



North American Energy Standards Board

801 Travis, Suite 1675, Houston, Texas 77002
Phone: (713) 356-0060, Fax: (713) 356-0067, E-mail: naesb@naesb.org
Home Page: www.naesb.org

NORTH AMERICAN ENERGY STANDARDS BOARD WHOLESALE ELECTRIC QUADRANT EXECUTIVE COMMITTEE MEETING MEETING MATERIALS

Tuesday, February 1, 2011 -- 10:00 am to 4:00 pm MT

PERA Club, 1 E. Continental Drive, Tempe, AZ -- Mesquite Hall



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	• WEQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - PAP09): http://www.naesb.org/pdf4/weq_111510_southernco_6c.doc	851
	• Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP 09 and Data Requirements): see above agenda item 3	
	• Late Comments on (WEQ) PAP 09 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/weq_111510_pratt_phillips_bartell_9_late.doc	974
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	• Comments Submitted by the WEQ Standards Review Subcommittee: http://www.naesb.org/pdf4/weq_120810_weqsrs_4d_memo.doc , Suggested Redline Changes: http://www.naesb.org/pdf4/weq_120810_weqsrs_4d.doc	1216
	• Comments Submitted by C. Wesley on behalf of the ISO/RTOs – ERCOT, IESO, ISO-NE, Midwest ISO, NYISO, PJM, SPP, CASIO: http://www.naesb.org/pdf4/weq_120810_iso_rtos_4d.doc , Recommendation Redlines: http://www.naesb.org/pdf4/weq_120810_iso_rtos_4d_redline.doc	1231
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	• Late Comments Submitted by Hamilton Consulting on behalf of Southern California Edison: http://www.naesb.org/pdf4/weq_120810_sce_4d_late.doc	1257
	• Late Comments Submitted by G. Fry, Northeast Utilities: http://www.naesb.org/pdf4/weq_011411_northeast_utilities_late.doc	1272



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	• Comments Submitted by C. Wesley on behalf of the ISO/RTOs – ERCOT, IESO, ISO-NE, Midwest ISO, NYISO, PJM, SPP, CASIO: http://www.naesb.org/pdf4/weq_120810_iso_rtos_4a4b.doc	1431
	• Comments Submitted by A. Breidenbaugh, EnerNOC, Inc.: see above agenda item 7	
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	• Late Comments Submitted by the Wholesale Demand Response Working Group: http://www.naesb.org/pdf4/weq_011411_dsmee_group3_late.doc	1471
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	• Business Practices Subcommittee (BPS): http://www.naesb.org/pdf4/weq_ec020111w6.ppt (presentation)	1519
	• DSM-EE Subcommittee	
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	• Joint Electric Scheduling Subcommittee (JESS)	
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	• Glossary Efforts	
	• Smart Grid Standards Development Subcommittee, Smart Grid PAP 10 Subcommittee, Smart Grid Energy Services Provider Interface Task Force	



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	• Wholesale Gas and Retail key activities – WGQ Annual Plan, Retail Annual Plan http://www.naesb.org/pdf4/wgq_2011_annual_plan.doc (WGQ),	1571
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	Adjourn	

Attire – Business Casual



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NAESB ANTITRUST GUIDELINES STATEMENT

ANTITRUST GUIDELINES

- The following guidelines will be reviewed by counsel at the meeting. The meeting will be monitored, transcribed, and minutes will be taken. The guidelines are as follows:

Antitrust guidelines direct meeting participants to avoid discussion of topics or behavior that would result in anticompetitive behavior including: restraint of trade and conspiracies to monopolize, unfair or deceptive business acts or practices, price discriminations, division of markets, allocation of production, imposition of boycotts, and exclusive dealing arrangements.

Any views, opinions or positions presented or discussed by meeting participants are the views of the individual meeting participants and their organizations. Any such views, opinions or positions are not the views, positions or opinions of NAESB, the NAESB Board of Directors, or any NAESB Committee or Subcommittee, unless specifically noted otherwise.

As it is not the purpose of the meeting to discuss any antitrust topics, if anyone believes we are straying into improper areas, please let us know and we will redirect the conversation.



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE TERMS – Wholesale Gas Quadrant

PRODUCERS SEGMENT		TERM END:
Rhonda Denton	Regulatory Affairs, BP Energy Company	12-31-2012
Catherine Abercrombie	Regulatory Affairs, ConocoPhillips Gas and Power Marketing	12-31-2012
Chuck Cook	Manager - Regulatory Affairs, Chevron	12-31-2011
Richard D. Smith	Regulatory & Compliance Manager, Noble Energy, Inc.	12-31-2011
Mike Shepard	General Counsel, Mewbourne Oil Company	12-31-2011
PIPELINE SEGMENT		
Bill Griffith	Consultant, El Paso Natural Gas Company	12-31-2011
Kathryn Burch	Project Manager - Standards and Regulatory, Spectra Energy Transmission	12-31-2011
Dale Davis	Industry Standards Consultant, Williams Gas Pipeline	12-31-2013
Randy Young	Vice President - Regulatory Compliance and Corporate Services, Boardwalk Pipeline Partners, LP	12-31-2012
Kim Van Pelt	Regulatory Compliance Manager, Panhandle Eastern Pipe Line	12-31-2012
LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT		
Rodger Schwecke	Director – Energy Markets and Capacity Products, Sempra Energy - Southern California Gas	12-31-2011
Phil Precht	Management Consultant – Pricing & Regulatory Services Department, Baltimore Gas and Electric Company	12-31-2011
Archie Hickerson	Director - Regulatory Affairs and Planning, AGL Resources	12-31-2013
Mike Novak	Assistant General Manager- Federal Regulatory Affairs, National Fuel Gas Distribution Corporation	12-31-2012
Craig Colombo	Energy Trader III, Dominion Resources	12-31-2012
END USERS SEGMENT		
Norm Spooner	Supply Chain Manager – Fuel & Term Trading Department, Arizona Public Service Company	12-31-2012
Valerie Crockett	Senior Program Manager - Energy Markets & Policy, Tennessee Valley Authority	12-31-2012
Lori-Lynn C. Pennock	Senior Fuel Supply Analyst, Salt River Project	12-31-2011
Simona Patru	Manager Contract Administration – Energy Marketing & Trading, Florida Power & Light	12-31-2011
Tina Burnett	Natural Gas Resources Administrator, The Boeing Company	12-31-2011
SERVICES SEGMENT		
Craig Fleming	Director of Credit, Sequent Energy Management	12-31-2012
Lisa Simpkins	Vice President, Energy Policy – Natural Gas, Constellation Energy Commodities Group	12-31-2012
Leigh Spangler	CEO, Latitude Technologies, Inc.	12-31-2011
Jim Buccigross	Vice President, 8760 Inc.	12-31-2011
Jeff Jarvis	Senior Counsel, EnCana Marketing (USA), Inc.	12-31-2011



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE TERMS – Retail Electric Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT		TERM END:
Bill Barkas	Manager of Retail State Government Relations, Dominion Retail, Inc.	12-31-2011
Jim Minneman	Controller, PPL Solutions, LLC	12-31-2011
Wendell Miyaji	Vice President – Energy Sciences, Comverge, Inc.	12-31-2012
Susan Munson	ERCOT Retail Market Liaison, Electric Reliability Council of Texas (ERCOT)	12-31-2012
UTILITIES SEGMENT		
Phil Precht	Management Consultant - Pricing and Regulatory Services Department, Baltimore Gas & Electric Company	12-31-2011
Patrick Eynon	Supervisor – Retail Access, Ameren Services	12-31-2011
Judy Ray	Industrial Segment Manager – Contract Administrator, Alabama Power Company	12-31-2012
Michael J. Jesensky	Director – Demand –Side Analysis, Dominion Resources Services, Inc. (representing Dominion Virginia Power)	12-31-2012
END USERS/PUBLIC AGENCIES SEGMENT		
James Bradford Ramsay	General Counsel – Supervisor/Director – NARUC Policy Department, National Association of Regulatory Utility Commissioners (NARUC)	12-31-2011
V A C A N C Y		12-31-2011
Annunciata E. Marino	Utility Energy Policy and Technology Analyst, Pennsylvania Public Utility Commission	12-31-2012
Christopher Kotting	Administrator – Energy Assurance, Public Utility Commission of Ohio	12-31-2012



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE TERMS – Wholesale Electric Quadrant

TRANSMISSION SEGMENT		TERM END:	SUBSEGMENT:
Patrick McGovern	Manager - System Services, Georgia Transmission Corporation	12-31-2011	Muni/Coop
V A C A N C Y		12-31-2012	Fed/State/Prov.
Corey Sellers	Transmission Service Manager, Southern Company	12-31-2012	IOU
Edward Davis	Policy Consultant, Entergy Services, Inc.	12-31-2011	IOU
Robert Bean	Transmission Services Trading Section Leader, Arizona Public Service Company	12-31-2012	at large
Bob Harshbarger	OASIS Trading Manager, Puget Sound Energy	12-31-2011	at large
Michelle Mizumori	Director of Market – Operations Interface, Western Electricity Coordinating Council (WECC)	12-31-2011	At-Large
GENERATION SEGMENT			
William J. Gallagher	Special Contracts Chief, Vermont Public Power Supply Authority	12-31-2011	Muni/Coop
Kathy York	Senior Program Manager – Energy Markets, Policy, and Compliance Reporting, Tennessee Valley Authority	12-31-2012	Fed/State/Prov.
V A C A N C Y		12-31-2012	IOU
John Ciza	Project Manager Energy Policy and Regulatory Affairs, Southern Company Services	12-31-2011	IOU
Alan Johnson	Director Regulatory Compliance – Commercial Operations & Commodities, NRG Energy, Inc.	12-31-2012	Merchant
V A C A N C Y		12-31-2011	at large
Shah Hossain	Senior Regulatory Specialist, Westar Energy, Inc.	12-31-2011	at large
MARKETERS/BROKERS SEGMENT			
Chris Norton	Director of Market Regulatory Affairs, American Municipal Power, Inc.	12-31-2012	Muni/Coop
Belinda Thornton	General Manager - Energy Origination, Tennessee Valley Authority	12-31-2011	Fed/State/Prov.
V A C A N C Y		12-31-2012	Not IOU Affiliated
Richard Lehman	Supply and Trading, Salt River Project	12-31-2011	at large
John Apperson	Director – Commercial and Trading, PacifiCorp Energy	12-31-2012	IOU
Roy True	Manager of Regulatory and Market Affairs, ACES Power Marketing	12-31-2011	at large
Barry Green	Barry Green Consulting (representing Electric Power Supply Association (EPSA))	12-31-2011	at large



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DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT		TERM END:	SUBSEGMENT:
Ray Phillips	Manager of Compliance and Special Projects, Alabama Municipal Electric Authority	12-31-2012	Muni/Coop
Robert (Bob) S. Beadle	Manager – Transmission Resources, North Carolina Electric Membership Corporation	12-31-2011	at large
Alan Pritchard	Senior Engineer, Duke Energy Corporation	12-31-2012	IOU
Rufus D. Gladney	Executive Manager of Energy Services West, Consumers Energy Company	12-31-2011	IOU
Robert Martinko	Consultant FERC Compliance, FirstEnergy Service Company	12-31-2012	at large
Syd Berwager	Industry Restructuring Project Manager, Bonneville Power Administration/Power Business Line	12-31-2011	Other
Andy Rodriquez	Director of Standards Development, North American Electric Reliability Corporation (NERC)	12-31-2011	At-Large
END USERS SEGMENT			
V A C A N C Y		12-31-2011	at large
Aaron Breidenbaugh	Senior Manager - Regulatory Affairs and Public Policy - New York, EnerNOC, Inc.	12-31-2012	at large
Lou Ann Westerfield	Policy Strategist, Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners	12-31-2012	Regulator
V A C A N C Y		12-31-2011	at large
Jesse D. Hurley	Chief Executive Officer, Shift Research, LLC	12-31-2012	at large
V A C A N C Y		12-31-2011	at large
Paul Sorenson	Vice President - Central Markets Strategy, Open Access Technology International, Inc.	12-31-2011	At-Large
INDEPENDENT GRID OPERATORS/PLANNERS			
Thomas Bowe	Executive Director – Reliability Integration, PJM Interconnection, LLC	12-31-2012	
Jim Castle	Manager - Grid Operations, New York Independent System Operator, Inc.	12-31-2012	
Matt Goldberg	Director Reliability & Operations Compliance ISO New England, Inc.	12-31-2012	
Nancy Traweek	Director – Market Services, California ISO	12-31-2012	
Joel Mickey	Director of Grid Operations, Electric Reliability Council of Texas	12-31-2011	
Ed Skiba	Consulting Advisor, Standards Compliance & Strategy, Midwest ISO	12-31-2011	
Charles Yeung	Executive Director Interregional Affairs, Southwest Power Pool	12-31-2011	



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Home Page: www.naesb.org

TECHNOLOGY AND SERVICES

Jim Buccigross	Vice President Energy Industry Practice, 8760 Inc.	12-31-2012
Andy Tritch	Senior Business Analyst, SunGard	12-31-2012
V A C A N C Y		12-31-2012
V A C A N C Y		12-31-2012
V A C A N C Y		12-31-2011
V A C A N C Y		12-31-2011
V A C A N C Y		12-31-2011



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE TERMS – Retail Gas Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT		TERM END:
Dwight M. Whitley, Jr.	Corporate Counsel, Sierra Southwest Cooperative Services, Inc.	12-31-2011
V A C A N C Y		12-31-2011
Richard Zollars	Director - Data and Billing, Dominion Retail, Inc.	12-31-2012
V A C A N C Y		12-31-2012
DISTRIBUTORS SEGMENT		
Dan Jones	Supervisor - Certified Supplier Business Center, Duke Energy	12-31-2011
Julie Compton Pellizzi	Project Leader, AGL Resources, Inc.	12-31-2011
Michael Novak	Assistant General Manager – Federal Regulatory Affairs, National Fuel Gas Distribution Corporation	12-31-2012
V A C A N C Y		12-31-2012
END USERS/PUBLIC AGENCIES SEGMENT		
V A C A N C Y		12-31-2012
V A C A N C Y		12-31-2012
V A C A N C Y		12-31-2011
V A C A N C Y		12-31-2011



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE ALTERNATES – Wholesale Gas Quadrant

PRODUCER SEGMENT

PIPELINE SEGMENT

Bill Grygar	Vice President, Panhandle Eastern Pipe Line
Scott Hansen	Questar Pipeline Company
Ronald G. Tomlinson	Manager – Business Technology, Dominion Gas Transmission, Inc.
Paul Love	Director, Electronic Customer Services, Natural Gas Pipe Line Company of America
Mark Gracey	Consultant, Tennessee Gas Pipeline Company
Christopher Burden	Consultant e-Commerce & Service Delivery, Williams Gas Pipeline
Tom Gwilliam	Iroquois Gas Transmission System

LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT

Rick Ishikawa	Interconnect Account Manager in Capacity Products Group, Southern California Gas Company
Jim Blasiak	Specialist Federal Regulatory Affairs, Washington Gas Light Company
George Simmons	FERC Specialist, NiSource Inc.
Shannon Pierce	Senior Counsel – Interstate Transactions and Gas Operations, AGL Resources
Scott Butler	Project Manager, Energy Markets Policy Group, Consolidated Edison Company of New York, Inc.

END USER SEGMENT

Paul A. Jones	Senior Marketing Representative, Salt River Project
Art Morris	Gas Originator, Florida Power & Light Company
Kenneth Nordlander	Fuel Procurement, Arizona Public Service Company

SERVICES SEGMENT

Keith Sappenfield	Director, US Regulatory Affairs, Midstream and Marketing, EnCana Oil and Gas (USA), Inc.
Sylvia Munson	Director – Product Management and Regulatory Compliance, SunGard Energy and Commodities



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE ALTERNATES – Retail Electric Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT

Brandon S. Siegel	Manager – Market Management, E:SO
H. Neal Allen	Profitability & Economic Analysis Manager, Southern Company Services

UTILITIES SEGMENT

Keith P. Hock	Director ARES Business Center, Ameren Services Company
Debbie McKeever	Market Advocate, Oncor
William J. Welzant	Principal Supplier Services Analyst, Supplier Account Management, Baltimore Gas and Electric

END USERS/PUBLIC AGENCIES SEGMENT



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE ALTERNATES – Wholesale Electric Quadrant

TRANSMISSION SEGMENT		SUB-SEGMENT
Abbey J. Nulph	Senior Public Utilities Specialist, Bonneville Power Administration	Fed/State/Prov.
Chuck Feagans	Tennessee Valley Authority	Fed/State/Prov.
Sarah E. Edmonds	Director of Transmission Regulation, Strategy and Policy, PacifiCorp	IOU
Jane Daly	Rate & Regulatory Advisor, Arizona Public Service Company	IOU
Lori Molotch	Transmission Services Trader Senior, Arizona Public Service Company	IOU
Narinder Saini	Policy Consultant, Entergy Services, Inc.	IOU
J.T. Wood	Southern Company Services	IOU
Joshua Jenkins	Sr. Engineer – Transmission Policy and Services, Southern Company Services	IOU
Hasnah Mat-Amin	Market Interface Manager, Western Electricity Coordinating Council	At Large
Ross Kovacs	Transmission Strategic Coordinator, Georgia Transmission Corporation	Muni/Coop
GENERATION SEGMENT		SUB-SEGMENT
Lou Oberski	Director – Electric Market Policy, Dominion Resources Services, Inc	IOU
Francis Halpin	Bonneville Power Administration	Fed/State/Prov.
MARKETER/BROKER SEGMENT		SUB-SEGMENT
Jeff Ackerman	Manager, CRSP-Energy Mgmt., Western Area Power Administration	Fed/State/Prov
Brenda Anderson	Bonneville Power Administration	Fed/State/Prov
Valerie Crockett	Senior Program Manager, Energy Markets & Policy, Tennessee Valley Authority	Fed/State/Prov
Joel Dison	Project Manager, Southern Company Generation and Energy Marketing	IOU
DISTRIBUTION/LSE SEGMENT		SUB-SEGMENT
Gerry Adamski	Vice President of Standards, NERC	At-Large
Lee Hall	Coordination Manager – Power Services, Bonneville Power Administration	Other
James R. Manning	Senior Engineer – Transmission Resources, North Carolina Electric Membership Corporation	Muni/Coop
Ronald C. Snead	General Manager, System Planning and Business Services, Duke Energy	IOU



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END USER SEGMENT		SUB-SEGMENT
Mark W. Hackney	Regional Director – Transmission, Open Access Technology International, Inc.	At-Large
INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT		SUB-SEGMENT
Paul Wattles	Supervisor Demand Side Programs, Electric Reliability Council of Texas (ERCOT)	
Bill Blevins	Sr. Market Support Analyst, Electric Reliability Council of Texas (ERCOT)	
Heather Sanders	Renewable Integration Support Manager, California ISO	
Robert Coughlin	Principal Scientist Reliability & Operations Compliance, ISO New England, Inc.	
Eric Winkler	Project Manager – FCM and Tariff Administration, ISO New England, Inc.	
Cheryl Mendrala	Principal Engineer, ISO New England, Inc.	
Jason Marshall	Technical Manager, Midwest ISO	
Marie Knox	Sr. Standards Compliance Analyst, Midwest ISO	
Dean Hartung	Manager Real Time Market Operations, PJM Interconnection, LLC	
Cathy Wesley	Sr. Analyst, PJM Interconnection, LLC	
Carl Monroe	Sr. Vice President Operations & Chief Operating Officer, Southwest Power Pool	
Greg Campoli	Supervisor – Reliability Compliance and Assessment, New York ISO	
Diana Pommen	Director Interjurisdictional Affairs, Alberta Electric System Operator	
Jimmy Womack	Manager-Tariff Administration, Southwest Power Pool	
Terry Bilke	Director Standards Compliance and Strategy, Midwest ISO	
TECHNOLOGY AND SERVICES		SUB-SEGMENT



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NORTH AMERICAN ENERGY STANDARDS BOARD 2011 EXECUTIVE COMMITTEE ALTERNATES – Retail Gas Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT

Paul Cherevka	Project Manager Data Warehouse, Dominion Retail

DISTRIBUTORS SEGMENT

Joe Stengel	Manager, Federal Regulatory Affairs, Philadelphia Gas Works

END USERS/PUBLIC AGENCIES SEGMENT



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January 14, 2011

TO: NAESB Quadrant Executive Committee Members, Alternates and Interested Industry Participants
FROM: Rae McQuade, NAESB President
RE: Quadrant Executive Committee Meeting Announcements and Draft Agendas with links to Meeting Materials - **Revised with Additional Links to Materials**

NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETINGS Hosted by Salt River Project in Phoenix, AZ

First, let me thank SRP for its generosity and commitment to the NAESB organization through hosting this series of meetings. Without such support, it would be very difficult to maintain the NAESB budget and provide various locations around the country to NAESB in-person attendance meetings.

As we have announced at prior Executive Committee meetings, meeting announcements and in other communications, the Executive Committee (EC) will meet in Phoenix, AZ hosted by Salt River Project. Below are the meeting arrangements:

Where: PERA Club: 1 E. Continental Drive, Tempe, AZ 85281-1053
Contact: Veronica Thomason, 713-356-0060
When: Tuesday, February 1 -- 10:00 a.m. to 4:00 p.m. Mountain – Wholesale Electric Quadrant
Wednesday, February 2 -- 10:00 a.m. to 4:00 p.m. Mountain – Retail Gas Quadrant and Retail Electric Quadrant
Thursday, February 3 -- 9:00 a.m. to 3:00 p.m. Mountain – Wholesale Gas Quadrant

If you plan to attend any of the above EC meetings and have not already RSVPed to our office through the other announcements, please do so at your earliest convenience to the NAESB office (naesb@naesb.org) so that proper meeting arrangements can be made by NAESB and our host.¹ Travel information is posted on the NAESB web site on the EC pages and can be directly accessed from the following link: http://www.naesb.org/weq/weq_ec.asp. If you plan to participate by conference call, the information to do so is provided in this document. The EC meetings will be web cast as well. The meeting, conference calling and web casting is open to any interested party.

The materials for the meeting will be emailed to the participants and posted on the web site shortly. In an effort to control costs and be more environmentally aware, we are not printing Executive Committee books any longer although they will be posted in an assembled pdf document for each quadrant meeting, in addition to the links to the native formatted documents provided in the agendas. For agenda items where materials are already available and have been sent to you in prior communications, or posted on the web site, the links to those documents are included in the agenda for your convenience, and to help you prepare for the meetings. The links are formatted in blue underlined text. As the meeting approaches, this agenda with additional links to documents will be provided, along with the pdf assembled books.

Please note that in discussions with the Retail Quadrants EC chairs and vice chairs, it has been determined that all Retail EC meetings for 2011 will be conference call/web casts in recognition of the small number of in-person attendance from the 2009-2010 records, and also in recognition of the reduced travel budgets for 2011 of many of the Retail EC members. However, since NAESB staff will be on location to provide support for the retail EC meetings, any Retail EC participant may choose to join the staff and participate in-person.

As always, the chair reserves the right to extend the time of the meeting to ensure that agenda items are addressed. The times indicated on the agenda will be followed to ensure that agenda items are allotted appropriate time slots. Should an agenda item conclude earlier than its stated time slot, the remaining time could be allotted to other agenda items at the discretion of the chair.

¹ If you will require WIFI access while in the meeting at the PERA Club, please contact Lori Lynn Pennock (lori-lynn.pennock@srpnet.com or 602-236-4360) with your name, company, email address, and the dates WIFI is requested no later than January 25 to avoid connection delays. Access will be granted after individual user IDs and passwords are created.



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There are other NAESB subcommittee meetings being held in conjunction with the EC meetings. They are held in various locations, and available via conference call and web cast, and upon advance request² for WGQ Joint IR/Technical subcommittee meetings. The details are:

Date	Time	Meeting/Location
Mon Jan 31	10 am to 3 pm M	Day 1 of Retail BPS Meeting/PERA Club/Centennial Conference Center (labeled "Board Room" west of Clubhouse) Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 4698 Web Cast: http://www.readytalk.com (please use same codes)
Tues Feb 1	9 am to 3 pm M	Day 2 of Retail BPS Meeting/PERA Club/Centennial Conference Center (labeled "Board Room" west of Clubhouse) Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 4698 Web Cast: http://www.readytalk.com (please use same codes)
	10 am to 4 pm M	WEQ EC Meeting/PERA Club/Mesquite Hall (first floor of Clubhouse) Conference Call Number: 866-740-1260 Access Code: 7133562 Security Code: 2843 Web Cast: http://www.readytalk.com (please use same codes)
	9 am to 4 pm M	Day 1 of WGQ Joint IR & Technical//PERA Club/Big Horn Terrace (labeled "BHT" south of Clubhouse) No conference calling requested
Wed Feb 2	10 am to 4 pm M	Retail EC Meeting by phone/web cast/ for in person attendance, please join NAESB staff at PERA Club/Mesquite Hall (first floor of Clubhouse) Conference Call Number: 866-740-1260 Access Code: :7133562 Security Code: 6862 Web Cast: http://www.readytalk.com (please use same codes)
	9 am to 4 pm M	Day 2 of WGQ Joint IR & Technical//PERA Club/Big Horn Terrace (labeled "BHT" south of Clubhouse) No conference calling requested

² To set up phone call in capability for the WGQ IR/Technical meetings requires request from attendees unable to participate in person.



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Date	Time	Meeting/Location
	8 am to 4 pm M	Day 1 of WEQ OASIS Subcommittee/PERA Club/Centennial Conference Center (labeled "Board Room" west of Clubhouse) Conference Call Number: 866-740-1260 Access Code: : 7133560 Security Code: 2695 Web Cast: http://www.readytalk.com (please use same codes)
Thu Feb 3	9 am to 3 pm M	WGQ EC Meeting/PERA Club/Mesquite Hall (first floor of Clubhouse) Conference Call Number: 866-740-1260 Access Code: :7133562 Security Code: 8724 Web Cast: http://www.readytalk.com (please use same codes)
	8 am to 4 pm M	Day 2 of WEQ OASIS Subcommittee/PERA Club/Centennial Conference Center (labeled "Board Room" west of Clubhouse) Conference Call Number: 866-740-1260 Access Code: : 7133560 Security Code: 2695 Web Cast: http://www.readytalk.com (please use same codes)

You can access the materials for this meeting from the NAESB web site, at the page specific for the subcommittee noted (WEQ: <http://www.naesb.org/weq/default.asp>, WGQ: <http://www.naesb.org/wgq/default.asp>, and Retail: <http://www.naesb.org/RGQ/default.asp>).

Please feel free to call the NAESB office should you have any questions or comments.

Best Regards, *Rae*



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CONFERENCE CALLING AND WEB CONFERENCING INSTRUCTIONS FOR THE EXECUTIVE COMMITTEE AND RELATED SUBCOMMITTEE MEETINGS

This conference call, as all NAESB meetings and conference calls, is open to any interested party.

To join the conference call:

- Dial the 11-digit toll free phone number (provided in the preceding chart – specific to the meeting and date)
- An automated attendant will ask you to enter a seven-digit access code (provided in the preceding chart – specific to the meeting and date)
- The automated attendant will ask you to record your name.
- Please note, if the conference leader has not yet initiated the conference call, you will be placed on hold until the conference leader starts the conference.
- The automated attendant will then ask you for a four-digit security code (provided in the preceding chart – specific to the meeting and date)

Please place your phone on mute unless you are speaking. For those participants that do not have a mute feature on your phone, please press (*6) to mute your phone and (*7) to un-mute your phone. Putting the conference call on hold may cause music to be played over the discussion and if so, the NAESB office will contact the conference call administrator to have the line disconnected.

To join the web conference, go to www.readytalk.com and enter the same access code and security code. Please note that if the conference leader has not yet initiated the web conference, you will view a screen that states, “The Chairperson has not yet arrived. Please standby for your web conference to begin.”

ReadyTalk recommends that you test your browser and network connections for compatibility prior to participating in a web conference. To do so, go to <http://test.callinfo.com>. If you have problems joining a conference call or need technical assistance, please contact ReadyTalk Customer Care, 1-800-843-9166. Please contact the NAESB Office (713-356-0060 or naesb@naesb.org) should you need any additional information or have questions or comments.



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA

Tuesday, February 1, 2011 – 10:00 am to 4:00 pm M
PERA Club/Mesquite Hall (first floor of Clubhouse), Tempe, AZ

#	Agenda Item
1.	Welcome - Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc - Welcome to members and attendees - Quorum Establishment: Roll Call of WEQ EC Members and Alternates: http://www.naesb.org/pdf4/ec_terms.pdf (EC) and http://www.naesb.org/pdf4/alt_ec_members.pdf (EC Alt)
2.	Consent Agenda (simple majority to approve) - Adoption of WEQ Agenda (simple majority) http://www.naesb.org/pdf4/ec020111a.doc - Adoption of the WEQ EC Meeting Minutes: - October 26, 2010: http://www.naesb.org/pdf4/weq_ec102610dm.doc, proposed redline changes submitted by E. Skiba, Midwest ISO: http://www.naesb.org/pdf4/weq_ec020111w4.doc - October 22, 2010: http://www.naesb.org/pdf4/weq_req_ec102210dm.doc, proposed redline changes submitted by E. Skiba, Midwest ISO: http://www.naesb.org/pdf4/weq_req_ec020111w1.doc - August 17, 2010: http://www.naesb.org/pdf4/weq_ec081710dm.doc, proposed redline changes submitted by E. Skiba, Midwest ISO: http://www.naesb.org/pdf4/weq_ec020111w5.doc - Adoption of changes to the 2011 Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/pdf4/weq_ec020111w7.doc (redlined changes submitted by WEQ Leadership)
3.	Review and consider for vote WEQ 2010 Annual Plan Item 6a – Phase 2 Requirements Specifications for Common Electricity Product and Pricing Definition – NIST PAP03 – (super majority vote) - Recommendation: http://www.naesb.org/pdf4/weq_2010_ap6a_rec_101510.doc - Formal Comment Period ended November 15, 2010: - Comments Submitted by the NAESB Standards Review Subcommittee: http://www.naesb.org/pdf4/weq_111510_weq_srs.doc - Comments Submitted by the R. Sahib, CAISO: http://www.naesb.org/pdf4/weq_111510_caiso.doc - Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Phase 2 - PAP03): http://www.naesb.org/pdf4/weq_111510_trane_ingersollrand_6a.xls - REQ and WEQ Comments Submitted by S. Dinges, Trane-IngersollRand (Terms): http://www.naesb.org/pdf4/req_weq_111510_trane_ingersollrand_terms.xls - WEQ Comments Submitted by California ISO, ERCOT, IESO, ISO New England, Midwest ISO, New York ISO, PJM and SPP (Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): http://www.naesb.org/pdf4/weq_111510_iso_rto.doc - Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - PAP03): http://www.naesb.org/pdf4/weq_111510_southernco_6a.doc - Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): http://www.naesb.org/pdf4/req_weq_111510_cox.xls - Late Comments on WEQ PAP 03 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/weq_111510_pratt_phillips_bartell_3_late.doc



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA

Tuesday, February 1, 2011 – 10:00 am to 4:00 pm M
PERA Club/Mesquite Hall (first floor of Clubhouse), Tempe, AZ

#	Agenda Item
4.	Review and consider for vote on WEQ 2010 Annual Plan Item 6b – Phase 2 Requirements Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04 – (super-majority vote) • Recommendation: http://www.naesb.org/pdf4/weq_2010_ap6b_rec_101510.doc • Comments November 15, 2010: • Comments Submitted by the NAESB Standards Review Subcommittee: see agenda item 3 • Comments Submitted by the R. Sahib, CAISO: see agenda item 3 • WEQ Comments Submitted by S. Dinges, Trane-IngersollRand (Phase 2 - PAP04): http://www.naesb.org/pdf4/weq_111510_trane_ingersollrand_6b.xls • REQ and WEQ Comments Submitted by S. Dinges, Trane-IngersollRand (Terms): see agenda item 3 • WEQ Comments Submitted by California ISO, ERCOT, IESO, ISO New England, Midwest ISO, New York ISO, PJM and SPP (Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see agenda item 3 • WEQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 – PAP04): http://www.naesb.org/pdf4/weq_111510_southernco_6b.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see agenda item 3 • Late Comments on (WEQ) PAP 04 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/weq_111510_pratt_phillips_bartell_4_late.doc
5.	Review and consider for vote WEQ 2010 Annual Plan Item 6 – Master Data Requirements for Standards Associated with NIST PAP03 and PAP09 (super majority vote) • Recommendation: http://www.naesb.org/pdf4/weq_2010_ap6_rec_101510.doc • Comments Due November 15, 2010: • Comments Submitted by the NAESB Standards Review Subcommittee: see agenda item 3 • Comments Submitted by R. Sahib, CAISO: see agenda item 3 • REQ and WEQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Terms): see above agenda item 3 • WEQ Comments Submitted by California ISO, ERCOT, IESO, ISO New England, Midwest ISO, New York ISO, PJM and SPP (Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see agenda item 3 • WEQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - Data Requirements): http://www.naesb.org/pdf4/weq_111510_southernco_6.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see above agenda item 3 • Late Comments on Data Requirements Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/weq_111510_pratt_phillips_bartell_data_requirements_late.doc



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA

Tuesday, February 1, 2011 – 10:00 am to 4:00 pm M
PERA Club/Mesquite Hall (first floor of Clubhouse), Tempe, AZ

#	Agenda Item
6.	Review and consider for vote WEQ 2010 Annual Plan Item 6c – Phase 2 Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09 (super majority vote) • Recommendation Redlined: http://www.naesb.org/pdf4/weq_2010_ap_6c_rec_101510_redline.pdf • Recommendation Clean: http://www.naesb.org/pdf4/weq_2010_ap_6c_rec_101510_clean.doc • Comments Due November 15, 2010: • Comments Submitted by the NAESB Standards Review Subcommittee: see agenda item 3 • Comments Submitted by R. Sahib, CAISO: see above agenda item 3 • REQ and WEQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Terms): see above agenda item 3 • WEQ Comments Submitted by California ISO, ERCOT, IESO, ISO New England, Midwest ISO, New York ISO, PJM and SPP (Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see above agenda item 3 • WEQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - PAP09): http://www.naesb.org/pdf4/weq_111510_southernco_6c.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP 09 and Data Requirements): see above agenda item 3 • Late Comments on (WEQ) PAP 09 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/weq_111510_pratt_phillips_bartell_9_late.doc
7.	Review WEQ 2010 Annual Plan Item 4d – Business Practice Standards for Measurement Verification of Energy Efficiency Products (super majority vote, vote will be taken at a subsequent meeting after comments have been considered) • Recommendation Redlined: http://www.naesb.org/pdf4/weq_2010_api_4d_rec_redline.doc • Recommendation Clean: http://www.naesb.org/pdf4/weq_2010_api_4d_rec_clean.doc • Comments Due January 14, 2010: • Comments Submitted by the WEQ Standards Review Subcommittee: http://www.naesb.org/pdf4/weq_120810_weqsrs_4d_memo.doc, Suggested Redline Changes: http://www.naesb.org/pdf4/weq_120810_weqsrs_4d.doc • Comments Submitted by C. Wesley on behalf of the ISO/RTOs – ERCOT, IESO, ISO-NE, Midwest ISO, NYISO, PJM, SPP, CASIO: http://www.naesb.org/pdf4/weq_120810_iso_rtos_4d.doc, Recommendation Redlines: http://www.naesb.org/pdf4/weq_120810_iso_rtos_4d_redline.doc • Comments Submitted by A. Breidenbaugh, EnerNOC, Inc.: http://www.naesb.org/pdf4/weq_120810_enernoc.pdf • Late Comments Submitted by Hamilton Consulting on behalf of Southern California Edison: http://www.naesb.org/pdf4/weq_120810_sce_4d_late.doc • Late Comments Submitted by G. Fry, Northeast Utilities: http://www.naesb.org/pdf4/weq_011411_northeast_utilities_late.doc



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA

Tuesday, February 1, 2011 – 10:00 am to 4:00 pm M
PERA Club/Mesquite Hall (first floor of Clubhouse), Tempe, AZ

#	Agenda Item
8.	Review and consider for vote WEQ 2010 Annual Plan Items 4a and 4b – Review and develop business practice standards to support DR and DSM-EE programs (DR Phase 2) (super majority vote) • Recommendation Redlined: http://www.naesb.org/pdf4/weq_2010_api_4a_4b_rec_redline.doc • Recommendation Clean: http://www.naesb.org/pdf4/weq_2010_api_4a_4b_rec_clean.doc • Comments Due January 14, 2010: • Comments Submitted by G. Fry, Northeast Utilities: http://www.naesb.org/pdf4/weq_011411_northeast_utilities.doc • Comments Submitted by B. Sailors, Duke Energy: http://www.naesb.org/pdf4/weq_120810_duke_energy.doc • Comments Submitted by the WEQ Standards Review Subcommittee: http://www.naesb.org/pdf4/weq_120810_weqsrs_4a4b_memo.doc, Suggested Redline Changes: http://www.naesb.org/pdf4/weq_120810_weqsrs_4a4b.doc • Comments Submitted by C. Wesley on behalf of the ISO/RTOs – ERCOT, IESO, ISO-NE, Midwest ISO, NYISO, PJM, SPP, CASIO: http://www.naesb.org/pdf4/weq_120810_iso_rtos_4a4b.doc • Comments Submitted by A. Breidenbaugh, EnerNOC, Inc.: see above agenda item 7 • Comments Submitted by M. Pieniazek, Energy Curtailment Specialists, Inc.: http://www.naesb.org/pdf4/weq_120810_ecs_4a4b.pdf • Late Comments Submitted by Hamilton Consulting on behalf of Southern California Edison: http://www.naesb.org/pdf4/weq_120810_sce_4a4b_late.doc • Late Comments Submitted by G. Fry, Northeast Utilities: http://www.naesb.org/pdf4/weq_011411_northeast_utilities_late.doc • Late Comments Submitted by the Wholesale Demand Response Working Group: http://www.naesb.org/pdf4/weq_011411_dsmee_group3_late.doc
9.	Subcommittee Updates (meeting materials for updates will be provided by leadership as they are available): • Triage Subcommittee: http://www.naesb.org/pdf4/tr110910disposition.doc (report), http://www.naesb.org/pdf4/tr011911agenda.doc (new requests), http://www.naesb.org/pdf4/tr011911agenda_revised.doc (revised - new requests) • Business Practices Subcommittee (BPS): http://www.naesb.org/pdf4/weq_ec020111w6.ppt (presentation) • DSM-EE Subcommittee • OASIS Subcommittee • Joint Electric Scheduling Subcommittee (JESS) • Standards Review Subcommittee (SRS): http://www.naesb.org/pdf4/weq_ec020111w1.doc (scope of work-clean); http://www.naesb.org/pdf4/weq_ec020111w2.doc (scope of work-redline), http://www.naesb.org/pdf4/weq_ec020111w3.ppt (presentation) • Glossary Efforts • Smart Grid Standards Development Subcommittee, Smart Grid PAP 10 Subcommittee, Smart Grid Energy Services Provider Interface Task Force



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA

Tuesday, February 1, 2011 – 10:00 am to 4:00 pm M
PERA Club/Mesquite Hall (first floor of Clubhouse), Tempe, AZ

#	Agenda Item

10. Publication Schedule Review:
 - WGQ Publication Schedule (Version 2.0): http://www.naesb.org/misc/wgq_publication_schedule_ver2_0.doc,
 - WGQ Publication Schedule (Version 2.1): http://www.naesb.org/misc/wgq_publication_schedule_ver2_1.doc,
 - WEQ Publication Schedule (Version 2.2): http://www.naesb.org/misc/weq_publication_schedule_ver2_2.doc,
 - Retail Publication Schedule (Version 1.3): http://www.naesb.org/misc/retail_publication_schedule_ver1_3.doc,
 - Retail Publication Schedule (Version 1.4): http://www.naesb.org/misc/retail_publication_schedule_ver1_4.doc
(Retail and WGQ provided for context)
11. Board of Directors, Board Committee and Regulatory Updates (no votes or action to be taken):
 - Board and Board Committee Updates – Board Meeting December 9, 2010:
<http://www.naesb.org/pdf4/bd120910dm.doc>
 - Wholesale Gas and Retail key activities – WGQ Annual Plan, Retail Annual Plan
http://www.naesb.org/pdf4/wgq_2011_annual_plan.doc (WGQ),
http://www.naesb.org/pdf4/retail_ec020211w2.doc (Retail with redlined changes submitted by Retail Leadership)
 - Regulatory Updates
 - EIR Registry Development Updates
12. Other Business
 - 2011 Schedule: http://www.naesb.org/misc/2011_schedule.pdf

Adjourn

Attire – Business Casual



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING RETAIL QUADRANTS DRAFT AGENDA

Wednesday, February 2, 2011 – 10:00 am to 4:00 pm M

Web Cast and Conference Call, for in person attendance – PERA Club, Tempe, AZ

#	Agenda Item
1.	Welcome • Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance) • Welcome to members and attendees • Quorum Establishment: Roll Call of Retail EC Members and Alternates: http://www.naesb.org/pdf4/ec_terms.pdf (EC) and http://www.naesb.org/pdf4/alt_ec_members.pdf (EC Alt)
2.	Consent Agenda (simple majority to approve) • Adoption of Retail Agenda (simple majority) http://www.naesb.org/pdf4/ec020111a.doc • Adoption of the Retail ECs Meeting Minutes: • October 27, 2010: http://www.naesb.org/pdf4/retail_ec102710dm.doc • October 22, 2010: http://www.naesb.org/pdf4/weq_req_ec102210dm.doc, proposed redline changes submitted by E. Skiba, Midwest ISO: http://www.naesb.org/pdf4/weq_req_ec020111w1.doc • Adoption of changes to the 2011 Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/pdf4/retail_ec020211w2.doc (redlined changes submitted by Retail Leadership)
3.	Review and consider for vote Retail 2010 Annual Plan Item 9a – Requirements Specifications for Common Electricity Product and Pricing Definition – NIST PAP03 – (super majority vote) • Recommendation: http://www.naesb.org/pdf4/retail_2010_ap9a_rec_101510.doc • Formal Comment Period ended November 15, 2010: • Comments Submitted by the B. Bartell, Xtensible Solutions (Phase 2 - PAP03, PAP04, PAP09): http://www.naesb.org/pdf4/req_111510_xtensible_solutions.doc • Comments Submitted by P. Precht, BGE (Phase 2 - PAP03): http://www.naesb.org/pdf4/req_111510_bge_9a.doc • REQ Comments Submitted by S. Dinges, Trane-IngersollRand (Phase 2 - PAP03): http://www.naesb.org/pdf4/req_111510_trane_ingersollrand_9a.xls • REQ and WEQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Terms): http://www.naesb.org/pdf4/req_weq_111510_trane_ingersollrand_terms.xls • REQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - PAP03): http://www.naesb.org/pdf4/req_111510_southernco_9a.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): http://www.naesb.org/pdf4/req_weq_111510_cox.xls • Late Comments on (REQ) PAP 03 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/req_111510_pratt_phillips_bartell_3_late.doc • Late Comments on (REQ) PAP 03 Submitted by L. Tillman on behalf of Southern Companies: http://www.naesb.org/pdf4/req_111510_southern_3_late.doc



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING RETAIL QUADRANTS DRAFT AGENDA

Wednesday, February 2, 2011 – 10:00 am to 4:00 pm M

Web Cast and Conference Call, for in person attendance – PERA Club, Tempe, AZ

#	Agenda Item
4.	Review and consider for vote on Retail 2010 Annual Plan Item 9b – Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04 – (super-majority vote) • Recommendation: http://www.naesb.org/pdf4/retail_2010_ap9b_rec_101510.doc • Comments November 15, 2010: • Comments Submitted by the B. Bartell, Xtensible Solutions – see above agenda item 3 • Comments Submitted by P. Precht, BGE(Phase 2 - PAP04): http://www.naesb.org/pdf4/req_111510_bge_9b.doc • REQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Phase 2 - PAP04): http://www.naesb.org/pdf4/req_111510_trane_ingersollrand_9b.xls • REQ and WEQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Terms): see above agenda item 3 • REQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 – PAP04): http://www.naesb.org/pdf4/req_111510_southernco_9b.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see agenda item 3 • Late Comments on (REQ) PAP 04 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/req_111510_pratt_phillips_bartell_4_late.doc • Late Comments on (REQ) PAP 04 Submitted by L. Tillman on behalf of Southern Companies: http://www.naesb.org/pdf4/req_111510_southern_4_late.doc
5.	Review and consider for vote on Retail 2010 Annual Plan Item 9 - Master Data Requirements List for Standards associated with NIST PAP 03 and PAP09 - (super-majority vote) • Recommendation: http://www.naesb.org/pdf4/req_2010_ap9_rec_101510.doc • Comments November 15, 2010 • REQ and WEQ Comments Submitted by S. Dinges, Trane-IngersollRand (Terms): see agenda item 3 • REQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - Data Requirements): http://www.naesb.org/pdf4/req_111510_southernco_9.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP 09 and Data Requirements): see agenda item 3 • Late Comments on Data Requirements Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/req_111510_pratt_phillips_bartell_data_requirements_late.doc • Late Comments on Data Requirements Submitted by L. Tillman on behalf of Southern Companies: http://www.naesb.org/pdf4/req_111510_southern_data_requirements_late.doc



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING RETAIL QUADRANTS DRAFT AGENDA

Wednesday, February 2, 2011 – 10:00 am to 4:00 pm M

Web Cast and Conference Call, for in person attendance – PERA Club, Tempe, AZ

#	Agenda Item
6.	Review and consider for vote on Retail 2010 Annual Plan Item 9c – Requirements Specifications for Retail Standard DR Signals – for NIST PAP09 - (super-majority vote) • Recommendation: http://www.naesb.org/pdf4/retail_2010_ap_9c_rec_101510.doc • Comments November 15, 2010 • Comments Submitted by B. Bartell, Xtensible Solutions (Phase 2 - PAP03, PAP04, PAP09): see agenda item 3 • Comments Submitted by G. Ghatikar, DRRC - Lawrence Berkely National Laboratory(Phase 2 - PAP09): http://www.naesb.org/pdf4/req_111510_drcc_lbnl.pdf • Comments Submitted by P. Precht, BGE(Phase 2 - PAP09): http://www.naesb.org/pdf4/req_111510_bge_9c.doc • REQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Phase 2 - PAP09): http://www.naesb.org/pdf4/req_111510_trane_ingersollrand_9c.xls • REQ and WEQ Comments Submitted by S. Dinges, Trane-Ingersoll Rand (Terms): see agenda item 3 • REQ Comments Submitted by L. Tillman on behalf of Southern Companies (Phase 2 - PAP09): http://www.naesb.org/pdf4/req_111510_southernco_9c.doc • Comments Submitted by W. Cox, Cox Software Architects LLC (REQ and WEQ Phase 2 - PAP03, PAP04, PAP09 and Data Requirements): see agenda item 3 • Late Comments on (REQ) PAP 09 Submitted by D. Pratt, J. Phillips and B. Bartell: http://www.naesb.org/pdf4/req_111510_pratt_phillips_bartell_9_late.doc • Late Comments on (REQ) PAP 09 Submitted by L. Tillman on behalf of Southern Companies: http://www.naesb.org/pdf4/req_111510_southern_9_late.doc
7.	Review and consider for vote on Retail 2010 Annual Plan Item 3c – Phase 2: M&V for Demand Response Programs - (super-majority vote) • Recommendation Redlined: http://www.naesb.org/pdf4/retail_2010_api_3c_rec_redline.doc • Recommendation Clean: http://www.naesb.org/pdf4/retail_2010_api_3c_rec_clean.doc • Comments January 14, 2011 • Comments Submitted by B. Sailors, Duke Energy: http://www.naesb.org/pdf4/req_120810_duke_energy.doc • Late Comments Submitted by Hamilton Consulting on behalf of Southern California Edison: http://www.naesb.org/pdf4/req_120810_sce.doc
8.	Subcommittee Updates (meeting materials for updates will be provided by leadership as they are available): • Triage Subcommittee: http://www.naesb.org/pdf4/tr110910disposition.doc (report), http://www.naesb.org/pdf4/tr011911agenda.doc (new requests), http://www.naesb.org/pdf4/tr011911agenda_revised.doc (revised - new requests) • Business Practices Subcommittee (BPS) and Texas Task Force • DSM-EE Subcommittee • Information Requirements Subcommittee (IR – Not Active) • Technical Electronic Implementation Subcommittee (TEIS)



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING RETAIL QUADRANTS DRAFT AGENDA

Wednesday, February 2, 2011 – 10:00 am to 4:00 pm M

Web Cast and Conference Call, for in person attendance – PERA Club, Tempe, AZ

#	Agenda Item
	• Glossary Efforts • Smart Grid Standards Development Subcommittee, Smart Grid PAP 10 Subcommittee, Smart Grid Energy Services Provider Interface Task Force
9.	Publication Schedule Review: • WGQ Publication Schedule (Version 2.0): http://www.naesb.org/misc/wgq_publication_schedule_ver2_0.doc, • WGQ Publication Schedule (Version 2.1): http://www.naesb.org/misc/wgq_publication_schedule_ver2_1.doc, • WEQ Publication Schedule (Version 2.2): http://www.naesb.org/misc/weq_publication_schedule_ver2_2.doc, • Retail Publication Schedule (Version 1.3): http://www.naesb.org/misc/retail_publication_schedule_ver1_3.doc, • Retail Publication Schedule (Version 1.4): http://www.naesb.org/misc/retail_publication_schedule_ver1_4.doc (WGQ and WEQ provided for context)
10.	Board of Directors, Board Committee and Regulatory Updates (no votes or action to be taken): • Board and Board Committee Updates – Board Meeting December 9, 2010: http://www.naesb.org/pdf4/bd120910dm.doc • Wholesale Gas and Electric key activities – WGQ Annual Plan, WEQ Annual Plan http://www.naesb.org/pdf4/wgq_2011_annual_plan.doc (WGQ), http://www.naesb.org/pdf4/weq_ec020111w7.doc (WEQ with redlined changes submitted by WEQ Leadership) • Regulatory Updates
11.	Other Business • 2011 Schedule: http://www.naesb.org/misc/2011_schedule.pdf
12.	Adjourn

Attire – Business Casual



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE GAS QUADRANT DRAFT AGENDA

Thursday, February 3, 2011 – 9:00 am to 3:00 pm M

PERA Club/Mesquite Hall (first floor of Clubhouse), Phoenix, AZ

#	Agenda Item
1.	Welcome • Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance) • Welcome to members and attendees • Quorum Establishment: Roll Call of WGQ EC Members and Alternates: http://www.naesb.org/pdf4/ec_terms.pdf (EC) and http://www.naesb.org/pdf4/alt_ec_members.pdf (EC Alt)
2.	Consent Agenda (simple majority to approve) • Adoption of WGQ Agenda (simple majority) http://www.naesb.org/pdf4/ec020111a.doc • Adoption of the WGQ EC Meeting Minutes: • October 28, 2010: http://www.naesb.org/pdf4/wgq_ec102810dm.doc , proposed redlines submitted by D. Davis, Williams Gas Pipeline: http://www.naesb.org/pdf4/wgq_ec020311w1.doc • Adoption of changes to the 2011 Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/pdf4/wgq_2011_annual_plan.doc
3.	Review and consider for vote on R10007 - Change the Offer, Bid and Award downloads to have the ability to communicate multiple indexed rates for a given offer (simple majority vote) • Recommendation: http://www.naesb.org/pdf4/wgq_r10007_rec_123010.doc • Comments due February 2, 2011 – none received
4.	Review and consider for vote on R09018 - Add MA data element Path Rank in the Nominations data set and corresponding error message in the Nom QR (super majority vote) • Recommendation: http://www.naesb.org/pdf4/wgq_r09018_rec_123010.doc • Comments due February 2, 2011 – none received
5.	Subcommittee Updates (meeting materials for updates will be provided by leadership as they are available): • Triage Subcommittee: http://www.naesb.org/pdf4/tr110910disposition.doc (report), http://www.naesb.org/pdf4/tr011911agenda.doc (new requests), http://www.naesb.org/pdf4/tr011911agenda_revised.doc (revised - new requests) • Business Practices Subcommittee (BPS) • Electronic Delivery Mechanisms Subcommittee (EDM) • Information Requirements Subcommittee (IR)/Technical Subcommittee • Interpretations Subcommittee • Contracts Subcommittee
6.	Publication Schedule Review: • WGQ Publication Schedule (Version 2.0): http://www.naesb.org/misc/wgq_publication_schedule_ver2_0.doc, • WGQ Publication Schedule (Version 2.1): http://www.naesb.org/misc/wgq_publication_schedule_ver2_1.doc, • WEQ Publication Schedule (Version 2.2): http://www.naesb.org/misc/weq_publication_schedule_ver2_2.doc, • Retail Publication Schedule (Version 1.3): http://www.naesb.org/misc/retail_publication_schedule_ver1_3.doc, • Retail Publication Schedule (Version 1.4): http://www.naesb.org/misc/retail_publication_schedule_ver1_4.doc (Retail and WEQ provided for context)



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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING WHOLESALE GAS QUADRANT DRAFT AGENDA

Thursday, February 3, 2011 – 9:00 am to 3:00 pm M
PERA Club/Mesquite Hall (first floor of Clubhouse), Phoenix, AZ

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#	Agenda Item
7.	Board of Directors, Board Committee and Regulatory Updates (no votes or action to be taken): • Board and Board Committee Updates – Board Meeting December 9, 2010: http://www.naesb.org/pdf4/bd120910dm.doc • Wholesale Gas and Electric key activities – Retail Annual Plan, WEQ Annual Plan http://www.naesb.org/pdf4/retail_ec020211w2.doc (Retail with redlined changes submitted by Retail Leadership), http://www.naesb.org/pdf4/weq_ec020111w7.doc (WEQ with redlined changes submitted by WEQ Leadership) • Regulatory Updates
8.	Other Business • 2011 Schedule: http://www.naesb.org/misc/2011_schedule.pdf
9.	Adjourn
-

Attire – Business Casual



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January 18, 2010

TO: NAESB Wholesale Electric Quadrant Executive Committee and Interested Industry Participants
FROM: Cory Galik Cummings, NAESB Staff Attorney
RE: Wholesale Electric Quadrant Single Topic Executive Committee Meeting Draft Minutes

**NORTH AMERICAN ENERGY STANDARDS BOARD
WHOLESALE ELECTRIC QUADRANT
EXECUTIVE COMMITTEE MEETING
Tuesday, October 26, 2010 – 10:00 am to 4:00 pm Mountain
DRAFT MINUTES**

1. Welcome

Ms. York called the meeting to order and welcomed the Wholesale Electric Quadrant (“WEQ”) Executive Committee (“EC”) members, alternates and other participants. Ms. Cummings gave the antitrust guidance and called the roll of the WEQ EC members and alternates. Quorum was established. In reviewing the agenda, Ms. York asked that the approval of the meeting minutes be delayed and placed on a consent agenda for the next WEQ EC meeting. She asked participants to send in comments on the minutes prior to the next meeting. Ms. Otondo moved, seconded by Mr. Hossain, to adopt the agenda as revised. The motion passed unanimously.

2. Adoption of the Wholesale Electric Quadrant Draft Minutes

This agenda item was delayed until the next WEQ EC meeting.

3. Consideration and Vote on Minor Corrections

MC10032: Mr. Davis reviewed the [comments](#) he submitted for MC10032. The suggested changes in the minor correction were vague; it appeared as though the definitions were referring to inadvertent interchange as opposed to On-Peak and Off-Peak hours. His comments suggested a change in the wording to better clarify the terms. Ms. Otondo expressed concern because the definitions should solely apply to inadvertent interchange paybacks. Mr. Davis asked if NAESB were to use these terms in another standard, would they have to be redefined. Mr. Skiba provided the background information on the minor correction. Ms. Rager noticed that WEQ-007 capitalized On-Peak and Off-Peak but they were not included in the glossary. In the text of the WEQ standards, On-Peak and Off-Peak were not used in any of the requirements. The subcommittee determined that the best way to address this was through the minor correction process rather than through the standards development process because the meaning of the terms is clear in the appendix.

After further discussion, the minor correction was [modified](#) to clarify that the definition is to be used relative to Inadvertent Interchange. Mr. Pritchard moved, seconded by Mr. Rodriguez, to approve the modified minor correction. The motion unanimously passed a simple majority vote.

MC10033: Ms. Coleman reviewed the [minor correction](#). Ms. Otondo moved, seconded by Mr. Skiba, to approve the minor correction as drafted. The motion unanimously passed a simple majority vote.

4. Review and Consider for Approval 2010 WEQ Annual Plan 1(d): Monitor and Develop NAESB Business Practices as needed to complement NERC reliability standards for FAC-012 and FAC-013

Mr. Skiba provided the review of this [recommendation](#). In 2008 NERC attempted to delete FAC 12 and 13, which was tied to NAESB’s ATC related work. FERC issued Order No. 729 and said that FAC 12 and 13 could not be deleted. This annual plan item was added as provisional last year and the SRS was asked to monitor the activity. The SRS monitored the NERC standards up through the point where the NERC standard went out for balloting and determined that it was not necessary to develop complementary standards. The SRS submitted this no action recommendation, which went out for formal comments on September 25. The comment period closed yesterday and no comments were received. Mr. Rodriguez had no issues with the no action recommendation. Mr. Pritchard



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moved, seconded by Ms. Otondo, to approve the recommendation. The motion unanimously passed a simple majority vote.

5. Review and Consider for Approval WEQ 2010 Annual Plan Item 1.a.i – Interim Solution for Parallel Flow Visualization

Ms. York provided the review. This [recommendation](#) is for the interim solution for parallel flow visualization (PFV). NAESB, with the agreement of its committee leadership, had committed to providing this information to NERC in order for them to begin a test period on November 1, 2010. During the summer, the committee leadership had concerns that the industry consensus for a permanent solution that would satisfy NERC's testing requirements would not be reached by November. The Business Practice Subcommittee (BPS) developed the interim solution for PFV, while continuing to pursue development of the permanent solution. This recommendation was sent out for a 30-day formal comment period and several comments were received. The BPS reviewed the comments.

Ms. Crockett moved to approve the recommendation and added, "The NAESB Executive Committee appreciates the work of the Business Practices Subcommittee in progressing Parallel Flow Visualization. The Business Practices Subcommittee recommendation supports the NERC ORS motion as referenced in their meeting minutes dated May 6, 2009. In their motion the ORS determined that the IDC should be modified to accept GTL calculations. The ORS further determined that the changes are intended to provide information only at this point until the ORS agrees that it is appropriate to utilize the additional data to enhance the tool processes or possible changes to the TLR procedures. The BPS Interim Parallel Flow Visualization recommendation provides for the requisite data submittals to the IDC. This data submission provides value to the industry that will enable the expeditious development of an information based GTL design. The NAESB WEQ EC therefore approves the BPS recommendation for the parallel flow visualization interim solution." Mr. Rodriguez seconded the motion.

Mr. Skiba noted a key item that was not included in the motion but was included in the ORS motion was, "a single vendor should be selected to implement methodology and perform the calculation." The BPS proposal was not a single solution and not a single methodology with a single set of calculations. He did not think the recommendation went as far as it should. He recognized that BPS continued to work on the final solution. The subcommittee began with four options, eliminated one prior to the creation of the interim solution, and discussed merging another solution into the two remaining options. Mr. Castle noted that the ORS motion was two pages long. While it was true the ORS wanted a final solution, it was also important to get there as quickly as possible. He believed the interim solution was a useful process to determine the correct way to develop the permanent solution.

Mr. Davis made an amendment to the original motion to accept the [timely comments of the WEQ BPS](#) and the [late comments of the WEQ BPS](#). Mr. Wood seconded the motion. The late and timely comments were reviewed by the WEQ EC. The BPS approved of Entergy's comments that the standards not be filed with FERC and will have a sunset date of November 1, 2011. Mr. Harshbarger asked how the wording in the recommendation to not file with FERC would impact NAESB's normal procedure of filing all recommendations with FERC. Ms. McQuade answered that NAESB's next filing with FERC is planned for the second quarter of 2011, dependent on the completion of the NITS work by the OASIS subcommittee. She noted that the purpose of the EC is to develop standards, not filings. The Board functions as the external liaison with the regulators. Mr. Goldberg asked that the section regarding filing with FERC be removed as a stand-alone item. Mr. Davis agreed to discuss and vote on the filing issue separately so that the EC can focus on the substance of the recommendation. Mr. Goldberg stated he was comfortable with the substance of the recommendation and wanted to see closure on the work BPS accomplished on the interim solution. If an EC member did not think the interim steps were appropriate, they could vote against the recommendation. Mr. Castle agreed that he was comfortable with the interim solution and thought it was a necessary step in determining the final solution.

Ms. Otondo asked if it was the appropriate procedure to write a temporary standard that would not be filed with the FERC. Mr. Harshbarger and Mr. Davis agreed. NAESB was providing a recommendation to NERC on how to proceed for a test to gather data. It was not necessary to develop a standard in order to accomplish that, especially if there was a chance the Board would recommend it be filed with FERC. Mr. Skiba expressed concern that NAESB was developing standards that may become enforceable before there is enough data to make an informed decision on



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the language for the final standards. Mr. Castle responded that he did not think the standards development and the testing were mutually exclusive. The data visibility and transparency were important to move the process along towards a final solution. Ms. Otondo restated that she did not feel comfortable voting on a standard that some EC members thought should not be a standard. She would be in favor of voting for a non-standard recommendation so that the data could be forwarded to NERC. Mr. Rodriguez understood the desire to avoid voting on a standard, but that was the only option possible at the moment. He stated it was important to move forward to help the industry as a whole.

For background regarding the completion date for this phase of the development, Ms. McQuade referred to a NAESB filing made on March 26, 2010 that was coordinated with NERC. It stated, "this project is a collaboration of NERC and NAESB activities including NERC developing modifications to IDC including uploads of data on a more frequent basis targeting every minutes and NAESB developing standards to support the curtailment activities in the event of system congestion based on classification of generator usage, allocation rules for curtailing and the identification of firm and non-firm service." Included in the filing was an explanation that the PFV project was to begin in November 2010.

Mr. Goldberg called the question. Mr. Castle seconded the calling of the question. The EC voted on the amendment offered by Mr. Davis and seconded by Mr. Wood. The motion unanimously passed a simple majority vote.

Ms. Crockett revised the original motion, removing the explanatory language, to state, "motion to adopt WEQ 2010 Annual Plan Item 1.a.i – Interim Solution for Parallel Flow Visualization as amended by the WEQ EC on October 26, 2010." Mr. Davis stated that he would vote in opposition of the motion because it should not be a NAESB standard, but rather guidance to NERC for development of the IDC.

Mr. Pritchard moved to remove the sunset date because it was unnecessary and provided some difficulties from an implementation standpoint. The motion died for lack of a second.

Mr. Skiba called the question on the main motion. The motion failed due segment blocks in the transmission segment and the independent grid operators segment.

Mr. Davis asked if the EC could recommend to NERC to use the parameters set forth in the recommendation as a guideline for their testing. Ms. Otondo agreed that there was consensus that the information would be useful for data collection. Ms. McQuade responded that the EC votes on standards and minor corrections and did not have the authority to make that type of suggestion. She also noted that she would be discussing the issue with the managing committee because a hole in the process was clearly identified through the course of this discussion. Mr. Rodriguez asked if the EC could remand the recommendation to the SRS and direct them to present it to NERC for comment. Ms. McQuade responded that the SRS does not have the authority to do that.

Ms. Crockett moved to reconsider the vote. A motion to reconsider can only be made by an EC member that voted in opposition in the previous vote. A motion to reconsider does not change the main motion but it is amendable. Mr. True moved to reconsider the motion. Mr. Rodriguez seconded the motion. He made the motion because the consequences of failing to pass the recommendation were not discussed prior to the vote. It appeared that the results of the vote were less acceptable than passing the recommendation. The motion passed a simple majority vote roll call vote.

Mr. Gallagher moved, seconded by Mr. True, to approve the original motion.

Mr. Rodriguez moved to amend the motion to approve the BPS Parallel Flow Visualization recommendation for NERC to use in its parallel operations test and delay ratification until the earlier of either 1) completion of the operations test demonstrating that the standards are sufficient as written or 2) subsequent modification of these standards. Mr. Hossain seconded the motion. Mr. Wood noted that the recommendation has to be ratified in order to become a standard. Mr. Rodriguez changed the wording from "delay ratification" to "delay filing with FERC." He recognized that the voluntary nature of the recommendation would not require participants to provide data to NERC. Rather, the recommendation could be used to demonstrate NERC and NAESB's collaboration.



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Ms. Otondo expressed concern with approving a standard that was not a standard, in the traditional sense. Mr. Rodriguez responded that NAESB was a standard setting body, it was not created to make guidelines or suggestions. Sometimes, incremental standards are necessary. In this situation, it provides NERC data it does not currently have. While it does not solve the problem, it gives NERC a starting point to look at the problem. If NAESB does not develop the interim solution, it opens the door for FERC to make the decision for the industry. Ms. Otondo respectfully disagreed. Mr. Harshbarger noted the bylaws as amended by the Board of Directors on November 21, 2008 state, "standard means a protocol or procedure for the conduct of specified acts or transactions." It does not put any restrictions on time or duration, it covers multiple situations and he no longer had a problem with the current recommendation.

Mr. Pritchard asked Mr. Rodriguez if he was going to propose removing the sunset date. Mr. Rodriguez stated he would do whichever was more likely to pass because he was confident that there would be a permanent solution before either of the two provisions were met. Mr. Pritchard suggested several wording changes to the motion. The motion was reworded to state, "Motion to approve the BPS Parallel Flow Visualization recommendation, excluding the November 1, 2011 sunset provision, and to include all the BPS recommended changes for NERC to use in its parallel operations test and delay any filing with FERC of the standards until the earlier of either 1) completion of the operations test demonstrating that the standards are sufficient as written or 2) subsequent modification of these standards." Mr. Rodriguez and Mr. Hossain accepted the revisions as friendly amendments to their motion to amend the original motion.

Mr. Skiba asked if the motion could contain the language regarding the delay of filing with the FERC when that goes beyond the scope of the EC. Ms. Crockett, as chairman of the Board of Directors, offered to recommend the delay in filing to the Managing Committee. The motion was revised to read, " Motion to approve the BPS Parallel Flow Visualization recommendation, excluding the November 1, 2011 sunset provision, and to include all the BPS recommended changes for NERC to use in its parallel operations test. It is our understanding that the Chairman of the NAESB Board of Directors will recommend to delay any filing with FERC of the standards until the earlier of either 1) completion of the operations test demonstrating that the standards are sufficient as written or 2) subsequent modification of these standards."

The motion did not garner enough votes to make a determination. A notational ballot will be distributed to the EC members who did not vote and were not represented by alternates. The motion subsequently passed via notational ballot.

6. Review, discuss, identify changes and vote to approve changes to the 2010 Annual Plan to be proposed to the Board of Directors

The WEQ EC reviewed the 2010 Annual Plan and modified it accordingly. Mr. True moved, seconded by Mr. Harshbarger, to approve the annual plan as [modified](#). The motion unanimously passed a simple majority vote.

7. Review, discuss, identify changes and vote to approve the 2011 Annual Plan to be proposed to the Board of Directors

The WEQ EC reviewed the 2011 Annual Plan. Ms. Crockett moved to adopt the [annual plan](#) with the caveat that the 4th quarter 2010 items may move. Mr. Skiba seconded the motion. The motion unanimously passed a simple majority vote.

8. Subcommittee Updates

Due to time constraints the Subcommittee Updates were not discussed.

9. Board of Directors, Board Committee and Regulatory Updates

Due to time constraints the Board and Regulatory Updates were not discussed.



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11. Other Business

Ms. McQuade noted sections 7.5 and 10.5 of the WEQ Procedures require occupied EC seats to revert to vacant at the end of the term and would have to be held vacant for 90 days before they could revert back to at-large for the previous seat holder to reclaim the seat. A leadership meeting was held to address this process as it impacts several Board and EC seats. The two sections were interpreted by leadership to mean that, should an individual be nominated from the original subsegment, they would receive deference. If not, the seat would not be held vacant for 90 days as long as there was an at-large representative to fill it.

12. Adjourn

Ms. Otondo moved, seconded by Mr. True, to adjourn the meeting at 4:00 PM Eastern.



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10. Attendance

NORTH AMERICAN ENERGY STANDARDS BOARD WEQ EXECUTIVE COMMITTEE						
VOTES	S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.					
ATTENDANCE	TRANSMISSION SEGMENT		SUBSEGMENT	WEQ 2010 ANNUAL PLAN ITEM 1.A.1 – VOTE 1	MOTION TO RECONSIDER	WEQ 2010 ANNUAL PLAN ITEM 1.A.1 – VOTE 2
In Person	R. Kovacs for Patrick McGovern	Georgia Transmission Corporation	Muni/Coop	O	S	O
Phone	Y. Coleman for Luke O'Dwyer	Salt River Project	Fed/State/Prov.		S	S
In Person	JT Wood for Daryl McGee	Southern Company Services	IOU	S	S	S
In Person	Edward Davis	Entergy Services, Inc.	IOU	O	O	O
In Person	Marceline Otondo	Arizona Public Service	at large	O	A	A
In Person	Bob Harshbarger	Puget Sound Energy	at large	O	S	S
Phon	H. Mat-Amin for Michelle Mizumori	Western Electricity Coordinating Council	At-Large	A	S	S
GENERATION SEGMENT			SUBSEGMENT			
Phone	William J. Gallagher	Vermont Public Power Supply Authority	Muni/Coop	S		S
In Person	Kathy York	Tennessee Valley Authority	Fed/State/Prov.	S	S	S
In Person	John Ciza	Southern Company Services	IOU	S	S	S
In Person	Alan Johnson	NRG Energy, Inc.	Merchant	S	S	O
In Person	L. Oberski for Trent Carlson	RRI Energy Services, Inc.	at large	S	S	S
In Person	Shah Hossain	Westar Energy, Inc.	at large	O	O	S
MARKETERS/BROKERS SEGMENT			SUBSEGMENT			
	Chris Norton	American Municipal Power, Inc.	Muni/Coop			S (NB)
In Person	V. Crockett alt. for Belinda Thornton	Tennessee Valley Authority	Fed/State/Prov.	S	S	S
	Richard Lehman	Salt River Project	at large			S (NB)
	John Apperson	PacifiCorp Energy	IOU			S (NB)
In Person	Roy True	ACES Power Marketing	at large	O	S	S
	Barry Green	Electric Power Supply Association (EPSA)	at large			O (NB)



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NORTH AMERICAN ENERGY STANDARDS BOARD WEQ EXECUTIVE COMMITTEE

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DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT		SUBSEGMENT:			
	Ray Phillips	Alabama Municipal Electric Authority			S (NB)
In Person	Alan Pritchard	Duke Energy Corporation	IOU	A	S
	Rufus D. Gladney	Consumers Energy Company	IOU		S (NB)
In Person	Robert Martinko	FirstEnergy Service Company	at large	O	S
	Syd Berwager	Bonneville Power Administration	Other		S (NB)
In Person	Andy Rodriguez	NERC	At-Large	S	S
END USERS SEGMENT		SUBSEGMENT:			
	Aaron Breidenbaugh	EnerNOC, Inc.	at large		S (NB)
	Lou Ann Westerfield	Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners	Regulator		S (NB)
	Christopher Kotting	Public Utility Commission of Ohio	at large		S (NB)
	Paul Sorenson	Open Access Technology International, Inc.	At-Large		S (NB)
INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT					
Phone	C. Wesley for Thomas Bowe	PJM Interconnection		O	O
In Person	Jim Castle	New York Independent System Operator, Inc.	S	S	S
In Person	Matt Goldberg	ISO New England, Inc.	S	S	S
Phone	Nancy Traweek	California ISO	A	A	A (NB)
Phone	Joel Mickey	Electric Reliability Council of Texas	A	A	S
In Person	Ed Skiba	Midwest ISO	O	O	O
In Person	J. Womack for Charles Yeung	Southwest Power Pool	O	O	O
TECHNOLOGY AND SERVICES					
Phone	Jim Buccigross	8760, INC		S	S



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Other Participant Attendance

Participant	Organization	Attendance
Jonathan Booe	NAESB	In Person
Jim Busbin	Southern Compnay	Phone
Ernie Cardone	NYISO	Phone
Cory Cummings	NAESB	In Person
Tony Dobbins	FERC	In Person
Michele Greening	PPL Energy Plus	Phone
Marie Knox	Midwest ISO	In Person
Rae McQuade	NAESB	In Person
BJ Moghadam	PacifiCorp	Phone
Barbara Rehman	BPA	Phone
Mark Robinson	SPP	Phone
Narinder Saini	Entergy	In Person
Veronica Thomason	NAESB	In Person
Dean Ulch	Southern Company	Phone
Jill Vaughn	Court Reporter	In Person



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January 18, 2010

TO: NAESB Wholesale Electric Quadrant Executive Committee and Interested Industry Participants
FROM: Cory Galik Cummings, NAESB Staff Attorney
RE: Wholesale Electric Quadrant Single Topic Executive Committee Meeting Draft Minutes

**NORTH AMERICAN ENERGY STANDARDS BOARD
WHOLESALE ELECTRIC QUADRANT
EXECUTIVE COMMITTEE MEETING
Tuesday, October 26, 2010 – 10:00 am to 4:00 pm Mountain
DRAFT MINUTES**

1. Welcome

Ms. York called the meeting to order and welcomed the Wholesale Electric Quadrant (“WEQ”) Executive Committee (“EC”) members, alternates and other participants. Ms. Cummings gave the antitrust guidance and called the roll of the WEQ EC members and alternates. Quorum was established. In reviewing the agenda, Ms. York asked that the approval of the meeting minutes be delayed and placed on a consent agenda for the next WEQ EC meeting. She asked participants to send in comments on the minutes prior to the next meeting. Ms. Otondo moved, seconded by Mr. Hossain, to adopt the agenda as revised. The motion passed unanimously.

2. Adoption of the Wholesale Electric Quadrant Draft Minutes

This agenda item was delayed until the next WEQ EC meeting.

3. Consideration and Vote on Minor Corrections

MC10032: Mr. Davis reviewed the [comments](#) he submitted for MC10032. The suggested changes in the minor correction were vague; it appeared as though the definitions were referring to inadvertent interchange as opposed to On-Peak and Off-Peak hours. His comments suggested a change in the wording to better clarify the terms. Ms. Otondo expressed concern because the definitions should solely apply to inadvertent interchange paybacks. Mr. Davis asked if NAESB were to use these terms in another standard, would they have to be redefined. Mr. Skiba provided the background information on the minor correction. Ms. Rager noticed that WEQ-007 capitalized On-Peak and Off-Peak but they were not included in the glossary. In the text of the WEQ standards, On-Peak and Off-Peak were not used in any of the requirements. The subcommittee determined that the best way to address this was through the minor correction process rather than through the standards development process because the meaning of the terms is clear in the appendix.

After further discussion, the minor correction was [modified](#) to clarify that the definition is to be used relative to Inadvertent Interchange. Mr. Pritchard moved, seconded by Mr. Rodriguez, to approve the modified minor correction. The motion unanimously passed a simple majority vote.

MC10033: Ms. Coleman reviewed the [minor correction](#). Ms. Otondo moved, seconded by Mr. Skiba, to approve the minor correction as drafted. The motion unanimously passed a simple majority vote.

4. Review and Consider for Approval 2010 WEQ Annual Plan 1(d): Monitor and Develop NAESB Business Practices as needed to complement NERC reliability standards for FAC-012 and FAC-013

Mr. Skiba provided the review of this [recommendation](#). In 2008 NERC attempted to delete FAC 12 and 13, which was tied to NAESB’s ATC related work. FERC issued Order No. 729 and said that FAC 12 and 13 could not be deleted. This annual plan item was added as provisional last year and the SRS was asked to monitor the activity. The SRS monitored the NERC standards up through the point where the NERC standard went out for balloting and determined that it was not necessary to develop complementary standards. The SRS submitted this no action recommendation, which went out for formal comments on September 25. The comment period closed yesterday and no comments were received. Mr. Rodriguez had no issues with the no action recommendation. Mr. Pritchard



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moved, seconded by Ms. Otondo, to approve the recommendation. The motion unanimously passed a simple majority vote.

5. Review and Consider for Approval WEQ 2010 Annual Plan Item 1.a.i – Interim Solution for Parallel Flow Visualization

Ms. York provided the review. This [recommendation](#) is for the interim solution for parallel flow visualization (PFV). NAESB, with the agreement of its committee leadership, had committed to providing this information to NERC in order for them to begin a test period on November 1, 2010. During the summer, the committee leadership had concerns that the industry consensus for a permanent solution that would satisfy NERC's testing requirements would not be reached by November. The Business Practice Subcommittee (BPS) developed the interim solution for PFV, while continuing to pursue development of the permanent solution. This recommendation was sent out for a 30-day formal comment period and several comments were received. The BPS reviewed the comments.

Ms. Crockett moved to approve the recommendation and added, "The NAESB Executive Committee appreciates the work of the Business Practices Subcommittee in progressing Parallel Flow Visualization. The Business Practices Subcommittee recommendation supports the NERC ORS motion as referenced in their meeting minutes dated May 6, 2009. In their motion the ORS determined that the IDC should be modified to accept GTL calculations. The ORS further determined that the changes are intended to provide information only at this point until the ORS agrees that it is appropriate to utilize the additional data to enhance the tool processes or possible changes to the TLR procedures. The BPS Interim Parallel Flow Visualization recommendation provides for the requisite data submittals to the IDC. This data submission provides value to the industry that will enable the expeditious development of an information based GTL design. The NAESB WEQ EC therefore approves the BPS recommendation for the parallel flow visualization interim solution." Mr. Rodriguez seconded the motion.

Mr. Skiba noted a key item that was not included in the motion but was included in the ORS motion was, "a single vendor should be selected to implement methodology and perform the calculation." The BPS proposal was not a single solution and not a single methodology with a single set of calculations. He did not think the recommendation went as far as it should. He recognized that BPS ~~continued~~ [continues](#) to work on the final solution. The subcommittee began with four options, eliminated one prior to the creation of the interim solution, and discussed merging another solution into the two remaining options. Mr. Castle noted that the ORS motion was two pages long. While it was true the ORS wanted a final solution, it was also important to get there as quickly as possible. He believed the interim solution was a useful process to determine the correct way to develop the permanent solution.

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Ms. Otondo asked if it was the appropriate procedure to write a temporary standard that would not be filed with the FERC. Mr. Harshbarger and Mr. Davis agreed. NAESB was providing a recommendation to NERC on how to proceed for a test to gather data. It was not necessary to develop a standard in order to accomplish that, especially if there was a chance the Board would recommend it be filed with FERC. Mr. Skiba expressed concern that NAESB



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For background regarding the completion date for this phase of the development, Ms. McQuade referred to a NAESB filing made on March 26, 2010 that was coordinated with NERC. It stated, "this project is a collaboration of NERC and NAESB activities including NERC developing modifications to IDC including uploads of data on a more frequent basis targeting every minutes and NAESB developing standards to support the curtailment activities in the event of system congestion based on classification of generator usage, allocation rules for curtailing and the identification of firm and non-firm service." Included in the filing was an explanation that the PFV project was to begin in November 2010.

Mr. Goldberg called the question. Mr. Castle seconded the calling of the question. The EC voted on the amendment offered by Mr. Davis and seconded by Mr. Wood. The motion unanimously passed a simple majority vote.

Ms. Crockett revised the original motion, removing the explanatory language, to state, "motion to adopt WEQ 2010 Annual Plan Item 1.a.i – Interim Solution for Parallel Flow Visualization as amended by the WEQ EC on October 26, 2010." Mr. Davis stated that he would vote in opposition of the motion because it should not be a NAESB standard, but rather guidance to NERC for development of the IDC.

Mr. Pritchard moved to remove the sunset date because it was unnecessary and provided some difficulties from an implementation standpoint. The motion died for lack of a second.

Mr. Skiba called the question on the main motion. The motion failed because it failed the super majority. It also failed due to segment blocks in the transmission segment and the independent grid operators segment.

Mr. Davis asked if the EC could recommend to NERC to use the parameters set forth in the recommendation as a guideline for their testing. Ms. Otondo agreed that there was consensus that the information would be useful for data collection. Ms. McQuade responded that the EC votes on standards and minor corrections and did not have the authority to make that type of suggestion. She also noted that she would be discussing the issue with the Managing Committee because a hole in the process was clearly identified through the course of this discussion. Mr. Rodriguez asked if the EC could remand the recommendation to the SRS and direct them to present it to NERC for comment. Ms. McQuade responded that the SRS does not have the authority to do that.

Ms. Crockett moved to reconsider the vote. A motion to reconsider can only be made by an EC member that voted in opposition in the previous vote. A motion to reconsider does not change the main motion but it is amendable. Mr. True moved to reconsider the motion. Mr. Rodriguez seconded the motion. He made the motion because the consequences of failing to pass the recommendation were not discussed prior to the vote. It appeared that the results of the vote were less acceptable than passing the recommendation. The motion passed a simple majority vote roll call vote.

Mr. Gallagher moved, seconded by Mr. True, to approve the original motion.

Mr. Rodriguez moved to amend the motion to approve the BPS Parallel Flow Visualization recommendation for NERC to use in its parallel operations test and delay ratification until the earlier of either 1) completion of the operations test demonstrating that the standards are sufficient as written or 2) subsequent modification of these standards. Mr. Hossain seconded the motion. Mr. Wood noted that the recommendation has to be ratified in order to become a standard. Mr. Rodriguez changed the wording from "delay ratification" to "delay filing with FERC." He recognized that the voluntary nature of the recommendation would not require participants to provide data to NERC. Rather, the recommendation could be used to demonstrate NERC and NAESB's collaboration.



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Ms. Otondo expressed concern with approving a standard that was not a standard, in the traditional sense. Mr. Rodriguez responded that NAESB was a standard setting body, it was not created to make guidelines or suggestions. Sometimes, incremental standards are necessary. In this situation, it provides NERC data it does not currently have. While it does not solve the problem, it gives NERC a starting point to look at the problem. If NAESB does not develop the interim solution, it opens the door for FERC to make the decision for the industry. Ms. Otondo respectfully disagreed. Mr. Harshbarger noted the bylaws as amended by the Board of Directors on November 21, 2008 state, "standard means a protocol or procedure for the conduct of specified acts or transactions." It does not put any restrictions on time or duration, it covers multiple situations and he no longer had a problem with the current recommendation.

Mr. Pritchard asked Mr. Rodriguez if he was going to propose removing the sunset date. Mr. Rodriguez stated he would do whichever was more likely to pass because he was confident that there would be a permanent solution before either of the two provisions were met. Mr. Pritchard suggested several wording changes to the motion. The motion was reworded to state, "Motion to approve the BPS Parallel Flow Visualization recommendation, excluding the November 1, 2011 sunset provision, and to include all the BPS recommended changes for NERC to use in its parallel operations test and delay any filing with FERC of the standards until the earlier of either 1) completion of the operations test demonstrating that the standards are sufficient as written or 2) subsequent modification of these standards." Mr. Rodriguez and Mr. Hossain accepted the revisions as friendly amendments to their motion to amend the original motion.

Mr. Skiba asked if the motion could contain the language regarding the delay of filing with the FERC when that goes beyond the scope of the EC. Ms. Crockett, as chairman of the Board of Directors, offered to recommend the delay in filing to the Managing Committee. The motion was revised to read, "~~Motion to approve the BPS Parallel Flow Visualization recommendation, excluding the November 1, 2011 sunset provision, and to include all the BPS recommended changes for NERC to use in its parallel operations test.~~ It is our understanding that the Chairman of the NAESB Board of Directors will recommend to delay any filing with FERC of the standards until the earlier of either 1) completion of the operations test demonstrating that the standards are sufficient as written or 2) subsequent modification of these standards."

The motion did not garner enough votes to make a determination. A notational ballot will be distributed to the EC members who did not vote and were not represented by alternates. The motion subsequently passed via notational ballot.

6. Review, discuss, identify changes and vote to approve changes to the 2010 Annual Plan to be proposed to the Board of Directors

The WEQ EC reviewed the 2010 Annual Plan and modified it accordingly. Mr. True moved, seconded by Mr. Harshbarger, to approve the annual plan as [modified](#). The motion unanimously passed a simple majority vote.

7. Review, discuss, identify changes and vote to approve ~~the~~ 2011 Annual Plan to be proposed to the Board of Directors

The WEQ EC reviewed the 2011 Annual Plan. Ms. Crockett moved to adopt the [annual plan](#) with the caveat that the 4th quarter 2010 items may move. Mr. Skiba seconded the motion. The motion unanimously passed a simple majority vote.

8. Subcommittee Updates

Due to time constraints the Subcommittee Updates were not discussed.

9. Board of Directors, Board Committee and Regulatory Updates

Due to time constraints the Board and Regulatory Updates were not discussed.



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11. Other Business

Ms. McQuade noted sections 7.5 and 10.5 of the WEQ Procedures require occupied EC seats to revert to vacant at the end of the term and would have to be held vacant for 90 days before they could revert back to at-large for the previous seat holder to reclaim the seat. A leadership meeting was held to address this process as it impacts several Board and EC seats. The two sections were interpreted by leadership to mean that, should an individual be nominated from the original subsegment, they would receive deference. If not, the seat would not be held vacant for 90 days as long as there was an at-large representative to fill it.

12. Adjourn

Ms. Otondo moved, seconded by Mr. True, to adjourn the meeting at 4:00 PM Eastern.



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10. Attendance

NORTH AMERICAN ENERGY STANDARDS BOARD WEQ EXECUTIVE COMMITTEE						
VOTES	S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.					
ATTENDANCE	TRANSMISSION SEGMENT		SUBSEGMENT	WEQ 2010 ANNUAL PLAN ITEM 1.A.1 – VOTE 1	MOTION TO RECONSIDER	WEQ 2010 ANNUAL PLAN ITEM 1.A.1 – VOTE 2
In Person	R. Kovacs for Patrick McGovern	Georgia Transmission Corporation	Muni/Coop	O	S	O
Phone	Y. Coleman for Luke O'Dwyer	Salt River Project	Fed/State/Prov.		S	S
In Person	JT Wood for Daryl McGee	Southern Company Services	IOU	S	S	S
In Person	Edward Davis	Entergy Services, Inc.	IOU	O	O	O
In Person	Marceline Otondo	Arizona Public Service	at large	O	A	A
In Person	Bob Harshbarger	Puget Sound Energy	at large	O	S	S
Phon	H. Mat-Amin for Michelle Mizumori	Western Electricity Coordinating Council	At-Large	A	S	S
GENERATION SEGMENT			SUBSEGMENT			
Phone	William J. Gallagher	Vermont Public Power Supply Authority	Muni/Coop	S		S
In Person	Kathy York	Tennessee Valley Authority	Fed/State/Prov.	S	S	S
In Person	John Ciza	Southern Company Services	IOU	S	S	S
In Person	Alan Johnson	NRG Energy, Inc.	Merchant	S	S	O
In Person	L. Oberski for Trent Carlson	RRI Energy Services, Inc.	at large	S	S	S
In Person	Shah Hossain	Westar Energy, Inc.	at large	O	O	S
MARKETERS/BROKERS SEGMENT			SUBSEGMENT			
	Chris Norton	American Municipal Power, Inc.	Muni/Coop			S (NB)
In Person	V. Crockett alt. for Belinda Thornton	Tennessee Valley Authority	Fed/State/Prov.	S	S	S
	Richard Lehman	Salt River Project	at large			S (NB)
	John Apperson	PacifiCorp Energy	IOU			S (NB)
In Person	Roy True	ACES Power Marketing	at large	O	S	S
	Barry Green	Electric Power Supply Association (EPSA)	at large			O (NB)



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NORTH AMERICAN ENERGY STANDARDS BOARD WEQ EXECUTIVE COMMITTEE

VOTES S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions for which the voting results are detailed below are noted in the minutes.

ATTENDANCE	TRANSMISSION SEGMENT	SUBSEGMENT	WEQ 2010 ANNUAL PLAN ITEM 1.A.1 – VOTE 1	MOTION TO RECONSIDER	WEQ 2010 ANNUAL PLAN ITEM 1.A.1 – VOTE 2
DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT		SUBSEGMENT:			
	Ray Phillips	Alabama Municipal Electric Authority			S (NB)
In Person	Alan Pritchard	Duke Energy Corporation	IOU	A	S
	Rufus D. Gladney	Consumers Energy Company	IOU		S (NB)
In Person	Robert Martinko	FirstEnergy Service Company	at large	O	S
	Syd Berwager	Bonneville Power Administration	Other		S (NB)
In Person	Andy Rodriquez	NERC	At-Large	S	S
END USERS SEGMENT		SUBSEGMENT:			
	Aaron Breidenbaugh	EnerNOC, Inc.	at large		S (NB)
	Lou Ann Westerfield	Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners	Regulator		S (NB)
	Christopher Kotting	Public Utility Commission of Ohio	at large		S (NB)
	Paul Sorenson	Open Access Technology International, Inc.	At-Large		S (NB)
INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT					
Phone	C. Wesley for Thomas Bowe	PJM Interconnection	Q	O	O
In Person	Jim Castle	New York Independent System Operator, Inc.	S	S	S
In Person	Matt Goldberg	ISO New England, Inc.	S	S	S
Phone	Nancy Traweek	California ISO	A	A	A (NB)
Phone	Joel Mickey	Electric Reliability Council of Texas	A	A	S
In Person	Ed Skiba	Midwest ISO	O	O	O
In Person	J. Womack for Charles Yeung	Southwest Power Pool	O	O	O
TECHNOLOGY AND SERVICES					
Phone	Jim Buccigross	8760, INC		S	S



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Other Participant Attendance

Participant	Organization	Attendance
Jonathan Booe	NAESB	In Person
Jim Busbin	Southern Compnay	Phone
Ernie Cardone	NYISO	Phone
Cory Cummings	NAESB	In Person
Tony Dobbins	FERC	In Person
Michele Greening	PPL Energy Plus	Phone
Marie Knox	Midwest ISO	In Person
Rae McQuade	NAESB	In Person
BJ Moghadam	PacifiCorp	Phone
Barbara Rehman	BPA	Phone
Mark Robinson	SPP	Phone
Narinder Saini	Entergy	In Person
Veronica Thomason	NAESB	In Person
Dean Ulch	Southern Company	Phone
Jill Vaughn	Court Reporter	In Person



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January 18, 2011

TO: NAESB Wholesale Electric Quadrant (WEQ) & Retail Electric Quadrant (REQ) Executive Committees and Interested Industry Participants
FROM: Jonathan Booe, NAESB Staff Attorney
RE: WEQ & REQ Executive Committees Single Topic Conference Call – Draft Minutes

**NORTH AMERICAN ENERGY STANDARDS BOARD
WHOLESALE & RETAILELECTRIC QUADRANTS
EXECUTIVE COMMITTEES
SINGLE TOPIC CONFERENCE CALL
Friday, October 22, 2010 – 1:00 pm to 4:00 pm Central
FINAL MINUTES**

1. Welcome

Ms. York called the meeting to order and welcomed the Retail Electric Quadrant (“REQ”) and Wholesale Electric Quadrant (“WEQ”) Executive Committee (“EC”) members, alternates and other participants. Mr. Booe provided the anti-trust guidance and called the roll of the REQ and WEQ EC members and alternates. A quorum was established for both Executive Committees. Ms. York reviewed the agenda and noted that the WEQ EC would address the comments and vote on the recommendation prior to the REQ EC action. Mr. Dison noted that the agenda did not include the late comments submitted by Mr. Tillman and asked if the agenda should be modified to include the comments. Ms. York and Ms. McQuade explained that agenda item 2 is broad enough to encompass the review of any comments submitted to either EC. Ms. Ray suggested that the WEQ EC review the comments submitted by Mr. Tillman rather than the late comments submitted by the Smart Grid Standards Subcommittee on Priority Action Plan 10 (PAP 10 subcommittee) as they modify the subcommittee draft. The participants agreed to review Mr. Tillman’s comments first. Ms. Wesley moved to adopt the agenda as discussed and Mr. Gladney seconded the motion. The motion passed without opposition.

2. Wholesale Electric Quadrant Review and Vote

Ms. Crockett moved to adopt the recommendation for WEQ 2010 Annual Plan Item 6(d) as submitted by the PAP 10 subcommittee. Mr. Winkler seconded the motion. Mr. Tillman reviewed the late comments submitted by [Southern Company](#). He stated that the purpose of his comments are to make clear the origin of the requirements included in Appendix A of the draft recommendation and to recommend that Appendix A be removed from the proposed standard. He stated that the requirements included in Appendix A were taken directly and unmodified from the SGIP and therefore were not properly vetted through the NAESB process. Mr. Pritchard made a motion to amend the motion on the table and adopt the redline language contained in the comments submitted by Southern Company. Mr. Ciza seconded the motion. Mr. Winkler stated that he does not support deleting Appendix A from of the recommendation. Mr. Johnson stated that he does support removing the Appendix and including the proposed language from Southern Company with the exception of the fourth paragraph. Mr. Ciza stated that he would like to adopt the proposed language prior to deleting the Appendix so that it is included in the artifact document. Mr. Tillman stated that taking the action proposed in the comments by Southern Company would bolster the credibility of NAESB and make the standard stronger. Mr. Ulch supported Mr. Tillman’s comments. Mr. Burns stated his support of including the Appendix in the recommendation. After further discussion, the participants took a simple majority vote on the amendment. The amendment passed a simple majority vote.

Mr. Winkler stated that the language added to the Executive Summary of the document by the previous amendment is inappropriate given the deletion of Appendix A. Ms. Ray stated that Southern Company supports including the language in the Executive Summary even with the deletion of Appendix A as it provides clarity. Mr. Ciza supported Ms. Ray’s statement. Mr. Gallagher made a motion to amend the motion on the table to delete the four paragraphs proposed by Southern Company in the Executive Summary of the recommendation. Mr. Johnson seconded the



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motion. Ms. York recommended that the EC take a roll call vote on the motion. The motion passed a simple majority roll call vote. [Vote 1].

Next, the participants reviewed the [Late Comments of the Smart Grid Standards Development Subcommittee submitted on October 18, 2010](#). Ms. York noted that the set of late comments incorporates the determinations of the subcommittee in response to all comments submitted and was reviewed by the subcommittee on October 4-5, 2010. She also noted that the late comments incorporate the first set of late comments submitted by Mr. Skiba. Mr. Skiba confirmed. Mr. Gallagher made a motion to amend the motion on the table and adopt the redline modifications included in the October 18, 2010 late comments. Mr. Gladney seconded the motion. Mr. Tillman offered a few minor corrections to the recommendation he noted during his final review as friendly amendments to Mr. Gallagher's motion. Mr. Gallagher and Mr. Gladney accepted the friendly amendments. Mr. Johnson stated that he too had some suggested modifications that he would like Mr. Gallagher and Mr. Gladney to consider. Mr. Johnson noted that the term Market Participant is included as a definition in the wholesale recommendation but only included in the recommendation in one instance and not capitalized. Mr. Skiba confirmed Mr. Johnson's comment. Mr. Gallagher and Mr. Gladney accepted the deletion of the definition as a friendly amendment. Mr. Johnson also noted that the term System Operator is included in the recommendation but not defined. Mr. Winkler and Mr. Booe explained that the term System Operator is defined in the Demand Response standards and included in WEQ-000. Mr. Winkler read the definition as adopted in the Demand Response recommendation. Mr. Johnson stated that he is comfortable with the definition. Mr. Winkler noted that the WEQ and REQ working group addressing the Demand Response terms and definitions made a modification to the term Governing Documents during a previous meeting and that the modification should be reflected in the recommendation for consistency. Mr. Precht reviewed the modification and Mr. Gallagher and Mr. Gladney accepted it as a friendly amendment. Mr. Dison clarified that the preamble adopted as part of Appendix A and then subsequently removed will remain in the draft recommendation as a redline strikethrough. Mr. Booe confirmed. The participants took a simple majority vote on Mr. Gallagher's motion and the motion passed without opposition.

The participants reviewed the [Additional Late Comments Submitted by E. Skiba, Midwest ISO](#). Mr. Skiba presented the comments and noted that his original comments were incorporated into the October 18, 2010 draft and his additional comments are intended to supplement that draft. Mr. Skiba noted that several of his comments are no longer applicable given the action of the EC in addressing previous comments. Specifically, bullet number one of comment four, comment seventeen, bullet number three of comment eighteen, comment twenty-three and comment twenty-five were disregarded. All other comments were addressed and modifications to the recommendation were made through discussion. Mr. Skiba made a motion to amend the motion on the table to incorporate the additional late comments submitted by Mr. Skiba and as discussed by the EC. Ms. Wesley seconded the motion. The motion passed a simple majority vote without opposition.

Ms. York asked if there were any other comments on the motion on the table to adopt the recommendation as amended. No comments were offered. Mr. Dison asked if a notational ballot would be distributed if the required super-majority support were not met. Mr. Booe stated that if a determination on the motion cannot be made due to a lack of votes, the motion would be distributed for notational ballot to the EC members not in attendance. Ms. McQuade stated that alternates vote in lieu of the absent EC member and that the absent EC member represented by an alternate would not receive a notational ballot. The participants took a roll call super majority vote. [Vote 2]. A determination on the motion could not be made due to a lack of votes. The motion will be distributed for a notational ballot period. The recommendation as modified by the WEQ EC can be found in redline format through the following hyperlink: http://www.naesb.org/pdf4/weq_ec102210ballot_a1.doc.

3. Retail Electric Quadrant Review and Vote

Mr. Precht stated that he would like to expedite the meeting by asking someone to make a motion to adopt the recommendation of the subcommittee with the addition of:

- the language offered by Mr. Tillman to Appendix A;
- the late comments of the subcommittee offered in the October 18, 2010 draft recommendation;
- the deletion of Appendix A and related modifications to the recommendation;



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- the editorial comments offered to REQ.18.4.1, REQ.18.4.1.3, REQ.18.4.1.4 and REQ.18.4.1.8 and
- the late comments submitted by Mr. Skiba incorporating the modifications made to the WEQ recommendation with the exception of comments 1, 2, 3, the first bullet of 4, 7, 8, 9 and 11.

Ms. Marino made the motion as reviewed by Mr. Precht and Mr. Kotting seconded the motion. Ms. Ray made a motion to amend to the motion on the table to incorporate the language included in the Executive Summary of the comments submitted by Mr. Tillman. Mr. Allen seconded the motion. Mr. Jesensky clarified that Ms. Ray's motion would create a significant deviation between the wholesale and retail standard. Ms. Ray confirmed. Mr. Precht noted that the Board of Directors requested that the Executive Committees provide an explanation for substantive differences between wholesale and retail standards developed jointly. Ms. Ray asked to move to the vote. The amendment failed a simple majority roll call vote. [Vote 3].

Mr. Precht asked if anyone would like to offer any additional comments or discussion. Ms. Ray stated that she would like to offer the deletion of the reference to Appendix A in REQ.18.1.1.7 as a friendly amendment. Ms. Marino and Mr. Kotting accepted the amendment. The participants took a roll call super majority vote and the motion passed the required super majority threshold. [Vote 4].

4. Other Business

No other business was discussed.

5. Adjourn

Mr. Allen moved to adjourn the meeting at 3:15 PM Central.



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6. Voting Record and Attendance

NORTH AMERICAN ENERGY STANDARDS BOARD REQ/WEQ EXECUTIVE COMMITTEE

Voting Record from June 16, 2010

VOTES = V		S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.			
ATTENDANCE	V1 ¹	V2	V3 ²	V4	
WEQ TRANSMISSION SEGMENT					
Phone	O			Patrick McGovern	Georgia Transmission Corporation
				Luke O'Dwyer	Salt River Project
Phone	O	S		Dean Ulch alt. for Daryl McGee	Southern Company Services
				Edward Davis	Entergy Services, Inc.
		S(NB)		Marceline Otondo	Arizona Public Service
Phone		S(NB)		Bob Harshbarger	Puget Sound Energy
	A			Hasnah Mat-Amin alt. for Michelle Mizumori	Western Electricity Coordinating Council
WEQ GENERATION SEGMENT					
Phone	O	S		William J. Gallagher	Vermont Public Power Supply Authority
Phone	S	S		Kathy York	Tennessee Valley Authority
Phone	O	S		John Ciza	Southern Company Services
Phone	S	S		Alan Johnson	NRG Energy, Inc.
		A(NB)		Trent Carlson	RRI Energy Services, Inc.
		S(NB)		Shah Hossain	Westar Energy, Inc.
WEQ MARKETERS/BROKERS SEGMENT					
Phone	O	S		Chris Norton	American Municipal Power, Inc.

¹ Roll Call Simple Majority Vote

² Roll Call Simple Majority Vote



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NORTH AMERICAN ENERGY STANDARDS BOARD

REQ/WEQ EXECUTIVE COMMITTEE

Voting Record from June 16, 2010

VOTES = V		S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.			
ATTENDANCE	V1 ¹	V2	V3 ²	V4	
Phone	S	S		Valerie Crockett alt. for B. Thornton	Tennessee Valley Authority
				Richard Lehman	Salt River Project
Phone	O	S		Joel Dison alt. for John Apperson	PacifiCorp Energy
Phone	S	S		Roy True	ACES Power Marketing
				Barry Green	Electric Power Supply Association (EPSA)
WEQ DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT					SUBSEGMENT:
				Ray Phillips	Alabama Municipal Electric Authority
Phone	O	S		Alan Pritchard	Duke Energy Corporation
Phone	O	S		Rufus D. Gladney	Consumers Energy Company
Phone	S	S		Robert Martinko	FirstEnergy Service Company
				Syd Berwager	Bonneville Power Administration
		S(NB)		Andy Rodriquez	NERC
WEQ END USERS SEGMENT					
				Aaron Breidenbaugh	EnerNOC, Inc.
		S(NB)		Lou Ann Westerfield	Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners
Phone	S	S		Christopher Kotting	Public Utility Commission of Ohio
		S(NB)		Paul Sorenson	Open Access Technology International, Inc.
WEQ INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT					
Phone	S	S		Cathy Wesley alt. for Thomas Bowe	PJM Interconnection
		S(NB)		Jim Castle	New York Independent System Operator, Inc.



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NORTH AMERICAN ENERGY STANDARDS BOARD

REQ/WEQ EXECUTIVE COMMITTEE

Voting Record from June 16, 2010

VOTES = V		S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.			
ATTENDANCE	V1 ¹	V2	V3 ²	V4	
Phone	S	S			Eric Winkler alt. for Matt Goldberg Nancy Traweek Joel Mickey
					ISO New England, Inc. California ISO Electric Reliability Council of Texas
Phone	S	S			Ed Skiba
Phone	S	S			Midwest ISO
					Charles Yeung Southwest Power Pool
WEQ TECHNOLOGY AND SERVICES					
		S(NB)			Jim Buccigross 8760, INC
REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT					
Phone			S	S	Bill Barkas Dominion Retail, Inc.
Phone			S	S	Neal Allen alt. for Jim Minneman PPL Solutions, LLC
					Jennifer Teel ista
Phone			A	S	Susan Munson Electric Reliability Council of texas
REQ UTILITIES SEGMENT					
Phone			O	S	Phil Precht Baltimore Gas and Electric Company
					Patrick Eynon Ameren Services
Phone			S	S	Judy Ray Alabama Power Company
Phone			O	S	Michael J. Jesensky Dominion Resources Services, Inc.
END USER/PUBLIC AGENCIES SEGMENT					
Phone			O	S	Annunciata E. Marino Pennsylvania Public Utility Commission
					Christopher Kotting Public Utility Commission of Ohio



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Voting Results for Supermajority Votes

	Votes Possible	Votes Cast	Percentage Affirmative Votes Cast	Reaching the 40% Segment Affirmative Vote Threshold?	Motion Passing
V2 – SUPERMAJORITY	WEQ – 37	25 affirmative 1 abstention 0 opposed	68%	Y	Passes Super Majority Vote
V4 – SUPERMAJORITY	REQ – 10	7 affirmative 0 abstention 0 opposed	70%	Y	Passes Super Majority Vote



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7. Other Participants

Participant	Organization
John Apperson	PacifiCorp
Martin Bartel	Northeast Utilities
Jonathan Booe	NAESB
Martin Burns	Hypertek, Inc.
Ernie Cardone	New York ISO
Brent Hodges	Reliant
Dave Kaufman	Honeywell
Marie Knox	Midwest ISO
Ross Kovacs	Georgia Transmission Corporation
Debbie McKeever	Oncor
Rae McQuade	NAESB
Gregory Obenchain	EEI
Brad Ramsay	NARUC
Jim Reiley	Exelon Corporation
Veronica Thomason	NAESB
Steve Van Ausdall	Xtensible Solutions
Jill Vaughn	Court Reporter
David Wollman	NIST
Jimmy Womack	SPP



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January 18, 2011

TO: NAESB Wholesale Electric Quadrant (WEQ) & Retail Electric Quadrant (REQ) Executive Committees and Interested Industry Participants
FROM: Jonathan Booe, NAESB Staff Attorney
RE: WEQ & REQ Executive Committees Single Topic Conference Call – Draft Minutes

**NORTH AMERICAN ENERGY STANDARDS BOARD
WHOLESALE & RETAILELECTRIC QUADRANTS
EXECUTIVE COMMITTEES
SINGLE TOPIC CONFERENCE CALL
Friday, October 22, 2010 – 1:00 pm to 4:00 pm Central
FINAL-DRAFT MINUTES**

1. Welcome

Ms. York called the meeting to order and welcomed the Retail Electric Quadrant (“REQ”) and Wholesale Electric Quadrant (“WEQ”) Executive Committee (“EC”) members, alternates and other participants. Mr. Booe provided the anti-trust guidance and called the roll of the REQ and WEQ EC members and alternates. A quorum was established for both Executive Committees. Ms. York reviewed the agenda and noted that the WEQ EC would address the comments and vote on the recommendation prior to the REQ EC action. Mr. Dison noted that the agenda did not include the late comments submitted by Mr. Tillman and asked if the agenda should be modified to include the comments. Ms. York and Ms. McQuade explained that agenda item 2 is broad enough to encompass the review of any comments submitted to either EC. Ms. Ray suggested that the WEQ EC review the comments submitted by Mr. Tillman rather than the late comments submitted by the Smart Grid Standards Subcommittee on Priority Action Plan 10 (PAP 10 subcommittee) as they modify the subcommittee draft. The participants agreed to review Mr. Tillman’s comments first. Ms. Wesley moved to adopt the agenda as discussed and Mr. Gladney seconded the motion. The motion passed without opposition.

2. Wholesale Electric Quadrant Review and Vote

Ms. Crockett moved to adopt the recommendation for WEQ 2010 Annual Plan Item 6(d) as submitted by the PAP 10 subcommittee. Mr. Winkler seconded the motion. Mr. Tillman reviewed the late comments submitted by [Southern Company](#). He stated that the purpose of his comments are to make clear the origin of the requirements included in Appendix A of the draft recommendation and to recommend that Appendix A be removed from the proposed standard. He stated that the requirements included in Appendix A were taken directly and unmodified from the SGIP and therefore were not properly vetted through the NAESB process. Mr. Pritchard made a motion to amend the motion on the table and adopt the redline language contained in the comments submitted by Southern Company. Mr. Ciza seconded the motion. Mr. Winkler stated that he does not support deleting Appendix A from the recommendation. Mr. Johnson stated that he does support removing the Appendix and including the proposed language from Southern Company with the exception of the fourth paragraph. Mr. Ciza stated that he would like to adopt the proposed language prior to deleting the Appendix so that it is included in the artifact document. Mr. Tillman stated that taking the action proposed in the comments by Southern Company would bolster the credibility of NAESB and make the standard stronger. Mr. Ulch supported Mr. Tillman’s comments. Mr. Burns stated his support of including the Appendix in the recommendation. After further discussion, the participants took a simple majority vote on the amendment. The amendment passed a simple majority vote.

Mr. Winkler stated that the language added to the Executive Summary of the document by the previous amendment is inappropriate given the deletion of Appendix A. Ms. Ray stated that Southern Company supports including the language in the Executive Summary even with the deletion of Appendix A as it provides clarity. Mr. Ciza supported Ms. Ray’s statement. Mr. Gallagher made a motion to amend the motion on the table to delete the four paragraphs proposed by Southern Company in the Executive Summary of the recommendation. Mr. Johnson seconded the



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motion. Ms. York recommended that the EC take a roll call vote on the motion. The motion passed a simple majority roll call vote. [Vote 1].

Next, the participants reviewed the [Late Comments of the Smart Grid Standards Development Subcommittee submitted on October 18, 2010](#). Ms. York noted that the set of late comments incorporates the determinations of the subcommittee in response to all comments submitted and was reviewed by the subcommittee on October 4-5, 2010. She also noted that the late comments incorporate the first set of late comments submitted by Mr. Skiba. Mr. Skiba confirmed. Mr. Gallagher made a motion to amend the motion on the table and adopt the redline modifications included in the October 18, 2010 late comments. Mr. Gladney seconded the motion. Mr. Tillman offered a few minor corrections to the recommendation he noted during his final review as friendly amendments to Mr. Gallagher's motion. Mr. Gallagher and Mr. Gladney accepted the friendly amendments. Mr. Johnson stated that he too had some suggested modifications that he would like Mr. Gallagher and Mr. Gladney to consider. Mr. Johnson noted that the term Market Participant is included as a definition in the wholesale recommendation but only included in the recommendation in one instance and not capitalized. Mr. Skiba confirmed Mr. Johnson's comment. Mr. Gallagher and Mr. Gladney accepted the deletion of the definition as a friendly amendment. Mr. Johnson also noted that the term System Operator is included in the recommendation but not defined. Mr. Winkler and Mr. Booe explained that the term System Operator is defined in the Demand Response standards and included in WEQ-000. Mr. Winkler read the definition as adopted in the Demand Response recommendation. Mr. Johnson stated that he is comfortable with the definition. Mr. Winkler noted that the WEQ and REQ working group addressing the Demand Response terms and definitions made a modification to the term Governing Documents during a previous meeting and that the modification should be reflected in the recommendation for consistency. Mr. Precht reviewed the modification and Mr. Gallagher and Mr. Gladney accepted it as a friendly amendment. Mr. Dison clarified that the preamble adopted as part of Appendix A and then subsequently removed will remain in the draft recommendation as a redline strikethrough. Mr. Booe confirmed. The participants took a simple majority vote on Mr. Gallagher's motion and the motion passed without opposition.

The participants reviewed the [Additional Late Comments Submitted by E. Skiba, Midwest ISO](#). Mr. Skiba presented the comments and noted that his original comments were incorporated into the October 18, 2010 draft and his additional comments are intended to supplement that draft. Mr. Skiba noted that several of his comments are no longer applicable given the action of the EC in addressing previous comments. Specifically, bullet number one of comment four, comment seventeen, bullet number three of comment eighteen, comment twenty-three and comment twenty-five were disregarded. All other comments were addressed and modifications to the recommendation were made through discussion. Mr. Skiba made a motion to amend the motion on the table to incorporate the additional late comments submitted by Mr. Skiba and as discussed by the EC. Ms. Wesley seconded the motion. The motion passed a simple majority vote without opposition.

Ms. York asked if there were any other comments on the motion on the table to adopt the recommendation as amended. No comments were offered. Mr. Dison asked if a notational ballot would be distributed if the required super-majority support were not met. Mr. Booe stated that if a determination on the motion cannot be made due to a lack of votes, the motion would be distributed for notational ballot to the EC members not in attendance. Ms. McQuade stated that alternates vote in lieu of the absent EC member and that the absent EC member represented by an alternate would not receive a notational ballot. The participants took a roll call super majority vote. [Vote 2]. A determination on the motion could not be made due to a lack of votes. The motion will be distributed for a notational ballot period. The recommendation as modified by the WEQ EC can be found in redline format through the following hyperlink: http://www.naesb.org/pdf4/weq_ec102210ballot_a1.doc.

3. Retail Electric Quadrant Review and Vote

Mr. Precht stated that he would like to expedite the meeting by asking someone to make a motion to adopt the recommendation of the subcommittee with the addition of:

- the language offered by Mr. Tillman to Appendix A;
- the late comments of the subcommittee offered in the October 18, 2010 draft recommendation;
- the deletion of Appendix A and related modifications to the recommendation;



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- the editorial comments offered to REQ.18.4.1, REQ.18.4.1.3, REQ.18.4.1.4 and REQ.18.4.1.8 and
- the late comments submitted by Mr. Skiba incorporating the modifications made to the WEQ recommendation with the exception of comments 1, 2, 3, the first bullet of 4, 7, 8, 9 and 11.

Ms. Marino made the motion as reviewed by Mr. Precht and Mr. Kotting seconded the motion. Ms. Ray made a motion to amend to the motion on the table to incorporate the language included in the Executive Summary of the comments submitted by Mr. Tillman. Mr. Allen seconded the motion. Mr. Jesensky clarified that Ms. Ray's motion would create a significant deviation between the wholesale and retail standard. Ms. Ray confirmed. Mr. Precht noted that the Board of Directors requested that the Executive Committees provide an explanation for substantive differences between wholesale and retail standards developed jointly. Ms. Ray asked to move to the vote. The amendment failed a simple majority roll call vote. [Vote 3].

Mr. Precht asked if anyone would like to offer any additional comments or discussion. Ms. Ray stated that she would like to offer the deletion of the reference to Appendix A in REQ.18.1.1.7 as a friendly amendment. Ms. Marino and Mr. Kotting accepted the amendment. The participants took a roll call super majority vote and the motion passed the required super majority threshold. [Vote 4].

4. Other Business

No other business was discussed.

5. Adjourn

Mr. Allen moved to adjourn the meeting at 3:15 PM Central.



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NORTH AMERICAN ENERGY STANDARDS BOARD
REQ/WEQ EXECUTIVE COMMITTEE

VOTES = V		S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.				
ATTENDANCE	V1 ¹	V2	V3 ²	V4		
				WEQ TRANSMISSION SEGMENT	SUBSEGMENT:	WEQ TRANSMISSION SEGMENT
Phone	O			Patrick McGovern	Georgia Transmission Corporation	Muni/Coop
				Luke O'Dwyer	Salt River Project	Fed/State/Prov.
Phone	O	S		Dean Ulch alt. for Daryl McGee	Southern Company Services	IOU
				Edward Davis	Entergy Services, Inc.	IOU
		S(NB)		Marceline Otondo	Arizona Public Service	at large
Phone		S(NB)		Bob Harshbarger	Puget Sound Energy	at large
	A			Hasnah Mat-Amin alt. for Michelle Mizumori	Western Electricity Coordinating Council	At-Large
				WEQ GENERATION SEGMENT		
Phone	O	S		William J. Gallagher	Vermont Public Power Supply Authority	Muni/Coop
Phone	S	S		Kathy York	Tennessee Valley Authority	Fed/State/Prov.
Phone	O	S		John Ciza	Southern Company Services	IOU
Phone	S	S		Alan Johnson	NRG Energy, Inc.	Merchant
		A(NB)		Trent Carlson	RRI Energy Services, Inc.	at large
		S(NB)		Shah Hossain	Westar Energy, Inc.	at large
				WEQ MARKETERS/BROKERS SEGMENT		
Phone	O	S		Chris Norton	American Municipal Power, Inc.	Muni/Coop

² Roll Call Simple Majority Vote



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NORTH AMERICAN ENERGY STANDARDS BOARD

REQ/WEQ EXECUTIVE COMMITTEE

Voting Record from June 16, 2010

VOTES = V		S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, NB – indicates a vote cast through notational ballot and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.			
ATTENDANCE	V1 ¹	V2	V3 ²	V4	
Phone	S	S		Valerie Crockett alt. for B. Thornton	Tennessee Valley Authority
				Richard Lehman	Salt River Project
Phone	O	S		Joel Dison alt. for John Apperson	PacifiCorp Energy
Phone	S	S		Roy True	ACES Power Marketing
				Barry Green	Electric Power Supply Association (EPSA)
WEQ DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT					SUBSEGMENT:
				Ray Phillips	Alabama Municipal Electric Authority
Phone	O	S		Alan Pritchard	Duke Energy Corporation
Phone	O	S		Rufus D. Gladney	Consumers Energy Company
Phone	S	S		Robert Martinko	FirstEnergy Service Company
				Syd Berwager	Bonneville Power Administration
		S(NB)		Andy Rodriquez	NERC
WEQ END USERS SEGMENT					
				Aaron Breidenbaugh	EnerNOC, Inc.
		S(NB)		Lou Ann Westerfield	Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners
Phone	S	S		Christopher Kotting	Public Utility Commission of Ohio
		S(NB)		Paul Sorenson	Open Access Technology International, Inc.
WEQ INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT					
Phone	S	S		Cathy Wesley alt. for Thomas Bowe	PJM Interconnection
		S(NB)		Jim Castle	New York Independent System Operator, Inc.



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ATTENDANCE	V1 ¹	V2	V3 ²	V4	
Phone	S	S			Eric Winkler alt. for Matt Goldberg Nancy Traweek Joel Mickey
					ISO New England, Inc. California ISO Electric Reliability Council of Texas
Phone	S	S			Ed Skiba
Phone	S	S			Charles Yeung
					Midwest ISO Southwest Power Pool
WEQ TECHNOLOGY AND SERVICES					
		S(NB)			Jim Buccigross 8760, INC
REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT					
Phone			S	S	Bill Barkas Dominion Retail, Inc.
Phone			S	S	Neal Allen alt. for Jim Minneman Jennifer Teel
					PPL Solutions, LLC ista
Phone			A	S	Susan Munson Electric Reliability Council of Texas
REQ UTILITIES SEGMENT					
Phone			O	S	Phil Precht Patrick Eynon
					Baltimore Gas and Electric Company Ameren Services
Phone			S	S	Judy Ray
Phone			O	S	Michael J. Jesensky
					Alabama Power Company Dominion Resources Services, Inc.
END USER/PUBLIC AGENCIES SEGMENT					
Phone			O	S	Annunciata E. Marino Christopher Kotting
					Pennsylvania Public Utility Commission Public Utility Commission of Ohio



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Voting Results for Supermajority Votes

	Votes Possible	Votes Cast	Percentage Affirmative Votes Cast	Reaching the 40% Segment Affirmative Vote Threshold?	Motion Passing
V2 – SUPERMAJORITY	WEQ – 37	25 affirmative 1 abstention 0 opposed	68%	Y	Passes Super Majority Vote
V4 – SUPERMAJORITY	REQ – 10	7 affirmative 0 abstention 0 opposed	70%	Y	Passes Super Majority Vote



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7. Other Participants

Participant	Organization
John Apperson	PacifiCorp
Martin Bartel	Northeast Utilities
Jonathan Booe	NAESB
Martin Burns	Hypertek, Inc.
Ernie Cardone	New York ISO
Brent Hodges	Reliant
Dave Kaufman	Honeywell
Marie Knox	Midwest ISO
Ross Kovacs	Georgia Transmission Corporation
Debbie McKeever	Oncor
Rae McQuade	NAESB
Gregory Obenchain	EEI
Brad Ramsay	NARUC
Jim Reiley	Exelon Corporation
Veronica Thomason	NAESB
Steve Van Ausdall	Xtensible Solutions
Jill Vaughn	Court Reporter
David Wollman	NIST
Jimmy Womack	SPP



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October 19, 2010

TO: NAESB Wholesale Electric Quadrant Executive Committee and Interested Industry Participants
FROM: Cory Galik Cummings, NAESB Staff Attorney
RE: Wholesale Electric Quadrant Single Topic Executive Committee Meeting Draft Minutes

**NORTH AMERICAN ENERGY STANDARDS BOARD
WHOLESALE ELECTRIC QUADRANT
EXECUTIVE COMMITTEE MEETING
Tuesday, August 17, 2010 – 10:00 am to 4:00 pm Mountain
DRAFT MINUTES**

1. Welcome

Ms. York called the meeting to order and welcomed the Wholesale Electric Quadrant (“WEQ”) Executive Committee (“EC”) members, alternates and other participants. Ms. Cummings gave the antitrust guidance and called the roll of the WEQ EC members and alternates. Quorum was established. Mr. Rodriguez moved, seconded by Ms. Crockett, to adopt the agenda. The motion passed unanimously.

2. Adoption of the Wholesale Electric Quadrant Draft Minutes

In an effort to reduce the amount of time spent editing minutes, the draft minutes were sent out ahead of the meeting to allow participants time to submit redlined changes. Mr. Rodriguez moved, seconded by Mr. True, to approve the May 4, June 4, June 16 and July 7, 2010 WEQ EC meeting minutes. The motion passed unanimously.

3. Consideration and Vote on Minor Corrections

Mr. Skiba reviewed [MC10019](#), which was intended to make corresponding revisions to the comparable sections of the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing in order to be coordinated with FERC’s implementation guide. Mr. Skiba’s submitted [comments](#) provided a few additional minor corrections, which were applied. The Standards Review Subcommittee (SRS) also noted some additional minor corrections, which will be applied. Ms. McQuade noted that FERC references version 2.1, so the minor correction will also apply to that version. Mr. Green asked if minor corrections would have to be applied every time FERC makes a change, or could the process be automated. Ms. McQuade stated that each change would have to go through the minor correction process, which will allow the EC to verify that the proposed change is acceptable. Ms. Otondo moved, seconded by Mr. Skiba to approve the minor correction for the e-Tariff Implementation guide with the redlined changes, Mr. Skiba’s comments and the SRS comments. The motion passed unanimously.

The second minor correction, [MC10031](#), was submitted by Mr. Goldberg to correct a mis-numbering in WEQ-001. Ms. York agreed with the proposed numbering change but expressed concern with the second part of the minor correction regarding the deletion of the Other Service Definitions paragraph. Ms. Otondo stated that with the issuance of FERC Order No. 132, paragraph 22, she was hesitant to remove the language. The paragraph states:

The Commission finds that PNM improperly invalidated Cargill’s February 21, 2008 transmission service request because Cargill submitted its request in accordance with section 17 of PNM’s OATT. PNM’s OATT in Attachment P explicitly incorporates by reference all of the NAESB business practice standards. While the Commission does not require transmission providers to adopt each of the flexible services included in the NAESB standards, the Commission does require the OATT to state accurately which services are offered, and PNM’s OATT does not specify which services it actually offers. Consequently, it is reasonable for the Commission and customers, such as Cargill, to conclude that on February 21, 2008, when Cargill submitted its Blackwater–Four Corners transmission service request, PNM was offering all the types of point-to-point transmission services described in the NAESB business practice standards incorporated



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by reference into its OATT, including sliding service. Therefore, PNM acted unreasonably by denying Cargill's sliding service transmission request that complied with PNM's OATT.

Ms. Otondo recognized that the minor correction was submitted prior to the FERC Order and asked that the minor correction be looked at in context with the Order, or delay consideration to determine if there are alternative solutions. Mr. Goldberg withdrew the second part of this minor correction and agreed to work with Ms. Otondo offline. Ms. Crockett moved, seconded by Ms. Otondo to adopt MC10031, specifically the first portion on numbering conventions. The motion unanimously passed a simple majority vote.

4. Update on efforts for Parallel Flow Visualization

Mr. Skiba reviewed the recommendation that is currently out for [formal comment](#), with comments due August 30, 2010. The recommendation is an interim solution to ensure NAESB stays coordinated with [NERC](#) on Change Order 283. He noted that the interim solution work paper provides detail about the process and coordination with NERC. Ms. York noted that a single topic conference call would be held to discuss the recommendation.

5. Review and vote to approve scoping effort for coordination of service across multiple transmission systems

Mr. Pritchard provided a review of the [scope recommendation](#) with a [presentation](#). In February, the WEQ EC formed a task force to complete this assignment, which was chaired by Mr. Pritchard and Mr. Saini. Mr. Rodriguez noted that duplication of transmission reservations has been an issue and asked if that problem was addressed in the scoping document. Mr. Pritchard answered that each linked request will have information regarding the requests on other systems. However, it is the responsibility of the customer to communicate with each transmission provider.

Mr. McGee asked whether the task force discussed assigning a particular queue date. Mr. Pritchard answered that the task force did consider that issue and recognized that to do so, they would have to develop a procedure where there was a common request with a specific queue time associated with it. The task force thought it was appropriate that the OASIS subcommittee state that in the true up process, once the last transmission provider has responded, there should be a deadline for completing the true up. That way, the evaluation can take place as quickly as possible without having to determine the response time for linking multiple requests.

Ms. York explained that the scoping document would be used as a starting point for the OASIS subcommittee to develop the coordination of service across multiple transmission systems recommendation. She encouraged any participant with concerns to get involved in the standards development process.

Mr. Rodriguez moved, seconded by Mr. Hossain, to adopt the scoping document for coordination of service across multiple transmission systems for use by the OASIS Subcommittee when addressing WEQ 2010 Annual Plan Item 2a-iii group 5. Ms. Otondo moved, seconded by Mr. Pritchard, to amend the language in the last sentence in section 5b to read, "Such a mechanism must allow linked requests that extend beyond the boundaries of the alliance." Ms. Otondo's motion passed a simple majority vote.

Ms. Otondo, as co-chair of the subcommittee, asked how the subcommittee should review Mr. Green's [white paper](#). She wanted to ensure the subcommittee's work was clear. Mr. Rodriguez answered that the purpose of his motion was to establish the scope document, and similar to any other input, the subcommittee can access Mr. Green's white paper. He did not think the subcommittee should be a requirement to make the changes suggested in the white paper, but rather it was a document that should be considered to determine if it has merit. If the white paper creates a significant increase in the subcommittee's work, it should not be considered any further. If the subcommittee determines that it will not address Mr. Green's white paper, he has the ability to submit a standards request to ask for that work to be done.

The motion passed a simple majority vote with one vote in opposition.

6. Update on WEQ/REQ efforts for smart grid standards for NIST PAPs 3, 4 and 9

Mr. Booe provided the [update](#). Phase one of the standards were voted on July 7 and passed a notational ballot on July 16. Those standards are in the ratification process, which ends Friday, August 20. The retail versions of the



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standards were ratified on July 30. The Task Force has continued to meet weekly to discuss the phase two effort, the purpose of which is to expand and fully detail the data requirements related to the use cases developed in phase one of the effort. Some identification of data requirements had been done as part of the phase one effort but it was determined that a complete identification of data requirements should be fleshed out in a subsequent phase.

A face-to-face meeting was held in Houston on July 13 and 14 and during that time the task force worked to develop a data requirement master list. The goal of the master list is to identify data requirements that have been developed in separate efforts related to PAP 9 by the IRC group (the wholesale group) and the Open SG group (representing the retail side) and to harmonize what has been developed. The group is in the process of that harmonization, sharing their work and trying to find overlap. The group has agreed that this review should be done on a smaller scale for the phase one PAPs 3 and 4 recommendations. Ms. McQuade urged participants to take the time to review the recommendations and to encourage subject matter experts within their company to get involved.

7. Update on WEQ/REQ efforts for Smart Grid Standards for NIST PAP10 and OpenADE

Mr. Booe provided the update. In May 2010, the assignments related to PAP10 were restructured by the SGIP in response to the urging of the Administration to produce a single standard information model for energy usage. NAESB was designated as the SDO to develop the standard and asked to complete such by year-end 2010. ASHRAE is beginning a similar effort as part of PAP 17. NAESB will share PAP 17 leadership at the committee level as NAESB has offered and they accepted leadership in PAP 10. While ASHRAE efforts are starting, the issue of shared leadership with ASHRAE has not yet been resolved. Part of the request from the SGIP was that NAESB leverage as much of the work of other groups in the area as a possible and try to create a model that is compatible or can be mapped to certain other work products. These work products included Open ADE 1.0, Smart Energy Profile 2.0 and EIS Alliance Requirements documents. The SGIP formed a Tiger Team that took the requirements from these specifications and created a white paper proposing a straw model, which was given to the subcommittee and has since been built upon to develop the recommendation.

The subcommittee has met every Tuesday since the first meeting on June 22, 2010 and is following a rigorous schedule to meet the year-end deadline. The subcommittee is scheduled to vote the recommendation out of the subcommittee for the formal comment period on August 31 and ask the EC to consider it in a single topic review session on October 15 and for vote on October 22. The standard will be ratified by December 1, which will allow NAESB an opportunity to present the work at the December 3rd SGIP governing board meeting.

In addition to the meetings included on the schedule, the subcommittee held several meetings for the WEQ to familiarize the WEQ EC with the recommendation and flesh out any potential issues that pertain specifically to wholesale electric market participants. These meetings were very productive. Similar meetings have begun on the retail side.

The current recommendation was posted for an informal comment on August 10 and ended August 16. Mr. Booe will compile the comments and make a matrix for the subcommittee to review in its next meeting on August 20.

Mr. Booe noted an upcoming project: R10008, which is related to PAP 10 but a separate item. The Open ADE Task Force within the UCA International Users Group recently submitted a standards request to NAESB for the standardization of the exchange of energy usage information that will facilitate the transfer of information between designated parties, and will build on the data model being developed by NAESB. This work is to build upon the requirements outlined in the requirements collected in OpenADE 1.0 Requirements documents. The item was triaged as of August 16 and will go to a task force of the PAP10 subcommittee.



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8. Subcommittee Updates

Triage Subcommittee: Ms. McQuade provided the [review](#) of triaged items. R10003, R10004, R10005 and R10007 were assigned to the WGQ. R10008 was assigned jointly to the WEQ and REQ. Request No. R10008 was provided by the OpenADE Task Force within the UCA International Users Group, to standardize the exchange of energy usage information from Smart Grid PAP 10. The item was triaged on August 16 and has been assigned to a task force of the PAP10 subcommittee, with the initial focus on the REQ.

Business Practices Subcommittee (BPS) TLR and Parallel Flow Visualization: Mr. Skiba provided a [power point presentation](#) review of the BPS. Mr. Rodriguez noted that NERC has discussed removing time error correction and is currently soliciting input from FERC to do a field test on this topic. NERC will be contacting NAESB in the next six months regarding the status of the field test.

Demand Side Management – Energy Efficiency (DSM-EE) Subcommittee: Mr. True provided the update. The retail demand response work group is working on completing its phase 2 efforts. The phase 2 recommendation has gone out for informal comment (minus the glossary). Only one response was received in support of the standards. The glossary work is underway to compare the wholesale and retail DR terms, as well as the smart grid glossary, to ensure consistency among the various work groups. Once the glossary work is completed, it will go out for informal comment again, with the glossary section.

The retail energy efficiency group has completed the scoping of its work product and has begun drafting the recommendation. The group currently has a draft glossary and are beginning to work on the process flows that will guide the development of the model business practices. The wholesale energy efficiency group has begun drafting its recommendation, which will be shared with the DSM-EE subcommittee at the upcoming September meeting.

The wholesale demand response work group created three task forces (glossary, model business practices and performance evaluation methods) to draft the second phase of the wholesale DR standards. The glossary task force has reviewed and synchronized the wholesale and retail demand response glossary terms and presented their work product to the wholesale demand response work group. They are currently working with the Retail DR work group to finalize the glossary. The Performance Evaluation group and the Model Business Practice group are meeting jointly to revise the standards. This work is ongoing, with a late August/early September expected completion date. It will go out for an informal comment period once the work is complete. Aaron Breidenbaugh, of EnerNOC, is working independently on a draft recommendation that will also be reviewed by the DSM-EE subcommittee. Sections of the EnerNOC work product may be used by the wholesale DR work group to provide more substance to the recommendation.

OASIS Subcommittee: Mr. Wood provided the update. The OASIS subcommittee is currently working on NITS on OASIS. The work on WEQ-001 was sent out for informal comment and several sets of comments were received and will be reviewed by the subcommittee in its upcoming meetings. The work related to WEQ-003 and the recommendation itself is partially complete. The original completion date was the end of August, but with the informal comments received, the subcommittee will need more time to review them. Once NITS is complete, the subcommittee will focus its attention on coordination of service across multiple transmission systems. The schedule for completion has been delayed to yearend 2010 and incorporates the work of coordination of transmission service requests across multiple transmission systems. Ms. McQuade stated that she would inform FERC of the delay regarding NITS and discuss options regarding publications and FERC filings.

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Standards Review Subcommittee (SRS): Mr. Saini provided a [power point presentation](#) to review the subcommittee's efforts.

Glossary Efforts: Mr. Wood stated that Ms. Rager is making consistency changes.



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Publication Schedule: Ms. Rager reviewed the [WEQ publication schedule](#). Version 2.2 is scheduled to be published in the 3rd quarter, 2010.

9. Review, discuss, identify changes and vote to approve changes to the 2010 Annual Plan to be proposed to the Board of Directors

Participants reviewed the [2010 WEQ Annual Plan](#) and made changes accordingly. Ms. Otondo moved, seconded by Mr. True, to approve the changes to the 2010 WEQ Annual Plan. The motion unanimously passed a simple majority vote.

10. Board of Directors, Board Committee and Regulatory Updates

Board Updates: Ms. McQuade urged participants to review the minutes from the [June 24 Board meeting](#). She noted the board resolution on the efforts on smart grid.

Board Critical Infrastructure Committee: Ms. McQuade asked participants to review the notes from the [July 19, 2010 Critical Infrastructure Committee meeting](#).

Wholesale Gas and Wholesale Electric activities: The [WGQ 2010 Annual Plan](#) and the Retail 2010 Annual Plan were briefly reviewed.

11. Other Business

Ms. McQuade noted that the NAESB office would develop the 2011 calendar shortly.

12. Adjourn

Mr. McGee moved, seconded by Mr. Ciza, to adjourn the meeting at 3:12 PM Mountain.



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10. Attendance

NORTH AMERICAN ENERGY STANDARDS BOARD WEQ EXECUTIVE COMMITTEE			
ATTENDANCE	TRANSMISSION SEGMENT		SUBSEGMENT
In Person	Patrick McGovern	Georgia Transmission Corporation	Muni/Coop
In Person	Y. Coleman for Luke O'Dwyer	Salt River Project	Fed/State/Prov.
In Person	Daryl McGee	Southern Company Services	IOU
Phone	Edward Davis	Entergy Services, Inc.	IOU
In Person	Marceline Otondo	Arizona Public Service	at large
	Bob Harshbarger	Puget Sound Energy	at large
In Person	Hasnah Mat-Amin for Michelle Mizumori	Western Electricity Coordinating Council	At-Large
GENERATION SEGMENT			SUBSEGMENT
Phone	William J. Gallagher	Vermont Public Power Supply Authority	Muni/Coop
In Person	Kathy York	Tennessee Valley Authority	Fed/State/Prov.
In Person	John Ciza	Southern Company Services	IOU
Phone	Alan Johnson	NRG Energy, Inc.	Merchant
	Trent Carlson	RRI Energy Services, Inc.	at large
In Person	Shah Hossain	Westar Energy, Inc.	at large
MARKETERS/BROKERS SEGMENT			SUBSEGMENT
	Chris Norton	American Municipal Power, Inc.	Muni/Coop
In Person	Valerie Crockett alt. for B. Thornton	Tennessee Valley Authority	Fed/State/Prov.
	Richard Lehman	Salt River Project	at large
	John Apperson	PacifiCorp Energy	IOU
In Person	Roy True	ACES Power Marketing	at large
In Person	Barry Green	Electric Power Supply Association (EPSA)	at large
DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT			SUBSEGMENT:
	Ray Phillips	Alabama Municipal Electric Authority	Muni/Coop
In Person	Alan Pritchard	Duke Energy Corporation	IOU
	Rufus D. Gladney	Consumers Energy Company	IOU
Phone	Robert Martinko	FirstEnergy Service Company	at large
Phone	Syd Berwager	Bonneville Power Administration	Other
In Person	Andy Rodriguez	NERC	At-Large
END USERS SEGMENT			SUBSEGMENT:
	Aaron Breidenbaugh	EnerNOC, Inc.	at large
	Lou Ann Westerfield	Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners	Regulator



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Phone	Christopher Kotting	Public Utility Commission of Ohio	at large
In Person	Paul Sorenson	Open Access Technology International, Inc.	At-Large

INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT

In Person	Thomas Bowe	PJM Interconnection
In Person	Jim Castle	New York Independent System Operator, Inc.
Phone	Matt Goldberg	ISO New England, Inc.
Phone	Nancy Traweck	California ISO
Phone	Joel Mickey	Electric Reliability Council of Texas
In Person	Ed Skiba	Midwest ISO
In Person	Charles Yeung	Southwest Power Pool

TECHNOLOGY AND SERVICES

Jim Buccigross	8760, INC



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Other Participant Attendance

Participant	Organization	Attendance
Toby Considine	University of North Carolina	
Cory Cummings	NAESB	In Person
Chuck Feagans	TVA	Phone
Michele Greening	PPL Energy Plus	Phone
Marie Knox	Midwest ISO	In Person
Matt Laherty	Cisco	Phone
Rae McQuade	NAESB	In Person
Glen Perez	CAISO	Phone
Denise Rager	NAESB	Phone
Narinder Saini	Entergy	In Person
Charlie Spirakis	Google	Phone
Veronica Thomason	NAESB	In Person
Jill Vaughn	Court Reporter	In Person
Cathy Wesley	PJM	In Person
Eric Winkler	ISO New England	Phone
Jimmy Womack	SPP	In Person
JT Wood	Southern Company	In Person



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October 19, 2010

TO: NAESB Wholesale Electric Quadrant Executive Committee and Interested Industry Participants
FROM: Cory Galik Cummings, NAESB Staff Attorney
RE: Wholesale Electric Quadrant Single Topic Executive Committee Meeting Draft Minutes

**NORTH AMERICAN ENERGY STANDARDS BOARD
WHOLESALE ELECTRIC QUADRANT
EXECUTIVE COMMITTEE MEETING
Tuesday, August 17, 2010 – 10:00 am to 4:00 pm Mountain
DRAFT MINUTES**

1. Welcome

Ms. York called the meeting to order and welcomed the Wholesale Electric Quadrant (“WEQ”) Executive Committee (“EC”) members, alternates and other participants. Ms. Cummings gave the antitrust guidance and called the roll of the WEQ EC members and alternates. Quorum was established. Mr. Rodriguez moved, seconded by Ms. Crockett, to adopt the agenda. The motion passed unanimously.

2. Adoption of the Wholesale Electric Quadrant Draft Minutes

In an effort to reduce the amount of time spent editing minutes, the draft minutes were sent out ahead of the meeting to allow participants time to submit redlined changes. Mr. Rodriguez moved, seconded by Mr. True, to approve the May 4, June 4, June 16 and July 7, 2010 WEQ EC meeting minutes. The motion passed unanimously.

3. Consideration and Vote on Minor Corrections

Mr. Skiba reviewed [MC10019](#), which was intended to make corresponding revisions to the comparable sections of the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing in order to be coordinated with FERC’s implementation guide. Mr. Skiba’s submitted [comments](#) provided a few additional minor corrections, which were applied. The Standards Review Subcommittee (SRS) also noted some additional minor corrections, which will be applied. Ms. McQuade noted that FERC references version 2.1, so the minor correction will also apply to that version. Mr. Green asked if minor corrections would have to be applied every time FERC makes a change, or could the process be automated. Ms. McQuade stated that each change would have to go through the minor correction process, which will allow the EC to verify that the proposed change is acceptable. Ms. Otondo moved, seconded by Mr. Skiba to approve the minor correction for the e-Tariff Implementation [gGuide](#) with the redlined changes, Mr. Skiba’s comments and the SRS comments. The motion passed unanimously.

The second minor correction, [MC10031](#), was submitted by Mr. Goldberg to correct a mis-numbering in WEQ-001. Ms. York agreed with the proposed numbering change but expressed concern with the second part of the minor correction regarding the deletion of the Other Service Definitions paragraph. Ms. Otondo stated that with the issuance of FERC Order No. 132, paragraph 22, she was hesitant to remove the language. The paragraph states:

The Commission finds that PNM improperly invalidated Cargill’s February 21, 2008 transmission service request because Cargill submitted its request in accordance with section 17 of PNM’s OATT. PNM’s OATT in Attachment P explicitly incorporates by reference all of the NAESB business practice standards. While the Commission does not require transmission providers to adopt each of the flexible services included in the NAESB standards, the Commission does require the OATT to state accurately which services are offered, and PNM’s OATT does not specify which services it actually offers. Consequently, it is reasonable for the Commission and customers, such as Cargill, to conclude that on February 21, 2008, when Cargill submitted its Blackwater–Four Corners transmission service request, PNM was offering all the types of point-to-point transmission services described in the NAESB business practice standards incorporated



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by reference into its OATT, including sliding service. Therefore, PNM acted unreasonably by denying Cargill's sliding service transmission request that complied with PNM's OATT.

Ms. Otondo recognized that the minor correction was submitted prior to the FERC Order and asked that the minor correction be looked at in context with the Order, or delay consideration to determine if there are alternative solutions. Mr. Goldberg withdrew the second part of this minor correction and agreed to work with Ms. Otondo offline. Ms. Crockett moved, seconded by Ms. Otondo to adopt MC10031, [specifically to approve only](#) the first portion on numbering conventions [of the minor correction](#). The motion unanimously passed a simple majority vote.

4. Update on efforts for Parallel Flow Visualization

Mr. Skiba reviewed the recommendation that is currently out for [formal comment](#), with comments due August 30, 2010. The recommendation is an interim solution to ensure NAESB stays coordinated with [NERC](#) on Change Order 283. He noted that the interim solution work paper provides detail about the process and coordination with NERC. Ms. York noted that a single topic conference call would be held to discuss the recommendation.

5. Review and vote to approve scoping effort for coordination of service across multiple transmission systems

Mr. Pritchard provided a review of the [scope recommendation](#) with a [presentation](#). In February, the WEQ EC formed a task force to complete this assignment, which was chaired by Mr. Pritchard and Mr. Saini. Mr. Rodriguez noted that duplication of transmission reservations has been an issue and asked if that problem was addressed in the scoping document. Mr. Pritchard answered that each linked request will have information regarding the requests on other systems. However, it is the responsibility of the customer to communicate with each transmission provider.

Mr. McGee asked whether the task force discussed assigning a particular queue date. Mr. Pritchard answered that the task force did consider that issue and recognized that to do so, they would have to develop a procedure where there was a common request with a specific queue time associated with it. The task force thought it was appropriate that the OASIS subcommittee state that in the true up process, once the last transmission provider has responded, there should be a deadline for completing the true up. That way, the evaluation can take place as quickly as possible without having to determine the response time for linking multiple requests.

Ms. York explained that the scoping document would be used as a starting point for the OASIS subcommittee to develop the coordination of service across multiple transmission systems recommendation. She encouraged any participant with concerns to get involved in the standards development process.

Mr. Rodriguez moved, seconded by Mr. Hossain, to adopt the scoping document for coordination of service across multiple transmission systems for use by the OASIS Subcommittee when addressing WEQ 2010 Annual Plan Item 2a-iii group 5. Ms. Otondo moved, seconded by Mr. Pritchard, to amend the language in the last sentence in section 5b to read, "Such a mechanism must allow linked requests that extend beyond the boundaries of the alliance." Ms. Otondo's motion passed a simple majority vote.

Ms. Otondo, as co-chair of the subcommittee, asked how the subcommittee should review Mr. Green's [white paper](#). She wanted to ensure the subcommittee's work was clear. Mr. Rodriguez answered that the purpose of his motion was to establish the scope document, and similar to any other input, the subcommittee can access Mr. Green's white paper. He did not think the subcommittee should be [a requirement](#) to make the changes suggested in the white paper, but rather it was a document that should be considered to determine if it has merit. If the white paper creates a significant increase in the subcommittee's work, it should not be considered any further. If the subcommittee determines that it will not address Mr. Green's white paper, he has the ability to submit a standards request to ask for that work to be done.

The motion passed a simple majority vote with one vote in opposition.

6. Update on WEQ/REQ efforts for smart grid standards for NIST PAPs 3, 4 and 9

Mr. Booe provided the [update](#). Phase one of the standards were voted on July 7 and passed a notational ballot on July 16. Those standards are in the ratification process, which ends Friday, August 20. The retail versions of the



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standards were ratified on July 30. The Task Force has continued to meet weekly to discuss the phase two effort, the purpose of which is to expand and fully detail the data requirements related to the use cases developed in phase one of the effort. Some identification of data requirements had been done as part of the phase one effort but it was determined that a complete identification of data requirements should be fleshed out in a subsequent phase.

A face-to-face meeting was held in Houston on July 13 and 14 and during that time the task force worked to develop a data requirement master list. The goal of the master list is to identify data requirements that have been developed in separate efforts related to PAP 9 by the IRC group (the wholesale group) and the Open SG group (representing the retail side) and to harmonize what has been developed. The group is in the process of that harmonization, sharing their work and trying to find overlap. The group has agreed that this review should be done on a smaller scale for the phase one PAPs 3 and 4 recommendations. Ms. McQuade urged participants to take the time to review the recommendations and to encourage subject matter experts within their company to get involved.

7. Update on WEQ/REQ efforts for Smart Grid Standards for NIST PAP10 and OpenADE

Mr. Booe provided the update. In May 2010, the assignments related to PAP10 were restructured by the SGIP in response to the urging of the Administration to produce a single standard information model for energy usage. NAESB was designated as the [Standards Development Organization \("SDO"\)](#) to develop the standard and asked to complete such by year-end 2010. ASHRAE is beginning a similar effort as part of PAP 17. NAESB will share PAP 17 leadership at the committee level as NAESB has offered and they accepted leadership in PAP 10. While ASHRAE efforts are starting, the issue of shared leadership with ASHRAE has not yet been resolved. Part of the request from the SGIP was that NAESB leverage as much of the work of other groups in the area as a possible and try to create a model that is compatible or can be mapped to certain other work products. These work products included Open ADE 1.0, Smart Energy Profile 2.0 and EIS Alliance Requirements documents. The SGIP formed a Tiger Team that took the requirements from these specifications and created a white paper proposing a straw model, which was given to the subcommittee and has since been built upon to develop the recommendation.

The subcommittee has met every Tuesday since the first meeting on June 22, 2010 and is following a rigorous schedule to meet the year-end deadline. The subcommittee is scheduled to vote the recommendation out of the subcommittee for the formal comment period on August 31 and ask the EC to consider it in a single topic review session on October 15 and for vote on October 22. The standard will be ratified by December 1, which will allow NAESB an opportunity to present the work at the December 3rd SGIP governing board meeting.

In addition to the meetings included on the schedule, the subcommittee held several meetings for the WEQ to familiarize the WEQ EC with the recommendation and flesh out any potential issues that pertain specifically to wholesale electric market participants. These meetings were very productive. Similar meetings have begun on the retail side.

The current recommendation was posted for an informal comment on August 10 and ended August 16. Mr. Booe will compile the comments and make a matrix for the subcommittee to review in its next meeting on August 20.

Mr. Booe noted an upcoming project: R10008, which is related to PAP 10 but a separate item. The Open ADE Task Force within the UCA International Users Group recently submitted a standards request to NAESB for the standardization of the exchange of energy usage information that will facilitate the transfer of information between designated parties, and will build on the data model being developed by NAESB. This work is to build upon the requirements outlined in the requirements collected in OpenADE 1.0 Requirements documents. The item was triaged as of August 16 and will go to a task force of the PAP10 subcommittee.



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8. Subcommittee Updates

Triage Subcommittee: Ms. McQuade provided the [review](#) of triaged items. R10003, R10004, R10005 and R10007 were assigned to the WGQ. R10008 was assigned jointly to the WEQ and REQ. Request No. R10008 was provided by the OpenADE Task Force within the UCA International Users Group, to standardize the exchange of energy usage information from Smart Grid PAP 10. The item was triaged on August 16 and has been assigned to a task force of the PAP10 subcommittee, with the initial focus on the REQ.

Business Practices Subcommittee (BPS) TLR and Parallel Flow Visualization: Mr. Skiba provided a [power point presentation](#) review of the BPS. Mr. Rodriguez noted that NERC has discussed removing time error correction and is currently soliciting input from FERC to do a field test on this topic. NERC will be contacting NAESB in the next six months regarding the status of the field test.

Demand Side Management – Energy Efficiency (DSM-EE) Subcommittee: Mr. True provided the update. The retail demand response work group is working on completing its phase 2 efforts. The phase 2 recommendation has gone out for informal comment (minus the glossary). Only one response was received in support of the standards. The glossary work is underway to compare the wholesale and retail DR terms, as well as the smart grid glossary, to ensure consistency among the various work groups. Once the glossary work is completed, it will go out for informal comment again, with the glossary section.

The retail energy efficiency group has completed the scoping of its work product and has begun drafting the recommendation. The group currently has a draft glossary and ~~are is~~ beginning to work on the process flows that will guide the development of the model business practices. The wholesale energy efficiency group has begun drafting its recommendation, which will be shared with the DSM-EE subcommittee at the upcoming September meeting.

The wholesale demand response work group created three task forces (glossary, model business practices and performance evaluation methods) to draft the second phase of the wholesale DR standards. The glossary task force has reviewed and synchronized the wholesale and retail demand response glossary terms and presented their work product to the wholesale demand response work group. They are currently working with the Retail DR work group to finalize the glossary. The Performance Evaluation group and the Model Business Practice group are meeting jointly to revise the standards. This work is ongoing, with a late August/early September expected completion date. It will go out for an informal comment period once the work is complete. Aaron Breidenbaugh, of EnerNOC, is working independently on a draft recommendation that will also be reviewed by the DSM-EE subcommittee. Sections of the EnerNOC work product may be used by the wholesale DR work group to provide more substance to the recommendation.

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Publication Schedule: Ms. Rager reviewed the [WEQ publication schedule](#). Version 2.2 is scheduled to be published in the 3rd quarter, 2010.

9. Review, discuss, identify changes and vote to approve changes to the 2010 Annual Plan to be proposed to the Board of Directors

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10. Board of Directors, Board Committee and Regulatory Updates

Board Updates: Ms. McQuade urged participants to review the minutes from the [June 24 Board meeting](#). She noted the board resolution on the efforts on smart grid.

Board Critical Infrastructure Committee: Ms. McQuade asked participants to review the notes from the [July 19, 2010 Critical Infrastructure Committee meeting](#).

Wholesale Gas and Wholesale Electric activities: The [WGQ 2010 Annual Plan](#) and the Retail 2010 Annual Plan were briefly reviewed.

11. Other Business

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12. Adjourn

Mr. McGee moved, seconded by Mr. Ciza, to adjourn the meeting at 3:12 PM Mountain.



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10. Attendance

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ATTENDANCE	TRANSMISSION SEGMENT		SUBSEGMENT
In Person	Patrick McGovern	Georgia Transmission Corporation	Muni/Coop
In Person	Y. Coleman for Luke O'Dwyer	Bonneville Power Administration Salt River Project	Fed/State/Prov.
In Person	Daryl McGee	Southern Company Services	IOU
Phone	Edward Davis	Entergy Services, Inc.	IOU
In Person	Marceline Otondo	Arizona Public Service	at large
	Bob Harshbarger	Puget Sound Energy	at large
In Person	Hasnah Mat-Amin for Michelle Mizumori	Western Electricity Coordinating Council	At-Large
GENERATION SEGMENT			SUBSEGMENT
Phone	William J. Gallagher	Vermont Public Power Supply Authority	Muni/Coop
In Person	Kathy York	Tennessee Valley Authority	Fed/State/Prov.
In Person	John Ciza	Southern Company Services	IOU
Phone	Alan Johnson	NRG Energy, Inc.	Merchant
	Trent Carlson	RRI Energy Services, Inc.	at large
In Person	Shah Hossain	Westar Energy, Inc.	at large
MARKETERS/BROKERS SEGMENT			SUBSEGMENT
	Chris Norton	American Municipal Power, Inc.	Muni/Coop
In Person	Valerie Crockett alt. for B. Thornton	Tennessee Valley Authority	Fed/State/Prov.
	Richard Lehman	Salt River Project	at large
	John Apperson	PacifiCorp Energy	IOU
In Person	Roy True	ACES Power Marketing	at large
In Person	Barry Green	Electric Power Supply Association (EPSA)	at large
DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT			SUBSEGMENT:
	Ray Phillips	Alabama Municipal Electric Authority	Muni/Coop
In Person	Alan Pritchard	Duke Energy Corporation	IOU
	Rufus D. Gladney	Consumers Energy Company	IOU
Phone	Robert Martinko	FirstEnergy Service Company	at large
Phone	Syd Berwager	Bonneville Power Administration	Other
In Person	Andy Rodriguez	NERC	At-Large
END USERS SEGMENT			SUBSEGMENT:
	Aaron Breidenbaugh	EnerNOC, Inc.	at large
	Lou Ann Westerfield	Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners	Regulator



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Phone	Christopher Kotting	Public Utility Commission of Ohio	at large
In Person	Paul Sorenson	Open Access Technology International, Inc.	At-Large

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Other Participant Attendance

Participant	Organization	Attendance
Toby Considine	University of North Carolina	
Cory Cummings	NAESB	In Person
Chuck Feagans	TVA	Phone
Michele Greening	PPL Energy Plus	Phone
Marie Knox	Midwest ISO	In Person
Matt Laherty	Cisco	Phone
Rae McQuade	NAESB	In Person
Glen Perez	CAISO	Phone
Denise Rager	NAESB	Phone
Narinder Saini	Entergy	In Person
Charlie Spirakis	Google	Phone
Veronica Thomason	NAESB	In Person
Jill Vaughn	Court Reporter	In Person
Cathy Wesley	PJM	In Person
Eric Winkler	ISO New England	Phone
Jimmy Womack	SPP	In Person
JT Wood	Southern Company	In Person



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NORTH AMERICAN ENERGY STANDARDS BOARD
2011 ANNUAL PLAN for the WHOLESALE ELECTRIC QUADRANT
Approved by the Board of Directors on December 9, 2010 with Redlined Changes From WEQ Leadership

Item Description	Completion ¹	Assignment ²
1 Develop business practices standards as needed to complement reliability standards		
Develop business practice standards to support and complement NERC reliability standards, NERC policies and NERC standards authorization requests (SARs) using the NERC/NAESB Coordination Joint Standards Development Process as appropriate. Current NAESB activities underway to develop business practice standards that are supportive of this annual plan item are:		
a) Parallel Flow Visualization/Mitigation for Reliability Coordinators in the Eastern Interconnection – Permanent Solution Note: Consideration should be given to provisional item 4. Work is being coordinated with the NERC IDC Working Group. Status: Started	2 nd Q, 2011	BPS
b) Perform consistency review of WEQ-008 Transmission Loading Relief Business Practice Standards and develop recommendation. ¹	4 th Q, 2011	BPS
c) DCS and AGC (BAL-002 and BAL-005) Coordination with NERC Status: Monitor. (Will require coordination with Balancing Authority Reliability Based Controls Group created in July 2010 NERC Project 2010-14)	TBD ²	TIMTF
d) Coordinate with NERC on the functional model glossary revisions NERC Project 2010-08	TBD	SRS
e) Coordinate with NERC on changes to the definition of Bulk Electric System NERC Project 2010-17	TBD	SRS
2 Develop business practice standards in support of the FERC RM05-25-000 and RM05-17-000 (OATT Reform)²		
a) Develop version 2 business practice standards to better coordinate the use of the transmission system among neighboring transmission providers. Status: Underway Request R050004 was expanded to include the Order No. 890 (Docket Nos. RM05-17-000 and RM02-25-000) , (Order No. 890-A (Docket Nos. RM05-17-001, 002 and RM05-25-001, 002)), and Order No. 890-B (Docket Nos. RM05-17-03 and RM05-25-03) “Preventing Undue Discrimination and Preference in Transmission Services”		
i) Group 3: Network Service On OASIS ³		
1) Use of OASIS to Make Electronic Requests to Designate and Terminate Network Resource Status: Underway	1 st Q, 2011	OASIS

¹ In some sections of WEQ 008 it appears that the standards are applicable to all of the Interconnections and other it appears that the standards are only applicable to the Eastern Interconnection. The title indicates the standards are applicable to the Eastern Interconnection.

² FERC Order No. 890, issued February 16, 2007 can be accessed from the following link - http://www.naesb.org/doc_view4.asp?doc=ferc021607.doc

³ Several group 3 items may be removed from this plan if the 4th quarter completion dates are met.



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Item Description	Completion ¹	Assignment ²
2) Ability to Query Requests to Designate and Terminate Network Resources and Allow for Queries of All Information Provided with Designation Requests Status: Underway	1 st Q, 2011	OASIS
3) Masking of Designated Network Resource Operating Restrictions and Generating Cost Information Status: Underway	1 st Q, 2011	OASIS
4) Procedural Requirements for Submitting Designations over new OASIS Functionality Status: Underway	1 st Q, 2011	OASIS
5) Specify How Designated Network Service Informational Postings are Posted on OASIS Status: Underway	1 st Q, 2011	OASIS
6) Develop standards for the treatment of OASIS Requests when the Customer Fails to Provide the Necessary Attestation Status: Underway	1 st Q, 2011	OASIS
7) Procedural Requirements for Submitting Both Temporary and Indefinite Terminations of Network Resources Status: Underway	1 st Q, 2011	OASIS
8) Procedures for Submitting and Processing Requests for Concomitant Evaluations of Transmission Requests and Temporary Terminations Status: Underway	1 st Q, 2011	OASIS
ii) Group 4: Pre-Emption; Request No. R05019		
1) Pre-Emption Status: Not Started	3 rd Q, 2011	OASIS
2) Request No. R05019 Status: Not Started	3 rd Q, 2011	OASIS



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	Item Description	Completion ¹	Assignment ²
iii)	Group 5: Paragraph 1377 ⁴ – Group 5 work should precede group 4 work ³		
	1) Paragraph 1377-Coordination of Requests Across Multiple Transmission Systems Status: Underway, Scoping Group work product approved by the WEQ EC and sent to the OASIS Subcommittee.	1 st Q, 2011	OASIS
	2) Re-Bid Of Partial Service across Multiple Transmission Providers' Systems Status: Underway, Scoping Group work product approved by the WEQ EC and sent to the OASIS Subcommittee	1 st Q, 2011	OASIS
	3) Group DNR requests from a system with point-to-point requests on other systems for synchronization Status: Underway, Scoping Group work product approved by the WEQ EC and sent to the OASIS Subcommittee	1 st Q, 2011	OASIS

⁴ Paragraph 1377 of FERC Order No. 890, issued February 16, 2007: The Commission agrees that transmission requests across multiple transmission systems should be coordinated by the relevant transmission providers. We will not, however, amend the pro forma OATT to require such coordination. Rather, we require transmission providers working through NAESB to develop business practice standards related to coordination of requests across multiple transmission systems. In order to provide guidance to NAESB, we will articulate the principles that should govern processing across multiple systems. All the transmission providers involved in a request across multiple systems should consider a request that requires studies across multiple systems to be a single application for purposes of establishing the deadlines for rendering an agreement for service, revising queue status, eliciting deposits and commencing service. In order to preserve the rights of other transmission customers with studies in the queue, the priority for the single application should be based on the latest priority across the transmission providers involved in the multiple system request. We note that regional entities like wesTTrans are already coordinating requests across multiple transmission systems and we believe such coordination is an acceptable solution to this issue.



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	Item Description	Completion ¹	Assignment ²
iv)	Group 6: Miscellaneous (Paragraphs 1390 ⁵ and 1627 ⁶ of FERC Order No. 890)		
	1) Paragraph 1390 of Order 890 – Terminations related to: deficient requests, customer failure to pay required annual reservation fee, and customer modifications to applications which are meaningfully different. Status: Not Started	4 th Q, 2011	OASIS
	2) Paragraphs 1627 of Order 890 – Posting of additional information on OASIS regarding firm transmission curtailments Status: Not Started	4 th Q, 2011	OASIS
	3) Redispatch Cost Posting to allow for posting of third party offers of planning redispatch services. Status: Not Started	4 th Q, 2011	OASIS

⁵ Paragraph 1390 of FERC Order No. 890, issued February 16, 2007: We will not modify the pro forma OATT to address requests to allow the transmission provider to terminate idle transmission service requests. NAESB's business practice 001-4.11 allows the transmission provider to retract a request if the transmission customer does not respond to an acceptance within the time established in NAESB business practice standard 001-4.13. Therefore, we interpret TDU Systems comments to refer to circumstances when a transmission customer fails to respond to the transmission provider's request for additional information during the course of a request study. As discussed above, by the time the transmission provider offers a system impact study agreement, it should have all of the information that it needs to complete the study. Pursuant to section 17.4 of the pro forma OATT, the transmission provider can deem a transmission service request deficient if the transmission customer does not provide all of the information the transmission provider needs to evaluate the request for service. We will revise section 17.7 of the pro forma OATT so that the transmission provider is able to terminate a request for transmission service if a transmission customer that is extending the commencement of service does not pay the required annual reservation fee within 15 days of notifying the transmission provider that it would like to extend the commencement of service. We will not change the pro forma OATT to allow the transmission provider to terminate a transmission service request if the transmission customer changes its application for service. We believe the existing pro forma OATT is sufficient to allow a transmission provider to manage situations where the transmission customer modifies its application for service to the point that the customer is requesting transmission service that is meaningfully different than its initial request.

⁶ Paragraph 1627 of FERC Order No. 890, issued February 16, 2007: We agree with suggestions for the posting of additional curtailment information on OASIS and, therefore, require transmission providers, working through NAESB, to develop a detailed template for the posting of additional information on OASIS regarding firm transmission curtailments. Transmission providers need not implement this new OASIS functionality and any related business practices until NAESB develops appropriate standards. These postings must include all circumstances and events contributing to the need for a firm service curtailment, specific services and customers curtailed (including the transmission provider's own retail loads), and the duration of the curtailment. This information is in addition to the Commission's existing requirements: (1) when any transmission is curtailed or interrupted, the transmission provider must post notice of the curtailment or interruption on OASIS, and the transmission provider must state on OASIS the reason why the transaction could not be continued or completed; (2) information to support any such curtailment or interruption, including the operating status of facilities involved in the constraint or interruption, must be maintained for three years and made available upon request to the curtailed or interrupted customer, the Commission's Staff, and any other person who requests it; and, (3) any offer to adjust the operation of the transmission provider's system to restore a curtailed or interrupted transaction must be posted and made available to all curtailed and interrupted transmission customers at the same time.



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Item Description	Completion ¹	Assignment ²
b) Develop the needed business practices to support existing Request No. R05004: The processing of transmission service requests, which use TTC/ATC/AFC, in coordination with NERC changes to MOD 001 where the allocation of flowgate capability based on historical Network Native Load impacts the evaluation of transmission service requests, requiring the posting of those allocation values in conjunction with queries of service offerings on OASIS Status: Underway	1 st Q, 2011	OASIS
3 Develop business practices standards to improve the current operation of the wholesale electric market and develop and maintain business practice and communication standards for OASIS and Electronic Scheduling		
a) Develop and/or maintain business practice standards as needed for OASIS and electronic scheduling. Specific items to address include:		
i) Network Services: Determine and develop needed business practice standards or other support is needed to support use of OASIS for Network Service transactions (R04006E). (Related to AP 2(a)(iii))³ – to discuss at the WEQ EC meeting on whether this item can be closed out. Status: Underway	1 st Q, 2011	OASIS
ii) Registry (TSIN): Determine and develop needed business practice standards to support the registry functions currently supported by NERC (R04037, R06027) and transition the TSIN Registry from NERC to NAESB as the enhanced Electric Industry Registry (EIR). Status: Underway.	2 nd Q, 2011	NAESB/NERC Administration, JESS
iii) Make remaining incremental enhancements to OASIS as an outgrowth of the NAESB March 29, 2005 conference on the future of OASIS (R05026). Scoping statement completed by SRS. There were a number of assignments from the Standards Request. The outstanding items are included below:		
1) Eliminate Masking of TSR tag source and sink when requested status is denied, withdrawn refused, displaced, invalid, declined, annulled or retracted Status: Not Started	2012	OASIS
2) Initiate standard that eliminates the disparity of posting “sensitive” information. This standard should also include procedures of user certification that allows access to this class of information. Status: Underway (upon further development of this item by NAESB, a completion date will be determined)	2012	OASIS
3) Enhance the TSR result postings to allow showing of (i) limiting transmission elements and (ii) available generation dispatch options that would allow acceptance of reservation request. Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined)	2012	OASIS



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	Item Description	Completion ¹	Assignment ²
iv)	Review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6. Status: Underway Completion date dependent upon coordination activities with NERC	2011	JESS
b)	Develop and/or maintain standard communication protocols and cyber-security business practices as needed.		
i)	Develop PKI certification program for e-Tag and OASIS Status: Underway	3 rd Q, 2011	Board Certification Program Committee
ii)	Develop PKI standards for OASIS. Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined)	2012	OASIS
iii)	Develop Industry Implementation Plan for meeting PKI Standard requirements for e-tagging. Status: Underway. Full e-Tag implementation (server & client side) is linked to the transition of the Registry from NERC to NAESB and NAESB implementation.	TBD – dependent on item above (i) and EIR	JESS

4 Review and develop business practices standards to Demand Response, Demand Side Management and Energy Efficiency Programs

Review and develop needed model business practices for a standardized method for quantifying benefits, savings, cost avoidance and/or the reduction in energy demand and usage derived from the implementation of demand side management and energy efficiency programs. This effort will include demand side response, energy efficiency programs and metering, including the 'curtailment service provider' program.

a)	Review the NAESB Business Practices for Measurement and Verification of Wholesale Electricity Demand Response (WEQ-015) in conjunction with the IRC developed Demand Response Matrix and identify business practice requirements that could be improved or made clearer through the addition of specific technical detail. The wholesale and retail demand response work groups and the Smart Grid Standards Subcommittees should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other. Status: Completed	Phase 2 – 4 th Q 2010	WEQ Section of the Joint WEQ/REQ DSM-EE Subcommittee
b)	For each performance evaluation type/service type combination identified in WEQ-015, using the IRC matrix as a starting point, assess and determine what standards or guidelines, if any, should be developed to aid all participants in the use of measurement and verification methods for demand response programs in organized wholesale electric markets. If the determination is made that standards or guidelines will be developed, those items will be added as sub-items to 4(b). Status: Completed	Phase 2 – 4 th Q 2010	WEQ Section of the Joint WEQ/REQ DSM-EE Subcommittee



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Item Description	Completion ¹	Assignment ²
c) Coordinate glossary updates for business practice standards with the Retail Electric Quadrant Status: Ongoing	Ongoing	Joint WEQ/REQ DSM Subcommittee and WEQ SRS and Retail Glossary
d) Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. ³ This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard Status: The WEQ EE standards are completed.	4 th Q, 2010	Joint WEQ/REQ DSM-EE Subcommittee
5 Maintain existing body of Version 2.x standards		
a) Make consistency changes to Version 2.2 standards as directed by the WEQ Leadership Committee on December 12, 2007 OASIS Consistency Changes (R08001, R08002, R08003, R08005) Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined)	TBD	OASIS
b) Consistent with ¶51 of FERC Order No. 890-A, add AFC and TFC values to the "System_Attribute" data element of the NAESB Standard WEQ-003: OASIS S&CP Data Dictionaries. (R08011) Status: Not Started. This Standards Request was assigned to the OASIS in May 2008.	TBD	OASIS
c) Correct WEQ 013-2.6.7.2. – Resale off OASIS (R08027) Status: Not Started	TBD	OASIS
d) Add language to WEQ-001-4 Online Negotiation and Confirmation process to clarify Table 4-3 (R09003) Status: Not Started	TBD	OASIS
e) Create a new OASIS mechanism that allows for the merger of like reservations without the use of the resale mechanism (R09015) Status: Not Started	TBD	OASIS
6. Develop Smart Grid Wholesale and Retail Electric Standards - The wholesale and retail demand response work groups and the Smart Grid task force should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other.		
a) Develop requirements and use cases for PAP 03 – Pricing Model Phase 2 Status: Completed	4 th Q, 2010	Joint WEQ/REQ SGS Subcommittee
b) Develop requirements and use cases for PAP 04 – Scheduling Model Phase 2 Status: Completed	4 th Q, 2010	Joint WEQ/REQ SGS Subcommittee



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Item Description	Completion ¹	Assignment ²
c) Develop requirements and use cases for PAP 09 – Demand Response/Distributed Energy Resources Phase 2 Status: Completed	4 th Q. 2010	WEQ Section of the Joint WEQ/REQ SGS Subcommittee
d) Develop standards to support PAP 10 – Standards Energy Usage Information		
i) Develop Information Model and related business practices Status: Complete	4 th Q. 2010	Joint WEQ/REQ PAP 10 SGS Subcommittee
ii) Develop standards to support PAP 10 – Standards Energy Usage Information, Phase 2, Harmonization with CIM and SEP 2.0 Status: Not Started, pending discussions with CIM and SEP 2.0	2011	Joint WEQ/REQ PAP 10 SGS Subcommittee
7. Develop or modify standards to Support FERC Order No. 676-E, (Docket No. RM 05-5-013)		
a) Review standards 001-14.1.3 and 001-15.1.2 based on FERC Order No. 676-E (See ¶ 39 ⁷) Status: Not Started	2 nd Q. 2011	OASIS
b) Develop standards to support the Transmission Provider right to reassess the availability of conditional firm (See ¶ 72 ⁸) Status: Not Started	2 nd Q. 2011	OASIS
c) Prepare status reports every six months regarding the development of standards for the coordination of transmission service requests across multiple transmission systems (See ¶ 105 ⁹). This annual plan item is tied to Annual Plan Item 2(a)(iii) Status: Underway – first report filed.	Ongoing	NAESB Office

⁷ 39. In regards to Entergy's question of whether the transmission provider's calculated and posted available flowgate capability values should be used to fulfill the posting requirements set forth in Standard 001-14 and 001-15 in instances where there is no requirement to convert this calculation to available transfer capability values, we agree with Entergy that this requirement can be met by the transmission provider posting its available flowgate capability values. As to EPSA's argument that Standard 001-15 falls short of the goals of Order No. 890, we find that, with the exception of Standard 001-15.1.2, compliance with Standard 001-15 provides all of the information required by Order No. 890. However, Standards 001-14.1.3 and 001-15.1.2 permit transmission providers to post an available transfer capability change narrative within five business days of meeting the criteria under which a narrative is required to be posted. In Order No. 890, the Commission rejected calls for delays prior to posting data and required posting as soon as possible. We do not find the NAESB standard meets this criterion and therefore decline to incorporate Standards 001-14.1.3 and 001-15.1.2 by reference. Transmission providers must post their narratives as soon as feasibly possible. Posting within one day would appear in most cases to be reasonable.

⁸ 72. However, we reiterate here the Commission's finding in Order No. 890 that a transmission provider is permitted to extend its right to reassess the availability of conditional firm service. Since the Version 002.1 Standards do not specifically address this issue, we would ask the industry, working through NAESB, to continue to look at additional business practice standards facilitating a transmission provider's extension of its right to perform a reassessment

⁹ 105. We agree that insufficient progress has been made on this issue. While we acknowledge that development of standards addressing this issue is included in NAESB's 2009 WEQ Annual Plan, we nevertheless urge NAESB to address this issue as



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soon as possible. Accordingly, we request that NAESB provide the Commission with a status report concerning its progress on this issue every six months, counting from the date this final rule is published in the Federal Register, until NAESB's adoption of the applicable standard(s).



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PROVISIONAL ITEMS

- 1 Develop and or modify business practices related to support of NERC effort on the NERC Resources and Transmission Adequacy (Project 2009-05 Resource Adequacy Assessment).
- 2 Develop business practices for allocating capacity among requests received during a submittal window Order 890-A ([Docket Nos. RM05-17-001, 002 and RM05-25-001, 002](#) - Paragraph 805)¹⁰.
- 3 Determine any needed NAESB action in support of the Interchange Distribution Calculator (IDC) and develop any necessary standards.
- 4 Prepare recommendations for future path for TLR¹¹ (Phase 2) in concert with NERC, which may include alternative congestion management procedures⁴. Work on this activity is dependent on completing 2010 WEQ Annual Plan 1.a (Parallel Flow Visualization/Mitigation for Reliability Coordinators in the Eastern Interconnection - Phase 1).
- 5 Develop complementary standards that align with NERC Project 2008-01 Voltage and Reactive Control, for which a white paper is expected after the SAR is authorized to proceed by the NERC Standards Committee.
- 6 Determine NAESB action needed to support FERC Action Plan for Smart Grid Technology.
- 7 Develop business practice standards for cap and trade programs for green house gas
- 8 Conduct assessment to determine if Electric Industry Requirements documented in WEQ-011 Gas / Electric Coordination should be considered reliability requirements and transition to NERC.
- 9 Develop needed business practice standards for organization/company codes for NAESB standards – and address current issues on the use of DUNs numbers. Common code usage is linked to the transition of the Registry from NERC to NAESB.
- 10 Review the need for, and develop standards where appropriate, in response to issues raised by FERC's National Action Plan on Demand Response.
- 11 Develop, modify or delete business practices to support Time Error and Inadvertent (BAL-004 and BAL-006) resulting from the NERC field test under NERC project (NERC Project 2010-14).
12. Coordinate standards development with the NERC Balancing Authority Reliability Based Controls Standards Drafting Team (BARCSDT- created in July 2010) regarding DCS and AGC (BAL-002 and BAL-005) which may require changes to NAESB WEQ standards.

¹⁰ 805. The Commission recognizes that developing methods to allocate capacity among requests received during a submittal window may require detailed procedures, particularly when transmission requests received simultaneously exceed available capacity. As the Commission explained in Order No. 890, however, we believe that each transmission provider is in the best position to develop allocation procedures that are suitable for its system. This does not preclude transmission providers from working through NAESB to develop standardized practices, as suggested by Southern. For example, as we pointed out in Order No. 890, allocation methods such as that used by PJM to allocate monthly firm point-to-point transmission service could provide useful guidance in developing general allocation procedures.

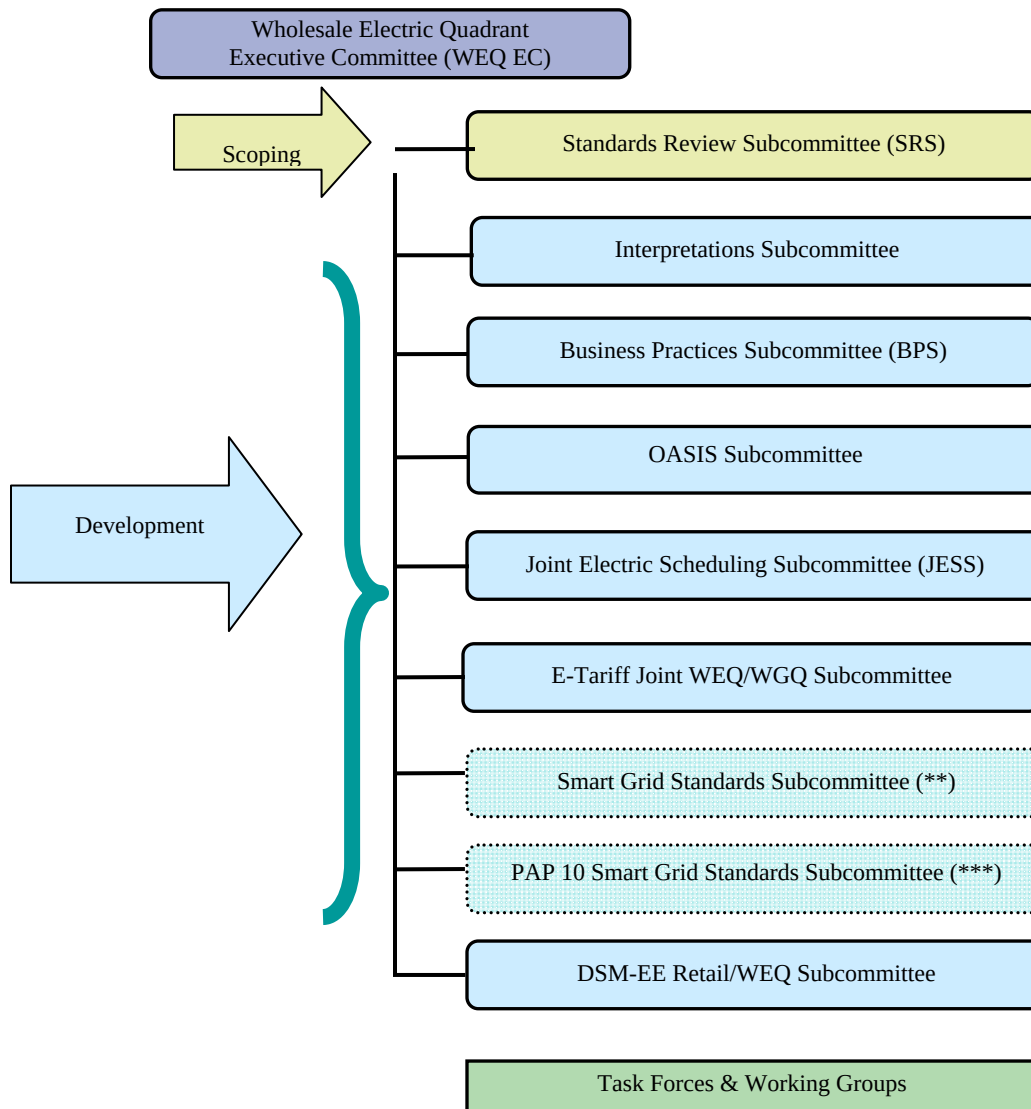
¹¹ Phase 2 of the Parallel Flow Visualization looks at developing options for and reporting of the most cost effective alternatives to achieve curtail obligations assigned during Phase 1."



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WHOLESALE ELECTRIC QUADRANT EXECUTIVE COMMITTEE AND SUBCOMMITTEE STRUCTURE



NAESB WEQ EC and Subcommittee Leadership:

Executive Committee (EC): Kathy York (Chair) and Alan Johnson (Vice Chair)

Standards Review Subcommittee (SRS): Narinder Saini, Ed Skiba

Interpretations Subcommittee: Ed Skiba

Business Practices Subcommittee (BPS) & Time and Inadvertent Management Task Force (TIMTF): Jim Busbin (TLR), Ed Skiba

Open Access Same Time Information System (OASIS) Subcommittee (OS): Paul Sorenson, J.T. Wood, Alan Pritchard

Joint Electric Scheduling Subcommittee (JESS): Bob Harshbarger (NAESB), Clint Aymond (NERC)

e-Tariff Joint WEQ/WGQ Subcommittee (e-Tariff): Jane Daly (WEQ), Keith Sappenfield (WGQ)

Demand Side Management-Energy Efficiency (DSM-EE) REQ/WEQ Subcommittee: Ruth Kiselewich and David Koogler (REQ), Roy True and Paul Wattles (WEQ)

(**) The Smart Grid Standards Subcommittee is a joint group of the retail electric and wholesale electric quadrants with other

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standards development groups such as OASIS (Organization for the Advancement of Structured Information Standards, not Open Access Same Time Information Systems related to NAESB standards and FERC actions), CalConnect, FIX and UCAIug, among others. Direction may be given from NIST, DoE or FERC and the group reports jointly to the NAESB Board Smart Grid Strategic Steering Committee and the WEQ and REQ ECs. The group is chaired by Joe Zhou, Wayne Longcore and Robert Burke.

(***) The PAP 10 Smart Grid Standards Subcommittee is a joint group of the retail electric and wholesale electric quadrants with other standards development groups such as OASIS, UCAIug, OpenADE, ZigBee, ASHRAE, EIS Alliance, NARUC and includes other groups. Direction may be given from NIST, DoE or FERC and the group reports jointly to the NAESB Board Smart Grid Strategic Steering Committee and the WEQ and REQECs. The group is chaired by Phil Precht, Cathy Wesley, Sharon Dinges, David Kaufman, Brad Ramsay, Tobin Richardson and Ed Koch.



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End Notes WEQ 2011 Annual Plan:

¹ Dates in the completion column are by end of the quarter for completion by the assigned committee, sub-committee or task force. The dates do not necessarily mean that the standards are fully staffed to be implementable by the industry, and/or ratified by membership. If one item is completed earlier than planned, another item can begin earlier and possibly complete earlier than planned. There are no begin dates on the plan.

² The assignments are abbreviated. The abbreviations and sub-committee structure can be found at the end of the annual plan document.

³ Energy efficiency may be a wholesale product, such as capacity. Energy efficiency in retail markets may be from individual energy efficiency measures at the project level or a portfolio of projects that make up an energy efficiency program.

⁴ For additional information, please see comments submitted by PJM and Midwest ISO for this Annual Plan Item:
http://www.naesb.org/pdf3/weq_aplan102907w1.pdf.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a)
Request Title: Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03

1. RECOMMENDED ACTION:

☒ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The NAESB Smart Grid Task Force (SGTF) submits this Recommendation that provides requirements for common pricing attributes that can be used as a basis for messaging protocols throughout the electrical energy system from producer through to a variety of energy consumers and the future intelligent devices employed by these consumers. These attributes are not meant to be a message protocol in and of themselves and further analysis and design work will be completed as part of several initiatives, such as ZigBee smart energy, OpenHAN, and OASIS¹ eMIX. These requirements should also be used as an input to the CIM maintained by UCAIug.

¹Reference to the Organization for the Advancement of Structured Information Standards not the Open Access Same-Time Information System



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a)
Request Title: Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03

WEQ-000

New Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 6(a-c) (NOTE: Many of the new terms are being used in the three PAP recommendations rather than duplicating the terms in multiple documents they are only listed in this recommendation.)

Term	Definition
<u>Asset</u>	<u>A logical entity with measurable and reportable consumption, e.g. an Asset may be a physical device with its own meter, or the main meter at the Service Delivery Point of a Service Location</u>
<u>Asset Group</u>	<u>A logical entity that as a reportable interval level consumption, e.g. an Asset Group may be a physical entity with its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of Retail Customers</u>
<u>Service Delivery Point</u>	<u>The identifier of the location where electric service is delivered to the Service Location.</u>
<u>Service Location (was Facility in the Phase 1 ERD)</u>	<u>The physical location at which connection to the transmission or distribution system is made.</u>
<u>End Device (ED)</u>	<u>A physical end-use device that consumes or supplies electricity.</u>
<u>Premise</u>	<u>The location at which connection to the transmission or distribution system is made.</u>
<u>Response Method</u>	<u>A measurable action taken in response to an instruction to change consumption.</u>
<u>Response Method Aggregation (RMA)</u>	<u>A logical entity that has a reportable interval level consumption, e.g. an RMA may be a physical entity with its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers.</u>

RECOMMENDED STANDARDS:



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a)
Request Title: Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03

Executive Summary

Specifications for Common Electricity Product and Pricing Definition

The following addresses the business objectives and context for capturing the attributes associated with electricity price and product signals as part of the Smart Grid implementation, which is called for by NIST PAP 03. ~~The NAESB SGTF in cooperation with UCAIug, OpenSG Task Force, the IRC Council, and other organizations, has developed the~~The use cases that provide requirements for electricity price and product signal standards.

~~Because the NAESB SGTF is involved in activities related to several of NIST's PAPs, the SGTF has developed a standard list of actors and related objects for all PAP work coming out of the group. These Business Practice Standards also contain an overview of the most common retail rate structures and price-related use cases. To maintain consistency between this Business Practice Standard and related Business Practice Standards developed for NIST PAP 04 and PAP 09, a master list of data elements, and common sets of actors terms and definitions are being recommended. Finally, a representative list of price and product attributes is provided.~~

The following deals exclusively with the pricing related requirements at both the wholesale and retail levels. The requirements are captured in the form of UML models, where business requirements are captured in use case narrative format and data requirements are captured in tabular format. The main use cases that are affected by pricing are:

- Demand Response
- Non-Price (Environmental) Response
- Load-follower
- Price-takers

~~Reliability based responses, both wholesale and retail, is addressed by PAP-09 on DR Signaling.~~

Introduction

Specifications for Common Electricity Product and Pricing Definition

Purpose: The purpose of the following is to capture business and data requirements related to the definition of a common model for capturing the attributes of an electricity product offered at wholesale and/or retail level. Such attributes will mainly include but are not limited to the pricing information of the product being offered to the end consumers of electricity.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification purposes.



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For Quadrant: Wholesale Electric Quadrant
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Common Electricity Product and Pricing
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Scope: The scope of the following is to provide business and data requirements, not implementation, of a common pricing model for electricity product.

The electricity rate design process is not included in the scope of these use cases.



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Business Practice Standards

016-1 Specifications for Common Electricity Product and Pricing Definition

016-1.1 ACTORS LIST

The actors listed in the table below are specific to this recommendation and are a subset of the actors and related objects defined in WEQ-000. Details on the relationships between the actors and related objects are further defined in Appendix A.

Actor Name	Actor ID ²	Examples
Communication Method	5.5	
Control	5.2	Premise, EMS, ESI or Gateway
System Operator	2.1	Market and system operators
End Device	4.5	Electric vehicle, or smart appliance, display
Load Serving Entity	3.2	
Measurement	5.1	Meter
Premise	4.3	Electricity consumer
Resource	4.1	DER
Service Provider	3.1	Retail service provider, demand response provider, dynamic price service provider
Transmission/ Distribution Service Provider	3.5	Utility distribution company

² The Actor ID shown in the table refers to the item number of the corresponding actor or related object in the Entity-Relationship Diagram provided in Appendix A. Definitions of the actors and related objects are included in WEQ-000.



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Actor Name	Actor ID ²	Examples
Utility Customer	2.4	Residential, industrial
Utility Distribution Operator	2.3	Distribution operator

016-1.2 USE CASE DATA CONSIDERATIONS

The following tariff rate types and product and pricing attributes were considered when developing the use cases included in this Business Practice Standard.

016-1.2.1 Tariff Rate Types Considered for Use Cases

A tariff establishes the prices paid for the services received, and is based on a variety of factors including wholesale prices, quality and type of service and costs associated with transmission and distribution grid infrastructure and operation. The use cases in this Business Practice Standard illustrate the high-level activities associated with publishing prices and how the information is used to evoke a change in consumption. For the use cases included below the following tariff rate types were considered:

Tariff Rate Type	Target Customers	Description
block rate	C&I, residential	An energy supply rate structure in which the per unit energy price increases or decreases for each successive block of energy consumed.
critical peak price	C&I, residential	A pricing structure in which the customer receives notification identifying a time interval, ("critical hours") during which special higher prices apply over and above whatever other rate they may be charged. Critical hours generally represent a small percentage of the hours in the year.
demand rate	Mainly for C&I customers, pilot for residential customers	A component of an energy supply rate structure based on the highest demand for electricity measured in a billing period.



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Tariff Rate Type	Target Customers	Description
day ahead market rate	C&I, residential	An energy supply rate structure, typically hourly, based on the day-ahead wholesale market price.
market clearing price for energy	C&I	An energy rate structure that allows for price changes every interval (e.g. 5 minutes, 15 minutes, hourly, etc.) based on real-time wholesale market prices.
peak time rebate	C&I, residential	An incentive rate in which the utility pays a rebate to customers who reduced demand during peak periods on critical days
real time price rate	C&I	An energy supply rate structure in which prices can vary, typically on an hourly basis, based on forecast (day-ahead) or actual (real-time) market conditions.
time of use rate	C&I, residential	An energy supply rate structure where the per unit charge (kWh or kW) varies according to the time of day. Time of use rates may have daily and seasonal variations.
variable peak pricing	C&I, residential	An energy supply rate structure that combines features of time of use and real time price structures to include the flexibility of market price variation and the fixed time periods of a time of use rate.



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016-1.2.2 Product and Pricing Attributes Considered for Use Cases

For the purpose of the development of the use cases in Business Practice Standard WEQ-016-2, the following price and product attributes were considered.

016-1.2.2.1 Product Identification

Attribute	Description	Considerations
<u>Product Name</u>	<u>An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.</u>	<u>Matches (Ref to Market Product in PAP 09 Wholesale)</u>
Product Identifier	~~Identifies a Specific Product associated with a Price. -Energy, although largely a non-storable and transitory commodity, is nonetheless still a tradable and sellable entity. Any commodity benefits from having a unique identifier (external) that can unambiguously be used by consumers to identify what it is that they are purchasing.~~	<u>Any commodity benefits from having a unique identifier (external) that can unambiguously be used by consumers to identify what it is that they are purchasing.</u> Examples of product identification scheme used in the financial world is the ISIN and stock ticker symbols used by exchanges. This not a transaction identifier – this would be an industry agreed upon identifier for a particular energy product offering.
Identifier Source <u>(product)</u>	Identification of the source of the Product Identifier.	In most systems there are competing or alternative product identification schemes. The Identifier Source references the product identification scheme for the Product Identifier.



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Attribute	Description	Considerations
Product Type	<u>Identifies the product and market.</u> ~~A product type.~~	<u>Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.</u> ~~Attempt to fit the product type within already in-place ontologies or product classifications used within industry for trading energy.~~
Product Sub-Type	The sub-type of product	Products may be further divided into subtypes, for example reserve products may be 10-minute or 30-minute response.
<u>Source Location Identifier</u>	<u>The identifier of the source location of the product for which the price applies</u>	<u>Electric energy cost and value are greatly impacted by the distance between generation and consumption. Indicating the source of the generation is important in terms of pricing decisions on part of consumers and intermediaries.</u> <u>The use of source location would mainly be used for bilateral transactions.</u>
<u>Source Location Identifier Type</u>	<u>Type of location.</u>	<u>The mechanism used to identify location can be defined in multiple sources based upon specific usage from control areas to GPS coordinates it is anticipated that there may need to be more than one method to identify a geographical location.</u> <u>Where possible existing industry standards should be adopted to identify geographic locations.</u>



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Attribute	Description	Considerations
<u>Delivery Time</u>	<u>Time at which the product is available for physical consumption</u>	
<u>Delivery Interval</u>	<u>The duration over which the product is available for physical consumption</u>	
Unit of Measure ~~for Product~~	Unit of measure <u>for</u> the <u>identified</u> product.	The unit of measure such as MWh or kWh. <u>May vary between markets.</u>
<u>Price Location</u>	<u>The location at which the price is applicable.</u>	

016-1.2.2.2 Pricing Attributes

Attribute	Description	Considerations
~~Total Product~~ Price	<u>The sum of all Price Component Values for a given product (Total Price). Total Price of the product at point of delivery</u>	Price is expressed as currency per unit of measure, i.e. quantity is not required, e.g. \$/MWh The sum of all Price Components must equal the <u>Total Product</u> Price.
Set of 1..n Price Components		
Price Component <u>Value</u>	A component of the price.	Price may have one or more components.
Price Component Type	<u>The portion of the price to which the corresponding value applies</u> ~~The type of Price Component~~	A standard set of price component types shall be enumerated, such as: - Wholesale electricity cost - Transmission costs - Distribution costs
Price Type	<u>Time characteristic of the price</u> ~~Type of price~~	A standard set of price types will need to be defined (<u>real time, 5 minute, day ahead, etc.</u>) ~~as examples for price types~~



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Attribute	Description	Considerations
<u>Product Price Factor</u>	<u>Terms of use attribute of Product Price</u>	<u>Examples: Price absolute, Price relative, Price multiplier</u>
Override Unit of Measure for the Product	<u>Alternative unit of measure applicable to a given transaction. Unit of measure which is used to determine the price</u>	<u>If this is used, then Unit of Measure is not applicable. Alternative unit of measure used in calculating the price.</u>
Currency	Economic unit of exchange in which the total price and price components are stated (i.e. dollars, euros)	Currency is required to determine the units of measure of the Total Price and Price Components. The energy units of measure are defined by the Product Type.
<u>Time and Interval</u>	<u>Interval of energy delivery</u>	<u>Timezone conventions and use need to be unambiguously defined.</u> <u>Daily blocks, hourly markets, 5 minute markets.</u> <u>A decision in how basic product information will reference and interact with the WS-Calendar initiative being completed as part of PAP-04.</u>
<u>Source Location Identifier</u>	<u>Location of the source of the electric energy</u>	<u>Electric energy cost and value are greatly impacted by the distance between generation and consumption. Indicating the source of the generation is important in terms of pricing decisions on part of consumers and intermediaries.</u> <u>The use of source location would mainly be used for bilateral transactions.</u>



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Attribute	Description	Considerations
~~Source Location Identifier Type~~	~~Type of location.~~	~~The mechanism used to identify location can be defined in multiple sources based upon specific usage from control areas to GPS coordinates it is anticipated that there may need to be more than one method to identify a geographical location.~~ ~~Where possible existing industry standards should be adopted to identify geographic locations.~~

016-2 Product and Pricing Use Cases

016-2.1 USE CASE OVERVIEW

The use case modeling technique is used for capturing business and data requirements relative to electric product and price information. The relationships used in the use case diagrams are as follows:

- Generalization (line with triangle head): this indicates variations (sub-types) of the main use case.
- Precedes: this indicates a time sequence
- Invokes: this indicates a pre-condition or dependency

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification purposes.



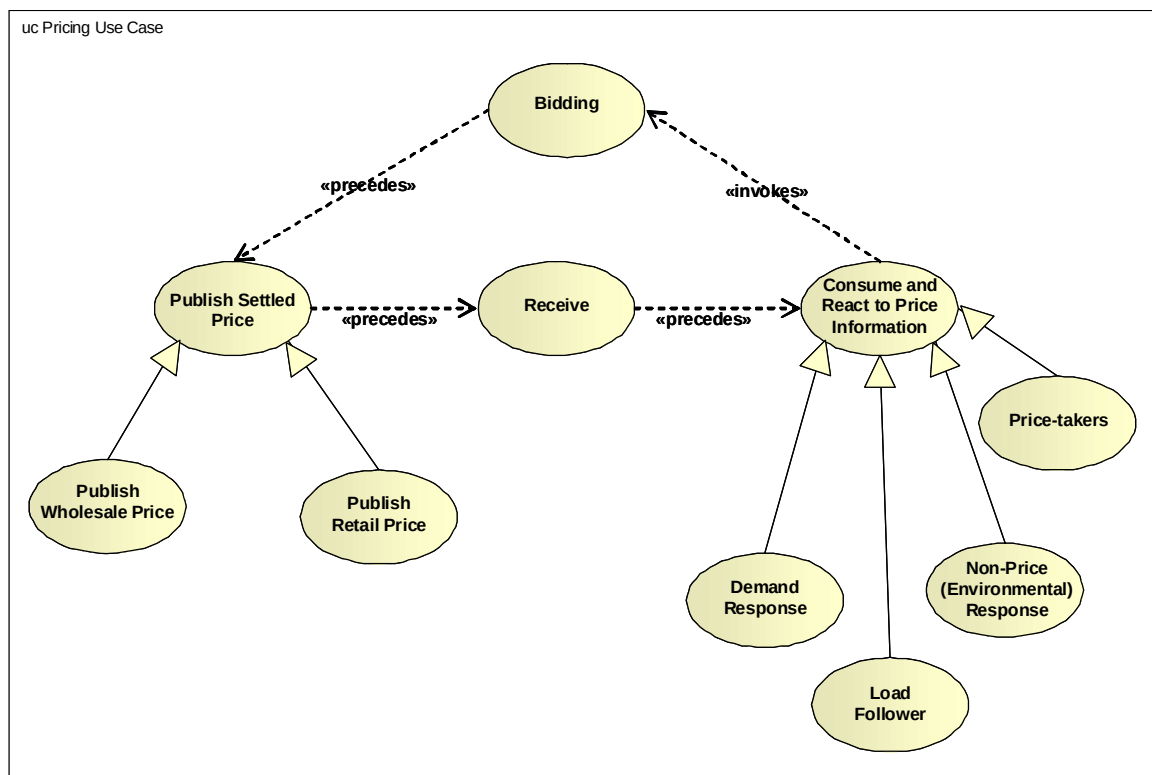
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016-2.2 PRICING USE CASE

The Pricing Use Case below provides an overview of the specific use cases described in these Business Practice Standards. The results of bidding produce the settled price which is published and then received. The recipient reacts to the price, which affects the next bidding cycle. The following use cases where electricity pricing and product information can be used are described in these Business Practice Standards:

- Demand response
- Non-Price (Environmental) Response
- Load-follower
- Price-takers





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016-2.3 SPECIFIC USE CASES

Specific use cases for what end use consumers of electricity might do when pricing signals are received are listed as follows:

Use Case	Actors	Description	SAMPLE Scenarios
Demand Response	SP ED Control Premise	Utility Customer (or device acting under UC direction) responds to Total Price or Price Component.	The System Operator published day-ahead prices which are statistically higher than average between 2:30 and 5:30 in the afternoon. Illustrate how different End Devices will respond to a forward energy price signal including: - An EMS requests BAS to “pre-cool” until 2:30 PM. - Home-based intelligent device is programmed to operate at a time when electricity is cheaper. An electric plug-in vehicle is programmed to charge when electricity is cheaper. A utility distribution company’s fixed time-of-day tariffs indicates higher price during day, and lower price after 11:00 PM. Demonstrate how different End Devices will response to price differentials: - Time-insensitive building systems schedule their run-time programs after 11:00 PM. Homeowner starts appliance at 5:10. The appliance notifies that by waiting 20 minutes to run, the consumer will get lower cost electricity. Homeowner acknowledges.
Non-Price	Resource	Product	Utility Customer sets a price



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Use Case	Actors	Description	SAMPLE Scenarios
(Environmental) Response	ED Premise	characteristics (other than price) are used to influence either the quantity or the time at which the customer uses electricity.	threshold at which “green” power is desirable. Above the “green price” the customer will take any power, below the “green price” the customer will choose suppliers with renewable portfolios. Test the scenario where, at 5:00 PM wind power picks up such that the price of power from renewable sources falls below the “green price” set by the customer. Utility delivers blend of 20% wind, 80% coal during this time of day at .10/kWh. 25% of customers indicate preference to buy pure wind, an over-subscription. Prices for pure wind are bid up to .15/kWh as the wind-sensitive market decreases. 20% of consumers pay the 50% premium to get only wind-only power. 1) Local PUC requires that segmentation be revenue-neutral, so bidding for wind power reduces undifferentiated power to .0875 kWh. 2) No bidding was required for undifferentiated power, so provider is incentivized to find additional sources of wind power. 3) Consumers unable to buy desired wind power reduce their aggregate demand. Consumers have programmed non-time-sensitive systems and appliances to not run when wind power is not available, time-shifting some demand until wind power is



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Use Case	Actors	Description	SAMPLE Scenarios
			available at the desired price.
Load-follower	DER UC		A UC is also a DER. The UC would purchase power up to the price at which the DER can economically produce power. The use case must prove that such a resource can receive enough information from the pricing signals to change its output according to the resource owner's price curve.
Price-taker	DER		A DER with no storage capability and zero fuel cost, such as a wind farm or solar array, will produce power at whatever the "market rate" for generation is at the time of production. The use case must prove that such a resource can identify its cost curve (zero in this case), supply energy to the grid, and get paid at the appropriate rate.



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016-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a PremiseService Location contains one or more End-DevicesService Delivery Points. The Entity-Relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The Entity-Relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both Use Cases and Process Maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a PremiseService Location is related to one-or-more End-DevicesService Delivery Points (reading top to bottom) and every End-DevicesService Delivery Point is related to exactly-one PremiseService Location (reading bottom to top).

~~**Optional Objects.** The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Premises, but does not require Response Method Aggregations and Response Methods. In this example, the relationship between Resource and Premise is transitive: a Resource is comprised of one-or-more Premises and each Premise is associated with zero-or-more Resources.~~

Optional Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the applicable

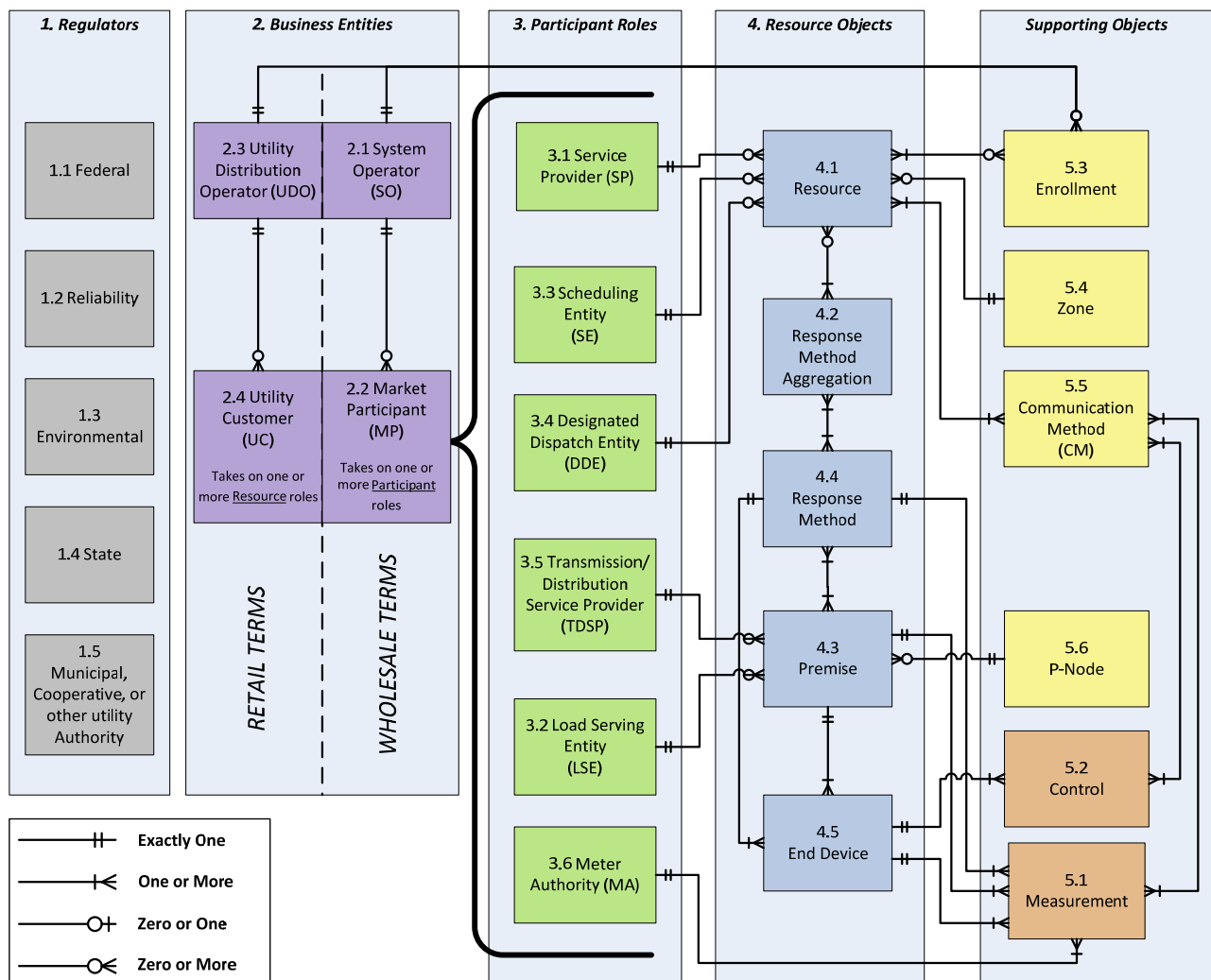


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business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.

Figure 1A. Entity-Relationship Model for Smart Grid Use Cases





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4. Supporting Documentation

a. Description of Request:

WEQ Annual Plan Item 6(a) – “Develop Requirements and Use Cases for PAP 03 – Pricing Model”

b. Description of Recommendation:

This recommendation provides the data requirements related to the use cases developed as part of the phase one effort

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the development of common specification for electric price and production definition.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted

Comments Submitted by the WEQ SRS

FORMAL COMMENTS

Quadrant: Wholesale Electric Quadrant

Recommendations: WEQ 2010 AP Item 6 (a) ii - Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03
WEQ 2010 AP Item 6 (b) ii - Requirements Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04
WEQ 2010 AP Item 6 (c) ii - Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09
WEQ 2010 AP Item 6 - Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Submitted By: Standards Review Subcommittee

Date: November 11, 2010

Under the Standards Review Subcommittee (SRS) Scope of Work, which was approved by the SRS on May 18, 2010, the SRS agreed to review recommendations and if subcommittee deemed appropriate, they would submit advisory comments to the Executive Committee (EC) for consideration. As stated in the Scope of Work these comments are “not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices.”

General Data Element Comments Applicable to All Recommendations

- In the Short Descriptions and Long Descriptions there are many words capitalized but not defined. For example, see the Short Description Energy Schedule Cleared MW Interval Value. In the Short Description the following terms are capitalized: Energy Value, Time Interval, and Energy Schedule.
- It is unclear why some data elements do not have a Short Description when they have a Long Description. When the data elements are incorporated into the PAP-03 and PAP-09 recommendation the result is there is no description in these recommendations. For example, see Ancillary Service Instruction ID, Instruction ID, and Schedule ID.
- In most cases there are spaces between terms Program ID, and Min Gen MW. There are a few data elements where this is not the case. From a consistency perspective spacing be included in the following data elements:
 - o GenEMSID
 - o GenBillingID
 - o MinGenCost
- Contact Middle Name – consider changing to “Middle Name” to be consistent with First Name and Last Name which do not have the prefix “Contact.”
- Parent Meter id – consider changing “id” to “ID” for consistency.
- Capacity Type description – consider changing “description” to “Description” for consistency
- Qualified Capacity – the acronym ICAP is used but is not defined

Comments Submitted by the WEQ SRS

- Event & Performance comments – consider changing “comments” to “Comments” for consistency.

PAP 03 Specific Comments:

- In the heading the Annual Plan Item should be changed to “6(a)ii”
- In the data elements the following data element names do not match the data element names in the Master Data Requirements List

PAP 03	Master Data Requirements List
Product Sub-Type	Product Sub-type
Override Unit of Measure for the Product	Override Unit of Measure

- There are instances where the Descriptions for the Data Elements in PAP-03 do not match either the Short Description or the Long Description contained in the Master Data Element Requirement List recommendation. For consistency the definitions should match. For example, see Price Component Value, Product Type, Product Sub-Type, and Unit of Measure.
- The Descriptions should consistently use either the Short Description or Long Description from the Master Data Element Requirement List recommendation. For example, Product Name uses the Long Description while Product Identifier uses the Short Description.

PAP 04 Specific Comments

- Extra “that” should be removed from the second sentence of the introduction as highlighted “They communicate information about events **that that** occur during power management and distribution. They invoke financial or business transactions that guide those events.”
- First paragraph of 017-2.1 should refer to data rather than date as highlighted “The use case modeling technique is used for capturing business and **date** requirements relative to electric product and price information.”
- In 017-A in paragraph heading **Proper (and Improper Usage of the Entity-Relationship Model**, System Operator should be singular in the sentence as highlighted “For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a **System Operators** or a Utility Distribution Operator.”

PAP 09 Specific Comments:

- For the Data Requirements tables it would be helpful to the user if there was a legend or an explanation for the columns and that O is for Optional and M is for Mandatory.
- In the data elements the following data element names do not match the data element names in the Master Data Requirements List

PAP 09	Master Data Requirements List
Service Location State/Province	State/Province
Service Location Zip/Postal Code	Zip/Postal Code
Service Location Country	Country
Load-Serving Entity ID	Load Serving Entity ID
Load-Serving Entity Name	Load Serving Entity Name
Device QA Plan	Meter Device QA Plan

Comments Submitted by the WEQ SRS

PAP 09	Master Data Requirements List
Generator In-Service Date	In-Service Date
StrikePriceType	Strike Price Type
Operational Constraint Type	Constraint Type
Operational Constraint Interval	Constraint Interval
Operational Constraint Value	Constraint Value
Measurement Value Timestamp	Measurement Value Timestamp (CIM)
Measurement Value	Measurement Value (CIM)

- In the Data Tables 4 and 5 there are a number of data elements listed which are not designated as either Mandatory or Optional. Is this because some of the data elements are used in the processes 1.0.1a through 1.0.9 and not used is 1.0.10 through 1.0.16 and vice versa? If so, should both tables contain the same list of data elements? Currently, Table 5 does not include the same set of data elements found in Table 4. For example, Table 5 Category 1 does not include Address 1, Address 2, City, etc. An explanation may be beneficial.
- In Table 4 the vertical line between 1.0.1 b and 1.0.1.c is not printing.
- The left line for Category 9 for the Set Point data element is not printing
- In Table 8 the following data elements are listed but are not defined as either Mandatory or Optional: Base Point, Breaker Status, Output MW, Output MVAR, DR Bus Load MW, Set Point, Regulation Base Point, and Base Load MW

Data Element List

- The WEQ Standards Review Subcommittee has not cross referenced the retail references to PAP-03 and PAP-09 and question whether this cross reference is required in the Wholesale Business Practice Standards.
- Measurement Value Type is cross referenced to the Wholesale PAP-09 recommendation. The data element is not included in the PAP-09 Data Requirements tables.
- Suggest that the comment “*Listing by Category ID and Category Element ID begins on page 45” be changed to “Listing by Category ID and Category Element ID can be found in Section WEQ-020.2” and adding a section number to “Listing by Category ID and Category Element ID”. This will make it easier to maintain since the page number will change with each NAESB publication.
- Source Location Identifier is cross referenced to the Wholesale PAP-03 recommendation but the data element has been deleted in the PAP-03 recommendation.
- Source Location Identifier Type is cross referenced to the Wholesale PAP-03 recommendation but the data element has been deleted in the PAP-03 recommendation
- In the Listing by Category ID and Category Element ID sort, the Category Element ID sort appears as if the column is sorted as an alphabet sort rather than a numeric sort? This results in data elements such as 2291 through 2296 appearing before 23. Was this intentional? If not and changes are made to the sorts in this section, conforming changes will need to be made to the PAP-09 Recommendation.

FORMAL COMMENTS

Quadrant: Wholesale Electric Quadrant

Recommendations: WEQ 2010 AP Item 6 (a) ii - Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03
WEQ 2010 AP Item 6 (b) ii - Requirements Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04
WEQ 2010 AP Item 6 (c) ii - Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09
WEQ 2010 AP Item 6 - Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Submitted By: California ISO

Date: November 15, 2010

- CAISO understand the requirements for PAPs 3,4 and 9 are generic and does not distinguish between load adjustment and load curtailment for demand response. In its future expansion of DR , the CAISO will be concentrating on load adjustment. Wholesale demand response products in the future will require a positive and negative signal to provide regulation and the potential for other non-regulation load following services. The CAISO believes standards should support the broader concept of demand response as load adjustment versus simply load curtailment.
- Understanding that PAP 9 was not meant to consider local attributes, in the future discussion we would like the group to distinguish separated enrollment and effective dates. A DR can enroll early and have a later effective date. We also believe in future discussions it may be useful to differentiate between scheduled load is the expected load , expected load would be the load for the hour and does not factor in any DR dispatch that the resource has been awarded.

C#	Company	Category	Cite
1	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	Introduction
2	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	Introduction, and 016-1.2.1
3	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	016-1.2.1
4	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	016-1.2.2.1
5	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	REQ.15.1.2.2.1 Source Location Identifier Type
6	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	016-2.2

Suggested Change

Suggest changing: "... will mainly include but are not limited to the pricing" to will mainly include, but are not limited, to the pricing

Suggest modifying to: "Standards are not to be required, nor are should they be considered to be exhaustive and, are provided for clarification purposes, only."

Suggest modifying to: "... including wholesale prices, quality and type of service, and costs associated with..."

General comment - choose to either use a period (.) or not. The punctuation mixed, especially in the Description column

Suggest modifying to: "... areas to GPS coordinates. It is anticipated..."

"The results of bidding produce the settled price which is published and then received." is slightly ambiguous. Who is doing the publishing and who is doing the receiving? Suggest modifying to something such as: "The results of bidding produce the settled price which is published by the Service Provider, and then received by the Utility Customer." (I made assumptions on actors - modify with the appropriate pair of actors)

C#	Company	Category	Cite
1	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	Control: The role associated with the control of an End Device.
2	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	Measurement: The role associated with the device or algorithm that measures the consumption or supply of an End Device.
3	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	Scheduling Entity(SE)
4	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	Scheduling Entity(SE): A role which carries the responsibility of submitting bids/offers and receives schedules and awards.

Suggested Change

The term, "End Device" was removed from the Defined Terms document. As such, we should remove the capitalization in this definition for the term "Control"

The term, "End Device" was removed from the Defined Terms document. As such, we should remove the capitalization in this definition for the term "Measurement"

Add a space: "Scheduling Entity (SE)"

"... and receiving schedules and awards."

FORMAL COMMENTS

Quadrant: Wholesale Electric Quadrant

Recommendations: WEQ 2010 AP Item 6 (a) ii - Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03
WEQ 2010 AP Item 6 (b) ii - Requirements Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04
WEQ 2010 AP Item 6 (c) ii - Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09
WEQ 2010 AP Item 6 - Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Submitted By: California ISO, ERCOT, IESO, ISO New England, Midwest ISO, New York ISO, PJM, SPP

Date: November 15, 2010

ISOs/RTOs members assisted in drafting the NAESB Standards Review Subcommittee formal comments for the recommendations:

- WEQ 2010 AP Item 6 (a) ii - Phase Two Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03
- WEQ 2010 AP Item 6 (b) ii - Requirements Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04
- WEQ 2010 AP Item 6 (c) ii - Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09
- WEQ 2010 AP Item 6 - Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

The ISOs/RTOs listed above support the formal comments submitted by the NAESB Standards Review Subcommittee.



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For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a)i
Request Title: Phase Two ~~Requirements~~ Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

1. RECOMMENDED ACTION:

☒ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The NAESB Smart Grid Task Force (SGTF) submits this Recommendation that provides ~~requirements~~ specifications for common pricing attributes that can be used as a basis for messaging protocols throughout the electrical energy system from producer through to a variety of energy consumers and the future intelligent devices employed by these consumers. These attributes are not meant to be a message protocol in and of themselves and further analysis and design work will be completed as part of several initiatives, such as ZigBee smart energy, OpenHAN, and OASIS¹ eMIX. These ~~requirements~~ specifications should also be used as an input to the CIM maintained by UCAIug.

¹Reference to the Organization for the Advancement of Structured Information Standards not the Open Access Same-Time Information System



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WEQ-000

New Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 6(a-c) (NOTE: Many of the new terms are being used in the three PAP recommendations rather than duplicating the terms in multiple documents they are only listed in this recommendation.)

Term	Definition
Asset	A logical entity with measurable and reportable consumption, e.g. an Asset may be a physical device with its own meter, or the main meter at the Service Delivery Point of a Service Location
Asset Group	A logical entity that <u>has</u> a reportable interval level consumption, e.g. an Asset Group may be a physical entity with its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of Retail Customers
Service Delivery Point	The identifier of the location where electric service is delivered to the Service Location.
Service Location (was Facility in the Phase 1 ERD)	The physical location at which connection to the transmission or distribution system is made.

RECOMMENDED STANDARDS:

Executive Summary

Specifications for Common Electricity Product and Pricing Definition

The following addresses the business objectives and context for capturing the attributes associated with electricity price and product signals as part of the Smart Grid implementation, which is called for by NIST PAP 03. The use cases provide ~~requirements~~ specifications for electricity price and product signal standards.

These Business Practice Standards also contain an overview of the most common retail rate structures and price-related use cases. To maintain consistency between this Business Practice Standard and related Business Practice Standards developed for NIST PAP 04 and PAP 09, a



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master list of data elements, and common sets of actors terms and definitions are being recommended.

The following deals exclusively with the pricing related ~~requirements~~ specifications at both the wholesale and retail levels. The ~~requirements~~ specifications are captured in the form of UML models, where business ~~requirements~~ specifications are captured in use case narrative format and data ~~requirements~~ elements are captured in tabular format. The main use cases that are affected by pricing are:

- Demand Response
- Non-Price (Environmental) Response
- Load-follower
- Price-takers

Introduction

Specifications for Common Electricity Product and Pricing Definition

Purpose: The purpose of the following is to capture business and data ~~requirements~~ elements related to the definition of a common model for capturing the attributes of an electricity product offered at wholesale and/or retail level. Such attributes will mainly include but are not limited to the pricing information of the product being offered to the end consumers of electricity.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for ~~clarification~~ informational purposes.

Scope: The scope of the following is to provide business and data ~~requirements~~ elements, not implementation, of a common pricing model for electricity product.

The electricity rate design process is not included in the scope of these use cases.

These Business Practice Standards and data elements included herein are not intended to (i) require the use of any of these data elements, (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.



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Business Practice Standards

016-1 Specifications for Common Electricity Product and Pricing Definition

016-1.1 ACTORS LIST

The actors listed in the table below are specific to this recommendation and are a subset of the actors and related objects defined in WEQ-000. Details on the relationships between the actors and related objects are further defined in Appendix A.

Actor Name	Actor ID ²	Examples
Communication Method	5.5	
Control	5.2	Premise, EMS, ESI or Gateway
System Operator	2.1	Market and system operators
End Device	4.5	Electric vehicle, or smart appliance, display
Load Serving Entity	3.2	
Measurement	5.1	Meter
Premise	4.3	Electricity consumer
Resource	4.1	DER
Service Provider	3.1	Retail service provider, demand response provider, dynamic price service provider
Transmission/ Distribution Service Provider	3.5	Utility distribution company

² The Actor ID shown in the table refers to the item number of the corresponding actor or related object in the Entity-Relationship Diagram provided in Appendix A. Definitions of the actors and related objects are included in WEQ-000.



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Actor Name	Actor ID ²	Examples
Utility Customer	2.4	Residential, industrial
Utility Distribution Operator	2.3	Distribution operator

016-1.2 USE CASE DATA CONSIDERATIONS

The following tariff rate types and product and pricing attributes were considered when developing the use cases included in this Business Practice Standard.

016-1.2.1 Tariff Rate Types Considered for Use Cases

A tariff establishes the prices paid for the services received, and is based on a variety of factors including wholesale prices, quality and type of service and costs associated with transmission and distribution grid infrastructure and operation. The use cases in this Business Practice Standard illustrate the high-level activities associated with publishing prices and how the information is used to evoke a change in consumption. For the use cases included below the following tariff rate types were considered:

Tariff Rate Type	Target Customers	Description
block rate	C&I, residential	An energy supply rate structure in which the per unit energy price increases or decreases for each successive block of energy consumed.
critical peak price	C&I, residential	A pricing structure in which the customer receives notification identifying a time interval, ("critical hours") during which special higher prices apply over and above whatever other rate they may be charged. Critical hours generally represent a small percentage of the hours in the year.
demand rate	Mainly for C&I customers, pilot for residential customers	A component of an energy supply rate structure based on the highest demand for electricity measured in a billing period.



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Tariff Rate Type	Target Customers	Description
day ahead market rate	C&I, residential	An energy supply rate structure, typically hourly, based on the day-ahead wholesale market price.
market clearing price for energy	C&I	An energy rate structure that allows for price changes every interval (e.g. 5 minutes, 15 minutes, hourly, etc.) based on real-time wholesale market prices.
peak time rebate	C&I, residential	An incentive rate in which the utility pays a rebate to customers who reduced demand during peak periods on critical days
real time price rate	C&I	An energy supply rate structure in which prices can vary, typically on an hourly basis, based on forecast (day-ahead) or actual (real-time) market conditions.
time of use rate	C&I, residential	An energy supply rate structure where the per unit charge (kWh or kW) varies according to the time of day. Time of use rates may have daily and seasonal variations.
variable peak pricing	C&I, residential	An energy supply rate structure that combines features of time of use and real time price structures to include the flexibility of market price variation and the fixed time periods of a time of use rate.



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016-1.2.2 Product and Pricing Attributes Considered for Use Cases

For the purpose of the development of the use cases in Business Practice Standard WEQ-016-2, the following price and product attributes were considered.

016-1.2.2.1 Product Identification

Attribute	Description	Considerations
Product Name	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Matches (Ref to Market Product in PAP 09 Wholesale)
Product Identifier	Identifies a Specific Product associated with a Price.	Any commodity benefits from having a unique identifier (external) that can unambiguously be used by consumers to identify what it is that they are purchasing. Examples of product identification scheme used in the financial world is the ISIN and stock ticker symbols used by exchanges. This not a transaction identifier – this would be an industry agreed upon identifier for a particular energy product offering.
Identifier Source (product)	Identification of the source of the Product Identifier.	In most systems there are competing or alternative product identification schemes. The Identifier Source references the product identification scheme for the Product Identifier.
Product Type	Identifies the product and market	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.



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Attribute	Description	Considerations
Product Sub-Type	The sub-type of product	Products may be further divided into subtypes, for example reserve products may be 10-minute or 30-minute response.
Source Location Identifier	The identifier of the source location of the product for which the price applies	Electric energy cost and value are greatly impacted by the distance between generation and consumption. Indicating the source of the generation is important in terms of pricing decisions on part of consumers and intermediaries. The use of source location would mainly be used for bilateral transactions.
Source Location Identifier Type	Type of location.	The mechanism used to identify location can be defined in multiple sources based upon specific usage from control areas to GPS coordinates. <u>it</u> is anticipated that there may need to be more than one method to identify a geographical location. Where possible existing industry standards should be adopted to identify geographic locations.
Delivery Time	Time at which the product is available for physical consumption	
Delivery Interval	The duration over which the product is available for physical consumption	
Unit of Measure	Unit of measure for the identified product.	The unit of measure such as MWh or kWh. May vary between markets.



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Attribute	Description	Considerations
Price Location	The location at which the price is applicable.	

016-1.2.2.2 Pricing Attributes

Attribute	Description	Considerations
Product Price	The sum of all Price Component Values for a given product (Total Price).	Price is expressed as currency per unit of measure, i.e. quantity is not required, e.g. \$/MWh The sum of all Price Components must equal the Product Price.
Set of 1..n Price Components		
Price Component Value	A component of the price.	Price may have one or more components.
Price Component Type	The portion of the price to which the corresponding value applies	A standard set of price component types ~~shall~~ <u>should</u> be enumerated, such as: - Wholesale electricity cost - Transmission costs - Distribution costs
Price Type	Time characteristic of the price	A standard set of price types will need to be defined (real time, 5 minute, day ahead, etc.)
Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier
Override Unit of Measure for the Product	Alternative unit of measure applicable to a given transaction.	If this is used, then Unit of Measure is not applicable



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Attribute	Description	Considerations
Currency	Economic unit of exchange in which the total price and price components are stated (i.e. dollars, euros)	Currency is required to determine the units of measure of the Total Price and Price Components. The energy units of measure are defined by the Product Type.

016-2 Product and Pricing Use Cases

016-2.1 USE CASE OVERVIEW

The use case modeling technique is used for capturing business and data ~~requirements~~ elements relative to electric product and price information. The relationships used in the use case diagrams are as follows:

- Generalization (line with triangle head): this indicates variations (sub-types) of the main use case.
- Precedes: this indicates a time sequence
- Invokes: this indicates a pre-condition or dependency

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for ~~clarification~~ informational purposes.



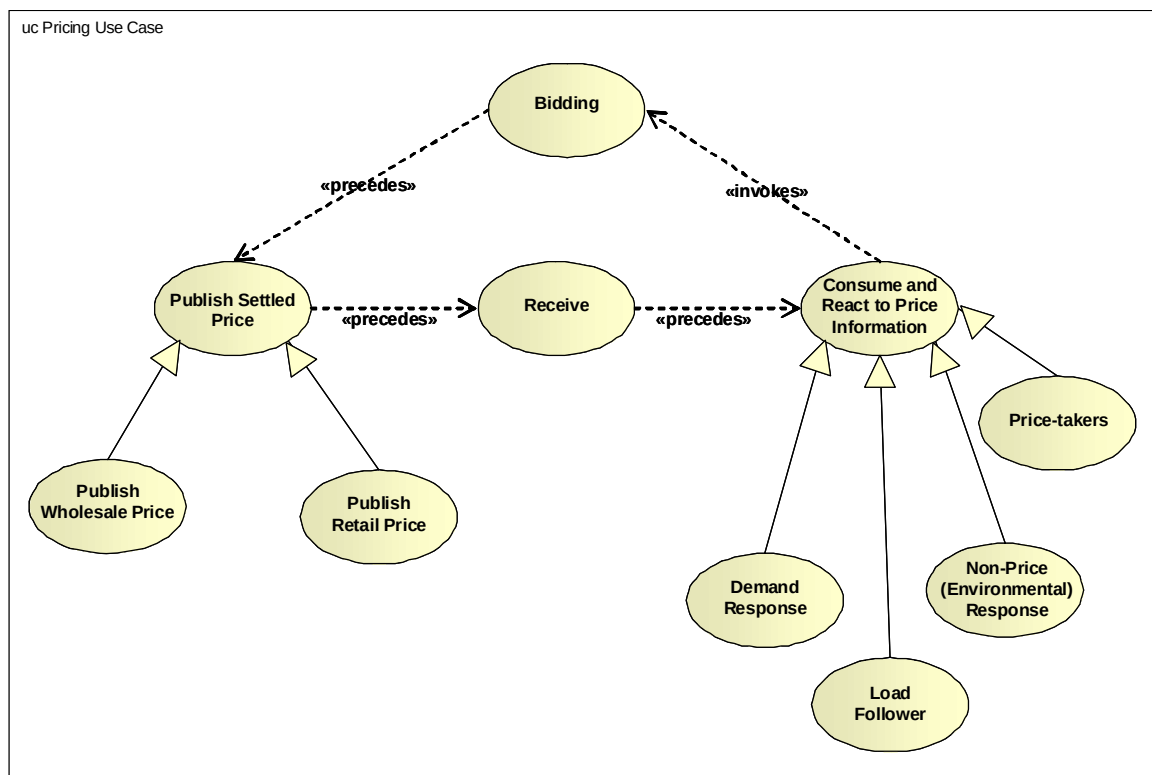
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016-2.2 PRICING USE CASE

The Pricing Use Case below provides an overview of the specific use cases described in these Business Practice Standards. The results of bidding produce the settled price which is published and then received. The recipient reacts to the price, which affects the next bidding cycle. The following use cases where electricity pricing and product information can be used are described in these Business Practice Standards:

- Demand response
- Non-Price (Environmental) Response
- Load-follower
- Price-takers





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016-2.3 SPECIFIC USE CASES

Specific use cases for what end use consumers of electricity might do when pricing signals are received are listed as follows:

Use Case	Actors	Description	SAMPLE Scenarios
Demand Response	SP ED Control Premise	Utility Customer (or device acting under UC direction) responds to Total Price or Price Component.	The System Operator published day-ahead prices which are statistically higher than average between 2:30 and 5:30 in the afternoon. Illustrate how different End Devices <u>will/could</u> respond to a forward energy price signal including: - An EMS requests BAS to “pre-cool” until 2:30 PM. - Home-based intelligent device is programmed to operate at a time when electricity is cheaper. An electric plug-in vehicle is programmed to charge when electricity is cheaper. A utility distribution company’s fixed time-of-day tariffs indicates higher price during day, and lower price after 11:00 PM. Demonstrate how different End Devices <u>will/could</u> respond <u>use</u> to price differentials: - Time-insensitive building systems schedule their run-time programs after 11:00 PM. Homeowner starts appliance at 5:10. The appliance notifies that by waiting 20 minutes to run, the consumer will get lower cost electricity. Homeowner acknowledges.
Non-Price	Resource	Product	Utility Customer sets a price



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Use Case	Actors	Description	SAMPLE Scenarios
(Environmental) Response	ED Premise	characteristics (other than price) are used to influence either the quantity or the time at which the customer uses electricity.	threshold at which “green” power is desirable. Above the “green price” the customer will take any power, below the “green price” the customer will choose suppliers with renewable portfolios. Test the scenario where, at 5:00 PM wind power picks up such that the price of power from renewable sources falls below the “green price” set by the customer. Utility delivers blend of 20% wind, 80% coal during this time of day at .10/kWh. 25% of customers indicate preference to buy pure wind, an over-subscription. Prices for pure wind are bid up to .15/kWh as the wind-sensitive market decreases. 20% of consumers pay the 50% premium to get only wind-only power. 1) Local PUC <u>could</u> requires that segmentation be revenue-neutral, so bidding for wind power reduces undifferentiated power to .0875 kWh. 2) No bidding was required for undifferentiated power, so provider is incentivized to find additional sources of wind power. 3) Consumers unable to buy desired wind power reduce their aggregate demand. Consumers have programmed non-time-sensitive systems and appliances to not run when wind power is not available, time-shifting some demand until wind power is



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Use Case	Actors	Description	SAMPLE Scenarios
			available at the desired price.
Load-follower	DER UC		A UC is also a DER. The UC would purchase power up to the price at which the DER can economically produce power. The use case ~~must~~ <u>should</u> prove that such a resource can receive enough information from the pricing signals to change its output according to the resource owner's price curve.
Price-taker	DER		A DER with no storage capability and zero fuel cost, such as a wind farm or solar array, will produce power at whatever the "market rate" for generation is at the time of production. The use case ~~must~~ <u>should</u> prove that such a resource can identify its cost curve (zero in this case), supply energy to the grid, and get paid at the appropriate rate.



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016-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a Service Location contains one or more Service Delivery Points. The Entity-Relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The Entity-Relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both Use Cases and Process Maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a Service Location is related to one-or-more Service Delivery Points (reading top to bottom) and every Service Delivery Point is related to exactly-one Service Location (reading bottom to top).

Optional Entities, Roles and Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all entities, roles and/or objects to function. Therefore, all-entities, roles and objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

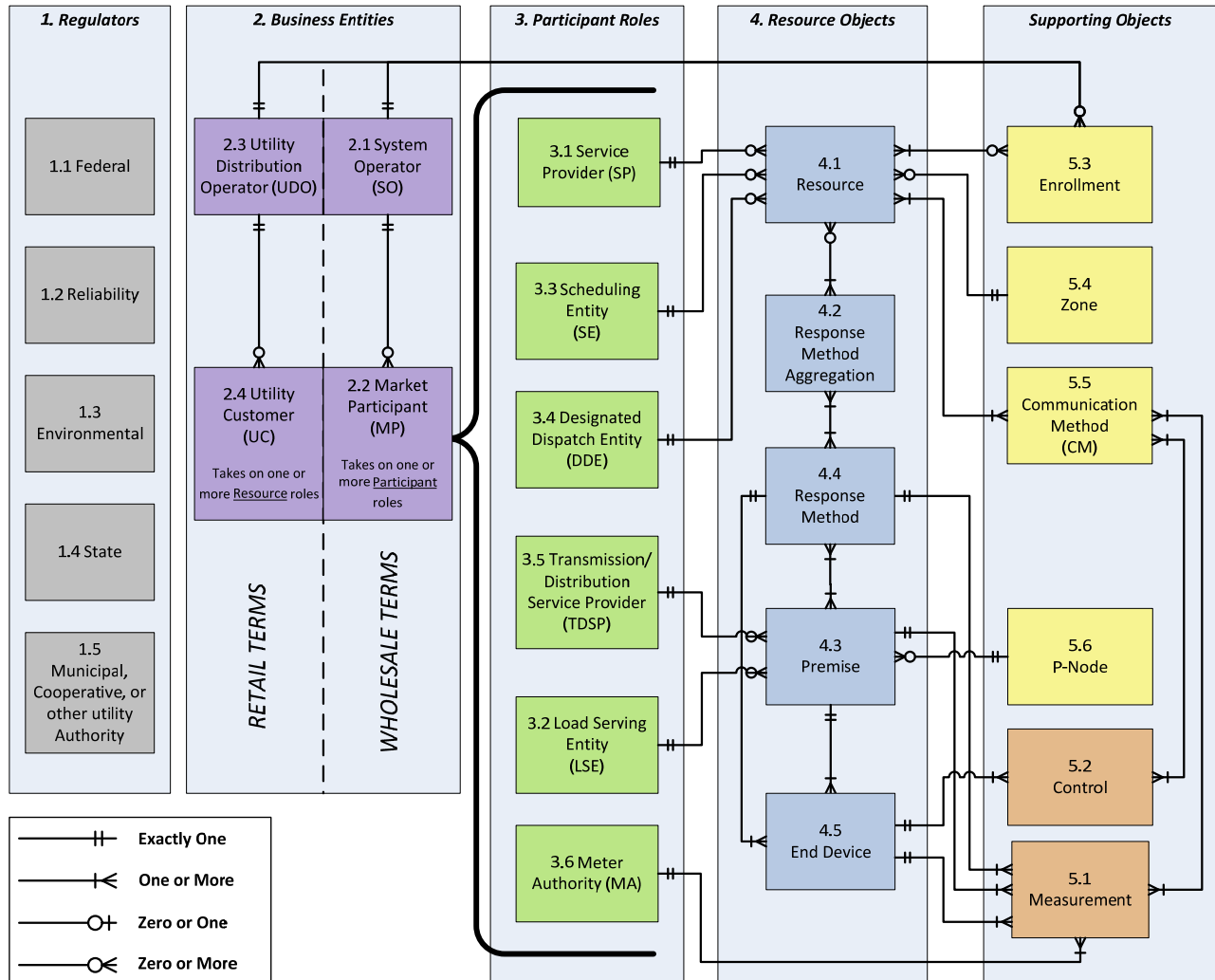
Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the typical applicable business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a)i
Request Title: Phase Two Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

Figure 1A. Sample Entity-Relationship Model for Smart Grid Use Cases





RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a)i
Request Title: Phase Two ~~Requirements~~ Specifications for
Common Electricity Product and Pricing
Definition – for NIST PAP03

4. Supporting Documentation

a. Description of Request:

WEQ Annual Plan Item 6(a) – “Develop Requirements and Use Cases for PAP 03 – Pricing Model”

b. Description of Recommendation:

This recommendation provides the data requirements-elements related to the use cases developed as part of the phase one effort

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the development of common specification for electric price and production definition.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted

C#	Company	Category	Cite
1	Cox Software Architects LLC	Technical	All documents in the public review starting October 15, 2010

Suggested Change

It is not clear (except in one footnote) that these requirements documents are not specification documents, i.e., that the structures, schemas, data element names and types, are requirements stated in very specific form. Add the following to the Executive Summary and the Introduction of each document: "All data element names, and implied or stated structures are not intended to specify specific message payloads or information object. The intent is to clearly specify the business information that is required to be exchanged to make effective and reasonable business decisions, and NAESB understands that standards that do not directly use such schemas and element names may conform to these requirements."



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [RequirementsElements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY: The Master Data [RequirementsElements](#) List contains the list of data elements used in the use cases that were developed for PAP 03 and PAP 09 in the phase one effort.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
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RECOMMENDED STANDARDS:

WEQ-020.1 Smart Grid Standards Data [RequirementsElements](#) Table

Introduction

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to [\(i\) require the use of any of these data elements, \(ii\) require the provision or purchase of any products, programs, rates, markets or services, or \(iii\) supersede](#) applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

~~All data element names and implied or stated structures are not intended to specify specific message payloads or information object. The intent is to clearly specify the business information that may be necessary to be exchanged to make effective and reasonable business decisions, and NAESB understands that standards or implementations that do not directly use such schemas and element names may conform to these requirements through clearly defined mapping documentation.~~

Capitalization of words within the Short Description or Long Description of a data element refers to the name of another data element within this Master Data Element List, not a NAESB defined term.

WEQ-020.1.1 1 Alphabetical Listing by Data Element Name

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



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* Listing by Category ID and Category Element ID begins [on page 245 in section WEQ-020.1.2](#)

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	10	Address1	Address line 1				Y			Y
2-Location	2	11	Address2	Address line 2				Y			Y
10-Ancillary Service Market	10	16	Ancillary Service Award - Cleared Price	Awarded Price	The market clearing price for the cleared ancillary service product MW.			Y			
10-Ancillary Service Market	10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	The start time of a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award	The value associated with a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID	Unique identifier assigned to each ancillary service instruction.-	Unique identifier assigned to each ancillary service instruction.			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	20	Ancillary Service Product Qualification Type	Type of Qualification	Examples include initial, requalification, etc.			Y			
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide				Y			Y
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource				Y			
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified				Y			
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID	~~-Unique identifier assigned to each ancillary service schedule.~~	~~Unique identifier assigned to each ancillary service schedule.~~			Y			
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies				Y			
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.			Y			Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets				Y			Y
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset							Y
6-Device and Qualification	6	80	Asset Manufacturer	Manufacturer of the Asset							Y
6-Device and Qualification	6	81	Asset Model	Model identifier of the Asset, assigned by the Manufacturer							Y
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location				Y			
1-General Asset / Resource	1	13	Asset Name	The name of the asset				Y			
5-Business Entity Relationships	5	90	Asset Operator ID	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	91	Asset Operator Name	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction or response (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.						Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer							Y
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.			Y			
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.			Y			Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline				Y			Y
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load				Y			
9-Energy Market	9	21	Breaker Status	Status of the Breaker for the Resource				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				Y			
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location				Y			
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid				Y			
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market				Y			
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.			Y			
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.			Y			
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.			Y			
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	10	Capacity Type	Type of Capacity	Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.			Y			Y
11-Capacity Market	11	11	~~Capacity Type~~ descriptionCapacity y Type Description	Description of the Type of Capacity				Y			Y
2-Location	2	12	City	City				Y			Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice				Y			
4-Grid Connection	4	12	Connect Voltage	Voltage level	Voltage at connection.			Y			
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address			Y			
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address			Y			
8-Offer Parameters	8	72	Constraint Interval	The timeframe over which the constraint type applies.	Typically daily, hourly, weekly, date			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.			Y			Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval				Y			Y
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.			Y			
3-Contact	3	991	Contact Comments	Comments associated with the Contact				Y			
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to which may be used.			Y			
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	23	Contact MiddleMiddle Name	Middle Name of the Contact				Y			
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.			Y			
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.			Y			
2-Location	2	15	Country	Country				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	51	Criticality Level	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or in combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility						Y
6-Device and Qualification	6	291	CT Ratio	Ratio of the Current Transformer				Y			
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)		Y			Y		Y
6-Device and Qualification	6	228	Date of Last Meter Test	Date of Last Test of the Meter				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market				Y			
14-Price and Product	14	38	Delivery Interval	The duration over which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	37	Delivery Time	Time at which the product is available for physical consumption		Y			Y		Y
5-Business Entity Relationships	5	14	Demand Response Controlling Entity	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>						Y
5-Business Entity Relationships	5	13	Demand Response Provider	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>						Y
12-Event and Performance	12	16	Deployment MW	Absolute or relative Deployment quantity	Expressed as an absolute or relative (%) MW value.			Y			Y
12-Event and Performance	12	11	Deployment Type	Type of Deployment	Examples are: Advanced (Normal), Immediate, Audit/Test			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.			Y			
5-Business Entity Relationships	5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity				Y			
6-Device and Qualification	6	70	Device Class	<u>Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event.</u> <u>0 HVAC compressor or furnace</u> <u>1 Strip Heaters/Baseboard Heaters</u> <u>2 Water Heater</u> <u>3 Pool Pump/Spa/Jacuzzi</u> <u>4 Smart Appliances</u> <u>5 Irrigation Pump</u> <u>6 Managed Commercial & Industrial (C&I) loads</u> <u>7 Simple misc. (Residential On/Off) loads</u> <u>8 Exterior Lighting</u>	<u>Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event.</u> <u>0 HVAC compressor or furnace</u> <u>1 Strip Heaters/Baseboard Heaters</u> <u>2 Water Heater</u> <u>3 Pool Pump/Spa/Jacuzzi</u> <u>4 Smart Appliances</u> <u>5 Irrigation Pump</u> <u>6 Managed Commercial & Industrial (C&I) loads</u> <u>7 Simple misc. (Residential On/Off) loads</u> <u>8 Exterior Lighting</u> <u>9 Interior Lighting</u> <u>10 Electric Vehicle</u> <u>11 Generation Systems</u> <u>12 to 15 Reserved</u>						Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved							
6-Device and Qualification	6	991	Distributed Generator Comments	Comments associated with the Distributed Generator				Y			
6-Device and Qualification	6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	39	Distributed Generator Name	Name of the Distributed Generator				Y			
6-Device and Qualification	6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.			Y			
6-Device and Qualification	6	30	Distributed Generator Type	Type of Distributed Generator	This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.			Y			
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR			Y			
13-Direct Load Control	13	11	DR Control Command: Direct Load Control Type	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	12	DR Control Command: Direct Load Control Value	Value associated with the Direct Load Control Type.							Y
1-General Asset / Resource	1	22	DR Resource Group ID	Grouping of Resources that can respond to the same DR signal							Y
3-Contact	3	12	DUNS Number	DUNS business number				Y			
13-Direct Load Control	13	13	Duty Cycle	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value of 0xFF indicates the field is not used." (from SEP2.0)							Y
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.			Y			Y
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is				Y			Y

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				connected							
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached				Y			Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline				Y			Y
12-Event and Performance	12	23	Energy Baseline Value	Calculated Energy Baseline	A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.			Y			Y
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.			Y			
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval			Y			
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			Y
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment				Y			Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated			Y			Y
12-Event and Performance	12	991	Event & ~~Performance~~ CommentsPerform ance Comments	Comments associated with Event and Performance data				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	14	Event Control	Event Control options for randomized start or end times: 1= Randomized Start time, 0=Randomized Start not Applied 1= Randomized End time, 0=Randomized End not Applied. (from SEP2.0)							Y
12-Event and Performance	12	12	Event Day	Operating Date of Start of Event				Y			Y
12-Event and Performance	12	13	Event Description	Description of the Event				Y			
12-Event and Performance	12	18	Event End Time	Time of End of deployment period	Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.			Y			Y
12-Event and Performance	12	10	Event ID	Identifier assigned to the Event	An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	19	Event Modification Number	A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.				Y			Y
12-Event and Performance	12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.				Y			Y
12-Event and Performance	12	14	Event Start Time	Time of Start of deployment period for Event	The Deployment Period is the period of time from the Deployment to Release/Recall.			Y			Y
12-Event and Performance	12	17	Event Status	Status of the Event	Examples include: initiated, completed, etc.			Y			Y
13-Direct Load Control	13	15	Exception Conditions	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.							Y
5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity				Y			
3-Contact	3	21	First Name	First Name of the Contact				Y			
1-General Asset / Resource	1	41	Gen_Billing_ID	Billing Identifier assigned to the Resource				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
1-General Asset / Resource	1	40	Gen_EMS_ID	Alias or point Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	991	General Resource Comments	General comments associated with the Resource				Y			
2-Location	2	20	GPS Coordinates	Latitude and longitude				Y			Y
4-Grid Connection	4	991	Grid Connection Comments	Comments associated with the Grid Connection of the Resource				Y			
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted				Y			
14-Price and Product	14	13	Identifier Source (product)	The Identifier Source references the product identification scheme for the Product Identifier.		Y					
6-Device and Qualification	6	37	In-Service Date	Date the Distributed Generator became operational				Y			
6-Device and Qualification	6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator				Y			
9-Energy Market	9	0	Instruction ID	~~Unique identifier assigned to each instruction.~~	~~Unique identifier assigned to each instruction.~~			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP				Y			
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location				Y			
3-Contact	3	22	Last Name	Last Name of the Contact				Y			
7-Market / Program Enrollment	7	30	Lead Time	Time between the advanced notification and deployment	Notification is the transmittal of a Deployment message.			Y			Y
13-Direct Load Control	13	16	Load Control State	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.							Y
12-Event and Performance	12	113	Load Level Value	Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				Y			
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.			Y			
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE				Y			
2-Location	2	991	Location Comments	Comments associated with the Service Location				Y			
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor				Y			
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.			Y			
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator				Y			Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market				Y			
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment				Y			
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).			Y			Y
6-Device and Qualification	6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error				Y			
6-Device and Qualification	6	229 3	Measurement Interval	Interval of time between Measurement readings	This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.			Y			
12-Event and Performance	12	32	Measurement Value (CIM)	Value of the interval reading				Y			Y
12-Event and Performance	12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated				Y			Y
12-Event and Performance	12	34	Measurement Value Type	The type of measurement value.	The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).			Y			
6-Device and Qualification	6	26	Meter Accuracy Class	Accuracy Class of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229 6	Meter Asset Comments	Comments associated with the Meter Asset				Y			
5-Business Entity Relationships	5	60	Meter Authority ID	Identifier assigned to the Metering Authority	The Metering Authority provides electric usage data necessary to determine the performance of a Resource.			Y			
5-Business Entity Relationships	5	61	Meter Authority Name	Name of the Metering Authority				Y			
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.			Y			
6-Device and Qualification	6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter				Y			
6-Device and Qualification	6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter				Y			
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter				Y			
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider				Y			
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the competitive -meter entity for the meter device.			Y			
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	[Are these Meter elements correctly checked Y for Wholesale but not for Retail?]			Y			
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter				Y			
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter				Y			
6-Device and Qualification	6	23	Meter Model	Model of the Meter				Y			
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units				Y			
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter				Y			
6-Device and Qualification	6	29	Meter Phase	Specific Phase information				Y			
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				Operator							
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter				Y			
6-Device and Qualification	6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter				Y			
6-Device and Qualification	6	226	Meter Test Frequency	Frequency of Tests of the Meter	Expressed in months.			Y			
6-Device and Qualification	6	229 1	Meter Test Results	Results of Tests of the Meter	These are specific to the meter type.			Y			
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.			Y			
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.			Y			Y
8-Offer Parameters	8	22	Min_Gen_Cost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.			Y			Y
11-Capacity Market	11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	Expressed in Price/MW.			Y			
6-Device and Qualification	6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability				Y			
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality				Y			
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity				Y			
2-Location	2	60	NERC Control Area	The NERC control area of the resource				Y			
11-Capacity Market	11	23	Nominal Capacity	Nominated load	Expressed as a decimal value.			Y			Y
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.			Y			
6-Device and Qualification	6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.				Y			Y
8-Offer Parameters	8	38	Offer Commit Status	Commitment status of offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.			Y			Y
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)			Y			
8-Offer Parameters	8	36	Offer Expiration Date	Date of Expiration of the Offer	This applies to DAM only.			Y			
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.			Y			Y
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.			Y			Y
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are may be applicable.			Y			Y
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smooth offer segments from step function to slope				Y			
8-Offer Parameters	8	33	Offer Segment Hour	Hour of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			
8-Offer Parameters	8	32	Offer Segment	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
			Price		default.						
12-Event and Performance	12	15	Operator Comment	Additional Event information provided by the Operator				Y			
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar			Y			
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW			Y			
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable		Y					
6-Device and Qualification	6	11	Parent ~~Meter~~ <u>Meter ID</u>	Flag set if the Meter is a Master or Parent Meter				Y			
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak				Y			
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.			Y			
11-Capacity Market	11	20	Peak Value	Measurement of Peak				Y			
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement				Y			
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource				Y			Y
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.			Y			Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location				Y			Y
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation				Y			
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y					
14-Price and Product	14	34	Price Component Value	The value of the price component.		Y					
14-Price and Product	14	35	Price Location	The location at which the price is applicable.		Y					
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y					

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For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.			Y			
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price		Y			Y		
14-Price and Product	14	10	Product Name	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y					
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).		Y					Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier	Y			Y		
14-Price and Product	14	12	Product Sub-type	Used to further define product types		Y			Y		
14-Price and Product	14	11	Product Type	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y					Y
7-Market / Program Enrollment	7	10	Program ID	Program Identifier	The identifier of the program			Y			Y
7-Market / Program Enrollment	7	11	Program Name	Name of the Program				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer				Y			
11-Capacity Market	11	24	Qualified Capacity	Nominal ICAP installed capacity (ICAP) derated for performance	Derated based on past performance.			Y			Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.			Y			Y
8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.			Y			Y
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.			Y			Y
7-Market / Program Enrollment	7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.			Y			
0-Common Message Parameters	0	13	Rejection Code Type	Type of rejection message	Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.			Y			
0-Common Message Parameters	0	14	Rejection Code Value	Code referring to the reason for a rejection message	Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.			Y			
12-Event and Performance	12	30	Reporting Interval	Interval size required for Reporting				Y			Y
10-Ancillary Service Market	10	24	Requalification Requirement	Flag set if Requalification is Required				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service				Y			Y
10-Ancillary Service Market	10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).			Y			
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.			Y			Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource				Y			
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction or response (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	41	Response Method ID	Identifier assigned to the Response Method				Y			
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method				Y			
7-Market / Program Enrollment	7	40	Response Method Type	Type of Response Method	Expressed as a response type code			Y			
7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.			Y			
7-Market / Program Enrollment	7	34	Response Time	The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load <u>or produce energy.</u>							Y
12-Event and Performance	12	33	Response Value	Response				Y			Y
5-Business Entity Relationships	5	44	Retail Rate	Retail Rate	Expressed as Price per kWh <u>*[Why are these retail items (40-44) checked Y for wholesale and unchecked for retail?]</u>			Y			
5-Business Entity	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	<u>*</u>			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Relationships											
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	*This can also be used for comments associated with the Retail Rate.			Y			
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	*			Y			
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	*			Y			
8-Offer Parameters	8	42	Schedule Description	Description of the Offer				Y			
9-Energy Market	9	15	Schedule ID	<u>-Unique identifier assigned to each schedule.</u>	<u>Unique identifier assigned to each schedule.</u>			Y			
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer				Y			
8-Offer Parameters	8	43	Schedule Status	Status of the Offer				Y			
5-Business Entity Relationships	5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.			Y			
5-Business Entity Relationships	5	71	Scheduling Entity Name	Name of the Scheduling Entity				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider [Is this a defined term for WEQ and REQ?] or the Resource.			Y			
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.			Y			Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location				Y			
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.			Y			Y
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider				Y			
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	50	Simple Signal Levels	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL							Y
14-Price and Product	14	40	Source Location Identifier	The identifier of the source location of the product for which the price applies		Y			Y		
14-Price and Product	14	41	Source Location Identifier Type	The type of source location of the product for which the price applies		Y					
8-Offer Parameters	8	34	Startup Cost	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	37	Startup Cost Type	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.			Y			
2-Location	2	13	State/Province	State or Province two-letter code				Y			Y
13-Direct Load Control	13	10	Status Check	A signal to require the DR resource status to be sent back. (Only applicable to Direct							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				Load Control)							
8-Offer Parameters	8	35	Strike Price	Threshold Price	Expressed as a decimal value of price/MW.			Y			
8-Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.			Y			
0-Common Message Parameters	0	10	Submittal Date	Timestamp for the sender's use				Y			
0-Common Message Parameters	0	11	Submitted By	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data			Y			
0-Common Message Parameters	0	12	Submitted Error	ID of submission error detected	Common data element to capture any errors or exceptions during submission			Y			
10-Ancillary Service Market	10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid				Y			
3-Contact	3	13	Third Party	Flag set if the Contact is a third-party entity				Y			
2-Location	2	22	Time Zone Name	Name of the Time Zone in which the Service Location is located				Y			
3-Contact	3	20	Title	Title of the Contact				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	22	Transmission / Distribution Service Provider Account Number	Transmission / Distribution Service Provider's account number for the Resource				Y			Y
5-Business Entity Relationships	5	20	Transmission / Distribution Service Provider ID	Identifier assigned to the Transmission / Distribution Service Provider	The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.			Y			
5-Business Entity Relationships	5	21	Transmission / Distribution Service Provider Name	Name of the Transmission / Distribution Service Provider				Y			
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay				Y			
14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier		Y					Y
12-Event and Performance	12	52	Usage Information	Information about the near real time electricity usage of the DR Resource.							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp .			Y			
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.			Y			
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.			Y			
2-Location	2	21	Weather Station	Weather Station code associated with the Service Location				Y			Y
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				Y			
2-Location	2	14	Zip/Postal Code	Zip or Postal Code				Y			Y
2-Location	2	31	Zone	Name of the Zone in which the Service Location is	A Zone is a physical or electrical region.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				located							
2-Location	2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				Y			Y
2-Location	2	32	Zone Type	Type of Zone	Examples: Capacity, Dispatch, Price, Load, etc.			Y			

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WEQ-020.1.2 Listing by Category ID and Category Element ID

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0		Common Message Parameters								
0-Common Message Parameters	0	10	Submittal Date	Timestamp for the sender's use				Y			
0-Common Message Parameters	0	11	Submitted By	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data			Y			
0-Common Message Parameters	0	12	Submitted Error	ID of submission error detected	Common data element to capture any errors or exceptions during submission			Y			
0-Common Message Parameters	0	13	Rejection Code Type	Type of rejection message	Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.			Y			
0-Common Message Parameters	0	14	Rejection Code Value	Code referring to the reason for a rejection message	Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability				Y			
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality				Y			
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity				Y			
1-General Asset / Resource	1		General Asset/Resource								
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.			Y			Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location				Y			
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset				Y			Y
1-General Asset / Resource	1	13	Asset Name	The name of the asset				Y			
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.			Y			Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
1-General Asset / Resource	1	22	DR Resource Group ID	Grouping of Resources that can respond to the same DR signal							Y
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.			Y			Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets				Y			Y
1-General Asset / Resource	1	40	Gen_EMS_ID	Alias or point Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	41	Gen_Billing_ID	Billing Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location				Y			
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load				Y			
1-General Asset / Resource	1	991	General Resource Comments	General comments associated with the Resource				Y			
2-Location	2		Location								
2-Location	2	10	Address1	Address line 1				Y			Y
2-Location	2	11	Address2	Address line 2				Y			Y
2-Location	2	12	City	City				Y			Y
2-Location	2	13	State/Province	State or Province two-letter code				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	14	Zip/Postal Code	Zip or Postal Code				Y			Y
2-Location	2	15	Country	Country				Y			Y
2-Location	2	20	GPS Coordinates	Latitude and longitude				Y			Y
2-Location	2	21	Weather Station	Weather Station code associated with the Service Location				Y			Y
2-Location	2	22	Time Zone Name	Name of the Time Zone in which the Service Location is located				Y			
2-Location	2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				Y			Y
2-Location	2	31	Zone	Name of the Zone in which the Service Location is located	A Zone is a physical or electrical region.			Y			Y
2-Location	2	32	Zone Type	Type of Zone	Examples: Capacity, Dispatch, Price, Load, etc.			Y			
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected				Y			Y

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2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached				Y			Y
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.			Y			Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location				Y			Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice				Y			
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location				Y			
2-Location	2	60	NERC Control Area	The NERC control area of the resource				Y			
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address			Y			
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address			Y			
2-Location	2	991	Location Comments	Comments associated with the Service Location				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3		Contact								
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.			Y			
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.			Y			
3-Contact	3	12	DUNS Number	DUNS business number				Y			
3-Contact	3	13	Third Party	Flag set if the Contact is a third-party entity				Y			
3-Contact	3	20	Title	Title of the Contact				Y			
3-Contact	3	21	First Name	First Name of the Contact				Y			
3-Contact	3	22	Last Name	Last Name of the Contact				Y			
3-Contact	3	23	Contact Middle Name	Middle Name of the Contact				Y			
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to which may be used.			Y			
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.			Y			

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Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.			Y			
3-Contact	3	991	Contact Comments	Comments associated with the Contact				Y			
4-Grid Connection	4		Grid Connection								
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor				Y			
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.			Y			
4-Grid Connection	4	12	Connect Voltage	Voltage level	Voltage at connection.			Y			
4-Grid Connection	4	991	Grid Connection Comments	Comments associated with the Grid Connection of the Resource				Y			
5-Business Entity Relationships	5		Business Entity Relationships								
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.			Y			Y

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider				Y			
5-Business Entity Relationships	5	13	Demand Response Provider	<u>-The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>						Y
5-Business Entity Relationships	5	14	Demand Response Controlling Entity	<u>An identifier for the Service Provider issuing the DR event deployment instructions.-</u>	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>						Y
5-Business Entity Relationships	5	20	Transmission / Distribution Service Provider ID	Identifier assigned to the Transmission / Distribution Service Provider	The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.			Y			
5-Business Entity Relationships	5	21	Transmission / Distribution Service Provider Name	Name of the Transmission / Distribution Service Provider				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	22	Transmission / Distribution Service Provider Account Number	Transmission / Distribution Service Provider's account number for the Resource				Y			Y
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.			Y			
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE				Y			
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	<u>*[Why are these retail items (40-44) checked Y for wholesale and unchecked for retail?]</u>			Y			
5-Business Entity Relationships	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	<u>*</u>			Y			
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	<u>*</u>			Y			
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	<u>*</u> This can also be used for comments associated with the Retail Rate.			Y			
5-Business Entity	5	44	Retail Rate	Retail Rate	<u>*</u> Expressed as Price per kWh			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Relationships											
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider				Y			
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the ~~competitive~~ meter entity for the meter device.			Y			
5-Business Entity Relationships	5	60	Meter Authority ID	Identifier assigned to the Metering Authority	The Metering Authority provides electric usage data necessary to determine the performance of a Resource.			Y			
5-Business Entity Relationships	5	61	Meter Authority Name	Name of the Metering Authority				Y			
5-Business Entity Relationships	5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.			Y			
5-Business Entity Relationships	5	71	Scheduling Entity Name	Name of the Scheduling Entity				Y			
5-Business Entity Relationships	5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity				Y			
5-Business Entity Relationships	5	90	Asset Operator ID	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	91	Asset Operator Name	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity				Y			
6-Device and Qualification	6		Device and Qualification								
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.			Y			
6-Device and Qualification	6	11	Parent Meter ID	Flag set if the Meter is a Master or Parent Meter				Y			
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter				Y			
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.			Y			
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter				Y			
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer				Y			
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	[Are these Meter elements correctly checked Y for Wholesale but not for Retail?]			Y			
6-Device and Qualification	6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter				Y			
6-Device and Qualification	6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter				Y			
6-Device and Qualification	6	226	Meter Test Frequency	Frequency of Tests of the Meter	Expressed in months.			Y			
6-Device and Qualification	6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter				Y			
6-Device and Qualification	6	228	Date of Last Meter Test	Date of Last Test of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator				Y			
6-Device and Qualification	6	229 1	Meter Test Results	Results of Tests of the Meter	These are specific to the meter type.			Y			
6-Device and Qualification	6	229 2	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp .			Y			
6-Device and Qualification	6	229 3	Measurement Interval	Interval of time between Measurement readings	This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.			Y			
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies				Y			
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229 6	Meter Asset Comments	Comments associated with the Meter Asset				Y			
6-Device and Qualification	6	23	Meter Model	Model of the Meter				Y			
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter				Y			
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units				Y			
6-Device and Qualification	6	26	Meter Accuracy Class	Accuracy Class of the Meter				Y			
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter				Y			
6-Device and Qualification	6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error				Y			
6-Device and Qualification	6	29	Meter Phase	Specific Phase information				Y			
6-Device and Qualification	6	291	CT Ratio	Ratio of the Current Transformer				Y			
6-Device and Qualification	6	30	Distributed Generator Type	Type of Distributed Generator	This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator				Y			
6-Device and Qualification	6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator				Y			
6-Device and Qualification	6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.			Y			
6-Device and Qualification	6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator				Y			
6-Device and Qualification	6	37	In-Service Date	Date the Distributed Generator became operational				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours				Y			
6-Device and Qualification	6	39	Distributed Generator Name	Name of the Distributed Generator				Y			
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP				Y			
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location				Y			
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid				Y			
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				Y			
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				Y			
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.			Y			
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay				Y			
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	70	Device Class		Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event. 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved						Y
6-Device and Qualification	6	80	Asset Manufacturer	Manufacturer of the Asset							Y
6-Device and Qualification	6	81	Asset Model	Model identifier of the Asset, assigned by the Manufacturer							Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset							Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction or response (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.						Y
6-Device and Qualification	6	991	Distributed Generator Comments	Comments associated with the Distributed Generator				Y			
7-Market / Program Enrollment	7		Market/Program Enrollment								
7-Market / Program Enrollment	7	10	Program ID	Program Identifier	The identifier of the program			Y			Y
7-Market / Program Enrollment	7	11	Program Name	Name of the Program				Y			Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market				Y			
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.			Y			Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated			Y			Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction or response (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.			Y			Y
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment				Y			Y
7-Market / Program Enrollment	7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	30	Lead Time	Time between the advanced notification and deployment	Notification is the transmittal of a Deployment message.			Y			Y
7-Market / Program	7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Enrollment				Ahead market							
7-Market / Program Enrollment	7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market				Y			
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider Is this a defined term for WEQ and REQ? or the Resource.			Y			
7-Market / Program Enrollment	7	34	Response Time	The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load or produce energy .							Y
7-Market / Program Enrollment	7	40	Response Method Type	Type of Response Method	Expressed as a response type code			Y			
7-Market / Program Enrollment	7	41	Response Method ID	Identifier assigned to the Response Method				Y			
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.			Y			
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.			Y			
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.			Y			
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement				Y			
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.			Y			
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment				Y			
8-Offer Parameters	8		Offer Parameters								
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are may be applicable.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.			Y			Y
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.			Y			Y
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource				Y			Y
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.			Y			Y
8-Offer Parameters	8	22	Min_Gen_Cost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.			Y			Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.			Y			Y
8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.			Y			Y

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Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.			Y			Y
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)			Y			
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			
8-Offer Parameters	8	32	Offer Segment Price	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	33	Offer Segment Hour	Hour of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	34	Startup Cost	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	35	Strike Price	Threshold Price	Expressed as a decimal value of price/MW.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	36	Offer Expiration Date	Date of Expiration of the Offer	This applies to DAM only.			Y			
8-Offer Parameters	8	37	Startup Cost Type	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.			Y			
8-Offer Parameters	8	38	Offer Commit Status	Commitment status of offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.			Y			Y
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smooth the offer segments from step function to slope				Y			
8-Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.			Y			
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer				Y			
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer				Y			
8-Offer Parameters	8	42	Schedule Description	Description of the Offer				Y			
8-Offer Parameters	8	43	Schedule Status	Status of the Offer				Y			
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.			Y			Y
8-Offer Parameters	8	72	Constraint Interval	The timeframe over which the constraint type applies.	Typically daily, hourly, weekly, date			Y			Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval				Y			Y
9-Energy Market	9		Energy Market								
9-Energy Market	9	0	Instruction ID	<u>Unique identifier assigned to each instruction.-</u>	<u>Unique identifier assigned to each instruction.-</u>			Y			
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval			Y			
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.			Y			
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.			Y			
9-Energy Market	9	15	Schedule ID	~~Unique identifier assigned to each schedule.~~	~~Unique identifier assigned to each schedule.~~			Y			
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A ~~Resource~~ Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.			Y			
9-Energy	9	21	Breaker Status	Status of the Breaker for				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Market				the Resource							
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW			Y			
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar			Y			
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR			Y			
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.			Y			
10-Ancillary Service Market	10		Ancillary Service Market								
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID	-Unique identifier assigned to each ancillary service	~~Unique identifier assigned to each ancillary service instruction.~~			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				instruction.							
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide				Y			Y
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted				Y			
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	The start time of a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award	The value associated with a specific ancillary service schedule interval			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	16	Ancillary Service Award - Cleared Price	Awarded Price	The market clearing price for the cleared ancillary service product MW.			Y			
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID	<u>-Unique identifier assigned to each ancillary service schedule.</u>	~~Unique identifier assigned to each ancillary service schedule.~~			Y			
10-Ancillary Service Market	10	20	Ancillary Service Product Qualification Type	Type of Qualification	Examples include initial, requalification, etc.			Y			
10-Ancillary Service Market	10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid				Y			
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource				Y			
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified				Y			
10-Ancillary Service Market	10	24	Requalification Requirement	Flag set if Requalification is Required				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).			Y			
10-Ancillary Service Market	10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.			Y			
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch				Y			
11-Capacity Market	11		Capacity Market								

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	10	Capacity Type	Type of Capacity	Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.			Y			Y
11-Capacity Market	11	11	~~Capacity Type~~ <u>Capacity Type Description</u>	Description of the Type of Capacity				Y			Y
11-Capacity Market	11	20	Peak Value	Measurement of Peak				Y			
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.			Y			
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak				Y			
11-Capacity Market	11	23	Nominal Capacity	Nominated load	Expressed as a decimal value.			Y			Y
11-Capacity Market	11	24	Qualified Capacity	Nominal ~~ICAP~~ <u>installed capacity (ICAP)</u> derated for performance	Derated based on past performance.			Y			Y
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.			Y			
11-Capacity Market	11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	Expressed in Price/MW.			Y			
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.			Y			
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.			Y			
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market				Y			
12-Event and Performance	12		Event and Performance								
12-Event and Performance	12	10	Event ID	Identifier assigned to the Event	An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	11	Deployment Type	Type of Deployment	Examples are: Advanced (Normal), Immediate, Audit/Test			Y			Y
12-Event and Performance	12	12	Event Day	Operating Date of Start of Event				Y			Y
12-Event and Performance	12	13	Event Description	Description of the Event				Y			
12-Event and Performance	12	14	Event Start Time	Time of Start of deployment period for Event	The Deployment Period is the period of time from the Deployment to Release/Recall.			Y			Y
12-Event and Performance	12	15	Operator Comment	Additional Event information provided by the Operator				Y			
12-Event and Performance	12	16	Deployment MW	Absolute or relative Deployment quantity	Expressed as an absolute or relative (%) MW value.			Y			Y
12-Event and Performance	12	17	Event Status	Status of the Event	Examples include: initiated, completed, etc.			Y			Y
12-Event and Performance	12	18	Event End Time	Time of End of deployment period	Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	19	Event Modification Number	A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.				Y			Y
12-Event and Performance	12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.				Y			Y
12-Event and Performance	12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.				Y			Y
12-Event and Performance	12	113	Load Level Value	Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.			Y			Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline				Y			Y
12-Event and Performance	12	23	Energy Baseline Value	Calculated Energy Baseline	A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.			Y			Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline				Y			Y
12-Event and Performance	12	30	Reporting Interval	Interval size required for Reporting				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated				Y			Y
12-Event and Performance	12	32	Measurement Value (CIM)	Value of the interval reading				Y			Y
12-Event and Performance	12	33	Response Value	Response				Y			Y
12-Event and Performance	12	34	Measurement Value Type	The type of measurement value.	The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).			Y			
12-Event and Performance	12	50	Simple Signal Levels	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	51	Criticality Level	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or in combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility						Y
12-Event and Performance	12	52	Usage Information	Information about the near real time electricity usage of the DR Resource.							Y
12-Event and Performance	12	991	Event & Performance comments Perform ance Comments	Comments associated with Event and Performance data				Y			
13-Direct Load Control	13		Direct Load Control								

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	10	Status Check	A signal to require the DR resource status to be sent back. (Only applicable to Direct Load Control)							Y
13-Direct Load Control	13	11	DR Control Command: Direct Load Control Type	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset							Y
13-Direct Load Control	13	12	DR Control Command: Direct Load Control Value	Value associated with the Direct Load Control Type.							Y
13-Direct Load Control	13	13	Duty Cycle	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				of 0xFF indicates the field is not used." (from SEP2.0)							
13-Direct Load Control	13	14	Event Control	Event Control options for randomized start or end times: 1= Randomized Start time, 0=Randomized Start not Applied 1= Randomized End time, 0=Randomized End not Applied. (from SEP2.0)							Y
13-Direct Load Control	13	15	Exception Conditions	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.							Y

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	16	Load Control State	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.							Y
14-Price and Product	14		Price and Product								
14-Price and Product	14	10	Product Name	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y					
14-Price and Product	14	11	Product Type	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y					Y
14-Price and Product	14	12	Product Sub-type	Used to further define product types		Y			Y		
14-Price and Product	14	13	Identifier Source (product)	The Identifier Source references the product identification scheme for the Product Identifier.		Y					

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier		Y					Y
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)		Y			Y		Y
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price		Y			Y		
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable		Y					
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).		Y					Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier	Y			Y		
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y					
14-Price and Product	14	34	Price Component Value	The value of the price component.		Y					

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	35	Price Location	The location at which the price is applicable.		Y					
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y					
14-Price and Product	14	37	Delivery Time	Time at which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	38	Delivery Interval	The duration over which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	40	Source Location Identifier	The identifier of the source location of the product for which the price applies		Y			Y		
14-Price and Product	14	41	Source Location Identifier Type	The type of source location of the product for which the price applies		Y					



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

4. Supporting Documentation

a. Description of Request:

2010 REQ Annual Plan Item 9 and 2010 WEQ Annual Plan Item 6 – “Develop Smart Grid Wholesale and Retail Electric Standards”

b. Description of Recommendation:

This recommendation provides the data [requirements elements](#) related to the use cases developed for Priority Action Plan 03 and 09 as part of the phase one effort

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the development of standard DR and DER signals.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- March 11, 2010 Meeting Notes – To be posted
- March 18, 2010 Meeting Notes – To be posted
- March 25, 2010 Meeting Notes – To be posted
- April 1, 2010 Meeting Notes – To be posted
- April 8, 2010 Meeting Notes – To be posted
- April 29, 2010 Meeting Notes – To be posted
- May 13, 2010 Meeting Notes – To be posted
- May 20, 2010 Meeting Notes – To be posted
- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

1. RECOMMENDED ACTION:

☐ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☐ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The Smart Grid Standards Subcommittee has determined that additional data requirements related to Priority Action Plan 04 do not need to be developed, as the standards developed as part of the Phase One effort satisfy the request of NIST and provide the necessary basis for other standards organizations developing standards at the request of NIST.

However, the WEQ Executive Committee on July 7, 2010, did “direct the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - Requirements Specifications for Common <u>Scheduling-Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

Additionally the Board on June 24, 2010 passed a resolution whereby they determined “that the Smart Grid standards developed by the wholesale and retail electric executive committees should strive to be consistent in all areas excepting where there are substantive jurisdictional differences.”

Based on the direction provided, the Smart Grid Standards Subcommittee is submitting the following changes to the Executive Summary and Introductions section for WEQ-017.

Note: Conforming changes are also being recommended for the Retail 2010 Annual Plan Item 9(b)(ii) recommendation “Phase Two - Requirements Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions – for NIST PAP04.”

WEQ-000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 are Included in the Recommendation Request Titled Phase Two Requirements Specifications for Common Electricity Product and Pricing Definitions – for NIST PAP03 to avoid redundancy between recommendations.

RECOMMENDED STANDARDS:

WEQ-017– Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions

Executive Summary

Specifications for Common Scheduling Mechanism for Energy Transactions

The following contains a set of requirements relating to the use of date and time based data elements that are used in transactions for Demand Response programs. ~~This information is being provided to NIST in order to aid in the development of a standard representation for date/time based data elements derived from an XML representation of iCalendar[±].~~

~~Although there are many other areas where date/time based data elements are used in energy industry transactions this~~ These recommendation Business Practice Standards is are limited in scope to only those date/time based data elements that are utilized in Demand Response programs.

[±] <http://tools.ietf.org/html/rfc5545>



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - Requirements Specifications for Common <u>Scheduling-Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

Introduction

Specifications for Common Scheduling Mechanism for Energy Transactions

~~Smart grid interfaces must communicate between domains, that is, between different business and consumer entities with different values and approaches (ontologies). Such interfaces must be simplified to bare essentials, and be understandable by parties with different backgrounds and expectations.~~

~~To achieve cross-domain understandability, and thereby enhance interoperation, smart grid transactions must use semantic models from different areas developed by different standards groups. Each of these vocabularies is most fully defined in one area. We have agreed, within the NIST process, to use the vocabularies from the appropriate domain experts to compose the message that flow between domains on the smart grid.~~

~~In the following, we defined transactions as grid events that occur between domains, or whose effects and outcomes must be communicated between domains. This activity makes no assertions about any other events.~~

Smart grid transactions communicate three classes of information. They communicate information about events that occur during power management and distribution. They invoke financial or business transactions that guide those events. They communicate schedules and interval information for the flows of energy. ~~Per agreement, all semantics relating to Power Management will use the CIM from IEC TC57. All financial and market semantics will be based upon the definitions found in ISO 20022² and in their most common expression, FIX. All elements relating to schedule and interval will be expressed in the notation of the IETF iCalendar (RFC 5545³) standard, as defined in the XML representation iCalendar developed by CalConnect. The purpose of this approach is to increase interoperation and understanding between domains.~~

~~The group primarily associated with the development of interoperable enterprise date, time, and interval standards for the IETF is the CalConnect. CalConnect and the Organization for the Advancement of Structured Information Standards will work together to define the common communication of date time and interval to meet the needs of smart grid transaction communications as well as for building systems integration, enterprise interaction, and financial transactions. This commonality is anticipated to reduce barriers to interoperation and thereby to expand participation in DR and DER.~~

The purpose of ~~this action~~ these Business Practice Standards is to define the requirements for standard communication of date, time, schedule, and interval by smart grid actors, with particular attention to DR. ~~These requirements will be submitted to the Organization for the~~

² International Organization for Standardization ISO 20022 Universal financial industry message scheme

³ Internet Calendaring and Scheduling Core Object Specification (iCalendar)



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for
Common ~~Scheduling~~ Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04

~~Advancement of Structured Information Standards and CalConnect technical committee to define the applicable communication standards to support them.~~

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification purposes.

Scope: The scope of the following is to define the range of information required to establish the breadth of the communication requirement. There is no need for the cases to be exhaustive, merely illustrative of the full scope.

Business Practice Standards

017-1 Specification for Common ~~Scheduling~~ Schedule Communication Mechanism for Energy Transactions

017-1.1 ACTORS LIST

There were no actors provided for the associated use cases.

017-2 Common ~~Scheduling~~ Schedule Communication Mechanism for Energy Transactions Use Cases

017-2.1 USE CASE OVERVIEW

The use case modeling technique is used for capturing business and data requirements relative to electric product and price information.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification purposes.

017-2.1.1 Requirements for Date and Time Usage

Demand Response programs employ a combination of absolute dates/times, absolute periods (range) of dates/times, relative dates/times, recurring dates/times, absolute intervals and absolute durations in order to communicate temporal information pertaining to demand response transactions. Demand Response programs must also accommodate time zone variations, leap years, leap seconds, and the use of daylight savings time. Any calendaring/ ~~Scheduling~~ schedule communication standard that is applicable to Demand Response programs must be capable of supporting this range of requirements.



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for
Common ~~Scheduling~~ Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04

An incomplete, but representative, set of instances is provided below. The sample data included are non-normative representations; they are included to clarify the expectation of information that will be in the standard.

Type of Representation	Representative Instance	Sample Data
Absolute date/time	Effective start date	2009-11-01
	Effective start date and time	2009-11-01T01:00:00-Z
Absolute Periods (range)	Deployment Period	2009-11-01T01:00:00-Z/ 2009-11-02T24:00:00-Z
Relative date/time (time-point)	Reduction Deadline	30 minutes from a specified point in time
Recurring date/time	Market Closing	Every day at 12:00 noon
Absolute Interval	Meter Data Recording Interval	Every 5 minutes
	System Frequency	60 cycles per second
Absolute Duration	Outage Duration	2 days
	Minimum Run Time	4 hours

It is an additional requirement that all schedule and interval communications be able to express the precision required in the response. For example, an actor may be required to perform within five minutes, or within five milliseconds of the agreed upon time.



For Quadrant: Requesters: Request No.: Request Title:	Wholesale Electric Quadrant (WEQ) Smart Grid Interoperability Panel 2010 WEQ Annual Plan Item 6(b)(ii) Phase Two - Requirements Specifications for Common <u>Scheduling-Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

017-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a PremiseService Location contains one or more End-DevicesService Delivery Points. The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a PremiseService Location is related to one-or-more End-DevicesService Delivery Points (reading top to bottom) and every End-DevicesService Delivery Points is related to exactly-one PremiseService Location (reading bottom to top).

~~**Optional Objects.** The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Premises, but does not require Response Method Aggregations and Response Methods. In this example, the relationship between Resource and Premise is transitive: a Resource is comprised of one-or-more Premises and each Premise is associated with zero-or-more Resources.~~

Optional Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the applicable



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - Requirements Specifications for Common ~~Scheduling~~ <u>Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

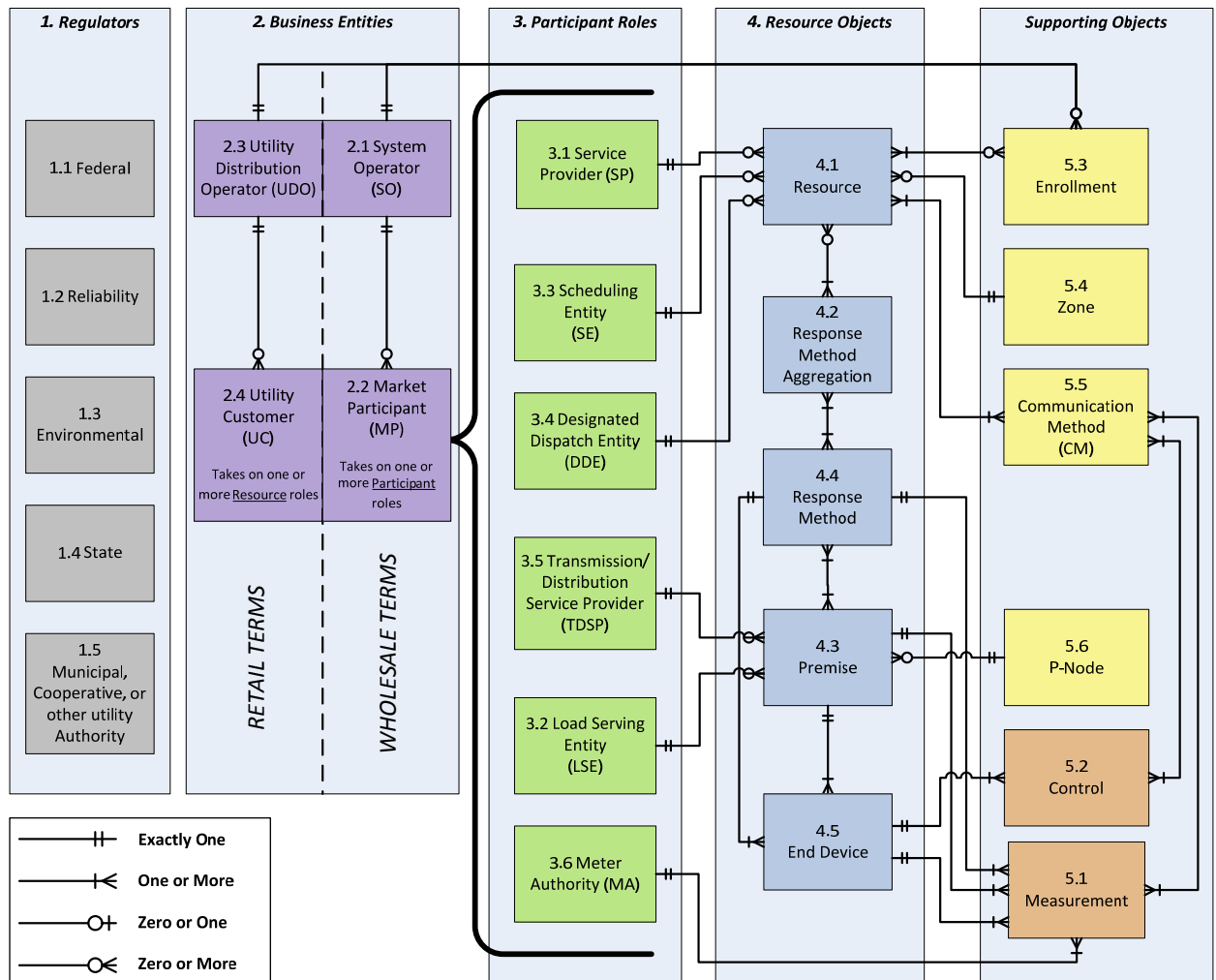
business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



For Quadrant:
Requesters:
Request No.:
Request Title:

Wholesale Electric Quadrant (WEQ)
Smart Grid Interoperability Panel
2010 WEQ Annual Plan Item 6(b)(ii)
Phase Two - Requirements Specifications for
Common Scheduling-Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04

Figure 1A. Entity-Relationship Model for Smart Grid Use Cases





For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - Requirements Specifications for Common <u>Scheduling-Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ Annual Plan Item 6(b)(ii) – “Develop Requirements and Use Cases for PAP 04 – Scheduling Model - Phase 2”

b. Description of Recommendation:

The Smart Grid Standards Subcommittee is recommending that changes be made to the Executive Summary and Introduction of the Business Practice Standards.

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the use of dates/times within a broad spectrum of energy transactions. The scope of this effort has been limited to Demand Response Programs in order to meet NIST’s deadline for this effort. No further action is required to satisfy the request of NIST.

Additionally, the recommendation addresses the direction provided by the WEQ Executive Committee on July 7, 2010, and the resolution passed by the Board of Directions on June 24, 2010.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd072210notes.doc
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - Requirements Specifications for Common ~~Scheduling~~ <u>Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd092310notes.doc
- October 7, 2010 Meeting Notes – To be posted
- October 14, 2010 Meeting Notes – To be posted

Additional links

- WEQ Executive Committee Motions July 7, 2010
http://www.naesb.org/pdf4/weq_ec070710motions.doc
- Board of Directors Resolution June 24, 2010
<http://www.naesb.org/pdf4/bd062410a4.doc>

C#	Company	Category	Cite
1	Trane - Ingersoll Rand (Sharon Dinges)	Editorial	017-A

Suggested Change

"End Device" / "End Devices" are used, throughout. This was removed as a defined term therefore, suggest considering removal of the capitalization and change it to "end device" / "end devices".



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

1. RECOMMENDED ACTION:

☐ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☐ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The Smart Grid Standards Subcommittee has determined that additional data ~~requirements~~ related to Priority Action Plan 04 do not need to be developed, as the standards developed as part of the Phase One effort satisfy the request of NIST and provide the necessary basis for other standards organizations developing standards at the request of NIST.

However, the WEQ Executive Committee on July 7, 2010, did “direct the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

Additionally the Board on June 24, 2010 passed a resolution whereby they determined “that the Smart Grid standards developed by the wholesale and retail electric executive committees should strive to be consistent in all areas excepting where there are substantive jurisdictional differences.”

Based on the direction provided, the Smart Grid Standards Subcommittee is submitting the following changes to the Executive Summary and Introductions section for WEQ-017.

Note: Conforming changes are also being recommended for the Retail 2010 Annual Plan Item 9(b)(ii) recommendation “Phase Two ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04.”

WEQ-000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 are included in the Recommendation Request Titled Phase Two ~~Requirements~~ Specifications for Common Electricity Product and Pricing Definitions – for NIST PAP03 to avoid redundancy between recommendations.

RECOMMENDED STANDARDS:

WEQ-017– Specifications for Common Schedule Communication Mechanism for Energy Transactions

Executive Summary

The following contains a set of ~~requirements~~ specifications relating to the use of date and time based data elements that are commonly used in transactions for Demand Response programs.

These Business Practice Standards are limited in scope to only those date/time based data elements that are utilized in Demand Response programs.

Introduction

Smart grid transactions communicate three classes of information. They communicate information about events that occur during power management and distribution. They invoke financial or business transactions that guide those events. They communicate schedules and interval information for the flows of energy.



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

The purpose of these Business Practice Standards is to define the ~~requirements~~specifications for standard communication of date, time, schedule, and interval by smart grid actors, with particular attention to DR.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for ~~clarification~~informational purposes.

These Business Practice Standards and mechanisms included herein are not intended to (i) require the use of any of these mechanisms, (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

Scope: The scope of the following is to define the range of information ~~required~~ to establish the breadth of the communication ~~requirements~~specification. There is no need for the cases to be exhaustive, merely illustrative of the full scope.

Business Practice Standards

017-1 Specification for Common Schedule Communication Mechanism for Energy Transactions

017-1.1 ACTORS LIST

There were no actors provided for the associated use cases.

017-2 Common Schedule Communication Mechanism for Energy Transactions Use Cases

017-2.1 USE CASE OVERVIEW

The use case modeling technique is used for capturing business and data requirements relative to electric product and price information.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for ~~clarification~~informational purposes.

These Business Practice Standards and mechanisms included herein are not intended to (i) require the use of any of these mechanisms, (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

017-2.1.1 Requirements Specifications for Date and Time Usage

Demand Response programs employ a combination of absolute dates/times, absolute periods (range) of dates/times, relative dates/times, recurring dates/times, absolute intervals and absolute durations in order to communicate temporal information pertaining to demand response transactions. Demand Response programs mustshould also accommodate time zone variations, leap years, leap seconds, and the use of daylight savings time. Any calendaring/schedule communication standard that is applicable to Demand Response programs mustshould be capable of supporting this range of requirements.

An incomplete, but representative, set of instances is provided below. The sample data included are non-normative representations; they are included for illustrative purpose to clarify the expectation of information that will be in the standard.

Type of Representation	Representative Instance	Sample Data
Absolute date/time	Effective start date	2009-11-01
	Effective start date and time	2009-11-01T01:00:00-Z
Absolute Periods (range)	Deployment Period	2009-11-01T01:00:00-Z/ 2009-11-02T24:00:00-Z
Relative date/time (time-point)	Reduction Deadline	30 minutes from a specified point in time
Recurring date/time	Market Closing	Every day at 12:00 noon
Absolute Interval	Meter Data Recording Interval	Every 5 minutes
	System Frequency	60 cycles per second
Absolute Duration	Outage Duration	2 days
	Minimum Run Time	4 hours

It is an additional requirements specification that all schedule and interval communications be able to express the precision required in the response. For example, an actor may be required to perform within five minutes, or within five milliseconds of the agreed upon time.



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

017-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a Service Location contains one or more Service Delivery Points. The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a Service Location is related to one-or-more Service Delivery Points (reading top to bottom) and every Service Delivery Points is related to exactly-one Service Location (reading bottom to top).

Optional Entities, Roles and Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all entities, roles and/or objects to function. Therefore, all entities, roles and objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

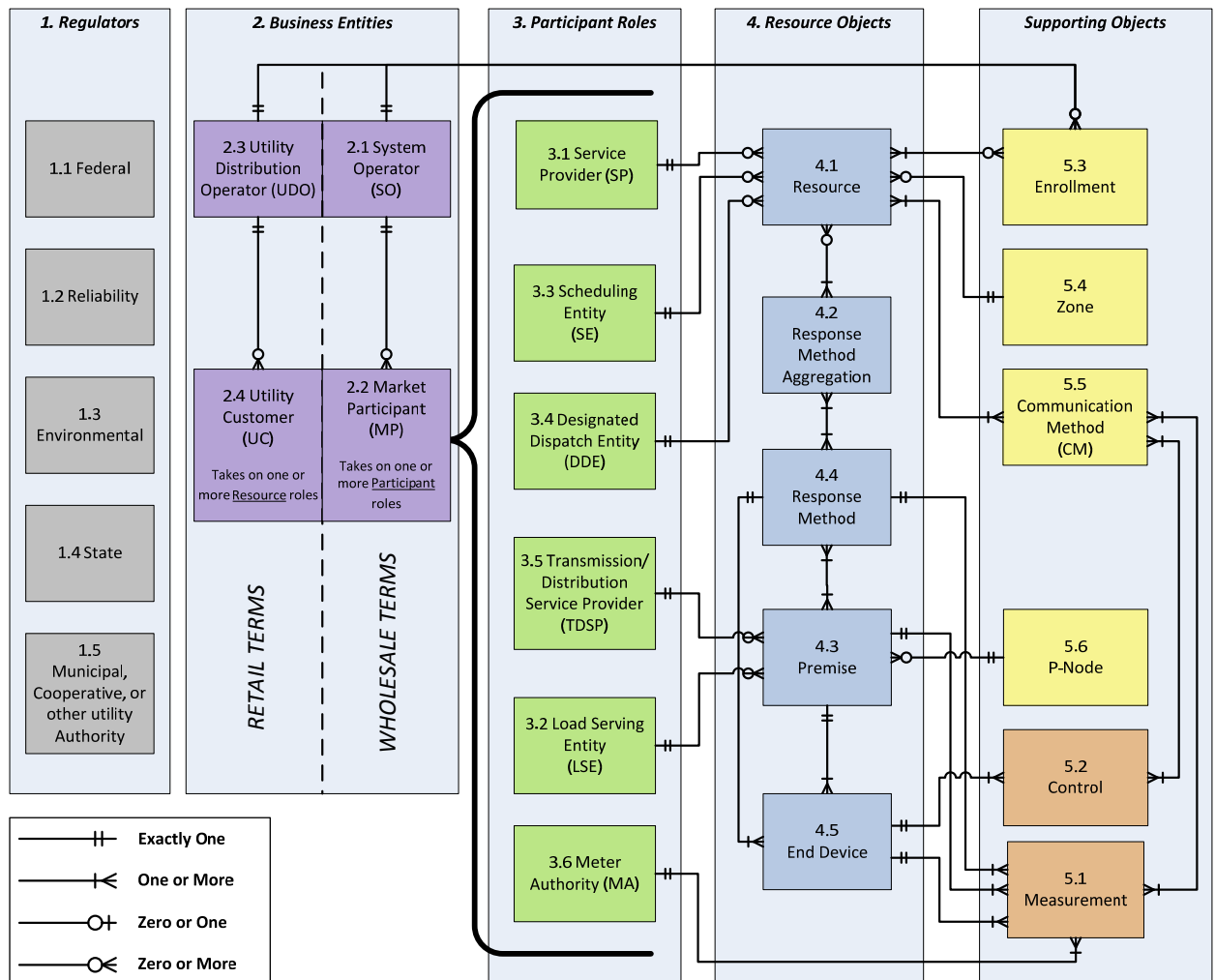
Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the typical applicable business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



For Quadrant:
Requesters:
Request No.:
Request Title:

Wholesale Electric Quadrant (WEQ)
Smart Grid Interoperability Panel
2010 WEQ Annual Plan Item 6(b)(ii)
Phase Two - **Requirements** Specifications for
Common Schedule Communication Mechanism
for Energy Transactions – for NIST PAP04

Figure 1A. **Sample** Entity-Relationship Model for Smart Grid Use Cases





For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ Annual Plan Item 6(b)(ii) – “Develop Requirements and Use Cases for PAP 04 – Scheduling Model - Phase 2”

b. Description of Recommendation:

The Smart Grid Standards Subcommittee is recommending that changes be made to the Executive Summary and Introduction of the Business Practice Standards.

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the use of dates/times within a broad spectrum of energy transactions. The scope of this effort has been limited to Demand Response Programs in order to meet NIST’s deadline for this effort. No further action is required to satisfy the request of NIST.

Additionally, the recommendation addresses the direction provided by the WEQ Executive Committee on July 7, 2010, and the resolution passed by the Board of Directions on June 24, 2010.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd072210notes.doc
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc



For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - ~~Requirements~~ Specifications for Common Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd092310notes.doc
- October 7, 2010 Meeting Notes – To be posted
- October 14, 2010 Meeting Notes – To be posted

Additional links

- WEQ Executive Committee Motions July 7, 2010
http://www.naesb.org/pdf4/weq_ec070710motions.doc
- Board of Directors Resolution June 24, 2010
<http://www.naesb.org/pdf4/bd062410a4.doc>



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for
Common Scheduling-Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04

1. RECOMMENDED ACTION:

☐ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☐ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The Smart Grid Standards Subcommittee has determined that additional data requirements-elements related to Priority Action Plan 04 do not need to be developed, as the standards developed as part of the Phase One effort satisfy the request of NIST and provide the necessary basis for other standards organizations developing standards at the request of NIST.

However, the WEQ Executive Committee on July 7, 2010, did “direct the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

Additionally the Board on June 24, 2010 passed a resolution whereby they determined “that the Smart Grid standards developed by the wholesale and retail electric executive committees should strive to be consistent in all areas excepting where there are substantive jurisdictional differences.”

Based on the direction provided, the Smart Grid Standards Subcommittee is submitting the following changes to the Executive Summary and Introductions section for WEQ-017.

Note: Conforming changes are also being recommended for the Retail 2010 Annual Plan Item 9(b)(ii) recommendation “Phase Two ~~Requirements~~ Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions – for NIST PAP04.”

WEQ-000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 are included in the Recommendation Request Titled Phase Two ~~Requirements~~ Specifications for Common Electricity Product and Pricing Definitions – for NIST PAP03 to avoid redundancy between recommendations.

RECOMMENDED STANDARDS:

WEQ-017– Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions

Executive Summary

Specifications for Common Scheduling Mechanism for Energy Transactions

The following contains a set of ~~requirements-specifications~~ relating to the use of date and time based data elements that are ~~commonly~~ used in transactions for Demand Response programs. This information is being provided to NIST in order to aid in the development of a standard representation for date/time based data elements derived from an XML representation of iCalendar⁺.

Although there are many other areas where date/time based data elements are used in energy industry transactions this These recommendation Business Practice Standards is are limited in

⁺ <http://tools.ietf.org/html/rfc5545>



For Quadrant: Wholesale Electric Quadrant (WEQ)
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Mechanism for Energy Transactions – for NIST
PAP04

scope to only those date/time based data elements that are utilized in Demand Response programs.

All data element names and implied or stated structures are not intended to specify specific message payloads or information object. The intent is to clearly specify the business information that may be necessary to be exchanged to make effective and reasonable business decisions, and NAESB understands that standards or implementations that do not directly use such schemas and element names may conform to these requirements through clearly defined mapping documentation.

Introduction

Specifications for Common Scheduling Mechanism for Energy Transactions

~~Smart grid interfaces must communicate between domains, that is, between different business and consumer entities with different values and approaches (ontologies). Such interfaces must be simplified to bare essentials, and be understandable by parties with different backgrounds and expectations.~~

~~To achieve cross-domain understandability, and thereby enhance interoperation, smart grid transactions must use semantic models from different areas developed by different standards groups. Each of these vocabularies is most fully defined in one area. We have agreed, within the NIST process, to use the vocabularies from the appropriate domain experts to compose the message that flow between domains on the smart grid.~~

~~In the following, we defined transactions as grid events that occur between domains, or whose effects and outcomes must be communicated between domains. This activity makes no assertions about any other events.~~

Smart grid transactions communicate three classes of information. They communicate information about events that ~~that~~ occur during power management and distribution. They invoke financial or business transactions that guide those events. They communicate schedules and interval information for the flows of energy. ~~Per agreement, all semantics relating to Power Management will use the CIM from IEC TC57. All financial and market semantics will be based upon the definitions found in ISO 20022² and in their most common expression, FIX. All elements relating to schedule and interval will be expressed in the notation of the IETF iCalendar (RFC 5545³) standard, as defined in the XML representation iCalendar developed by CalConnect. The purpose of this approach is to increase interoperation and understanding between domains.~~

~~The group primarily associated with the development of interoperable enterprise date, time, and interval standards for the IETF is the CalConnect. CalConnect and the Organization for the~~

² International Organization for Standardization ISO 20022 Universal financial industry message scheme

³ Internet Calendaring and Scheduling Core Object Specification (iCalendar)



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for Common Scheduling-Schedule Communication Mechanism for Energy Transactions – for NIST PAP04

~~Advancement of Structured Information Standards will work together to define the common communication of date time and interval to meet the needs of smart grid transaction communications as well as for building systems integration, enterprise interaction, and financial transactions. This commonality is anticipated to reduce barriers to interoperation and thereby to expand participation in DR and DER.~~

The purpose of ~~this action~~ these Business Practice Standards is to define the requirements specifications for standard communication of date, time, schedule, and interval by smart grid actors, with particular attention to DR. ~~These requirements will be submitted to the Organization for the Advancement of Structured Information Standards and CalConnect technical committee to define the applicable communication standards to support them.~~

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification-informational purposes.

These Business Practice Standards and mechanisms included herein are not intended to (i) require the use of any of these mechanisms, (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

Scope: The scope of the following is to define the range of information required to establish the breadth of the communication requirements specification. There is no need for the cases to be exhaustive, merely illustrative of the full scope.

Business Practice Standards

017-1 Specification for Common Scheduling-Schedule Communication Mechanism for Energy Transactions

017-1.1 ACTORS LIST

There were no actors provided for the associated use cases.

017-2 Common Scheduling-Schedule Communication Mechanism for Energy Transactions Use Cases

017-2.1 USE CASE OVERVIEW

The use case modeling technique is used for capturing business and date-data requirements relative to electric product and price information.



For Quadrant: Wholesale Electric Quadrant (WEQ)
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Mechanism for Energy Transactions – for NIST
PAP04

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for ~~clarification~~ informational purposes.

These Business Practice Standards and mechanisms included herein are not intended to (i) require the use of any of these mechanisms, (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

017-2.1.1

Requirements Specifications for Date and Time Usage

Demand Response programs employ a combination of absolute dates/times, absolute periods (range) of dates/times, relative dates/times, recurring dates/times, absolute intervals and absolute durations in order to communicate temporal information pertaining to demand response transactions. Demand Response programs ~~must~~ should also accommodate time zone variations, leap years, leap seconds, and the use of daylight savings time. Any calendaring/
~~Scheduling~~ schedule communication standard that is applicable to Demand Response programs ~~must~~ should be capable of supporting this range of requirements.

An incomplete, but representative, set of instances is provided below. The sample data included are non-normative representations; they are included for illustrative purposes to clarify the expectation of information that will be in the standard.

Type of Representation	Representative Instance	Sample Data
Absolute date/time	Effective start date	2009-11-01
	Effective start date and time	2009-11-01T01:00:00-Z
Absolute Periods (range)	Deployment Period	2009-11-01T01:00:00-Z/ 2009-11-02T24:00:00-Z
Relative date/time (time-point)	Reduction Deadline	30 minutes from a specified point in time
Recurring date/time	Market Closing	Every day at 12:00 noon

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(b)(ii)
Request Title: Phase Two - Requirements Specifications for
Common ~~Scheduling~~ Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04

Type of Representation	Representative Instance	Sample Data
Absolute Interval	Meter Data Recording Interval	Every 5 minutes
	System Frequency	60 cycles per second
Absolute Duration	Outage Duration	2 days
	Minimum Run Time	4 hours

It is an additional requirement-specification that all schedule and interval communications be able to express the precision required in the response. For example, an actor may be required to perform within five minutes, or within five milliseconds of the agreed upon time.



For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: Smart Grid Interoperability Panel
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Request Title: Phase Two - Requirements Specifications for
Common Scheduling-Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04

017-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a PremiseService Location contains one or more End-DevicesService Delivery Points. The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a PremiseService Location is related to one-or-more End-DevicesService Delivery Points (reading top to bottom) and every End-DevicesService Delivery Points is related to exactly-one PremiseService Location (reading bottom to top).

~~**Optional Objects.** The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Premises, but does not require Response Method Aggregations and Response Methods. In this example, the relationship between Resource and Premise is transitive: a Resource is comprised of one-or-more Premises and each Premise is associated with zero-or-more Resources.~~

Optional Entities, Roles and Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all entities, roles and/or objects to function. Therefore, all-entities, roles and objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the typical applicable

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



For Quadrant:	Wholesale Electric Quadrant (WEQ)
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Request Title:	Phase Two - Requirements Specifications for Common ~~Scheduling~~ <u>Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

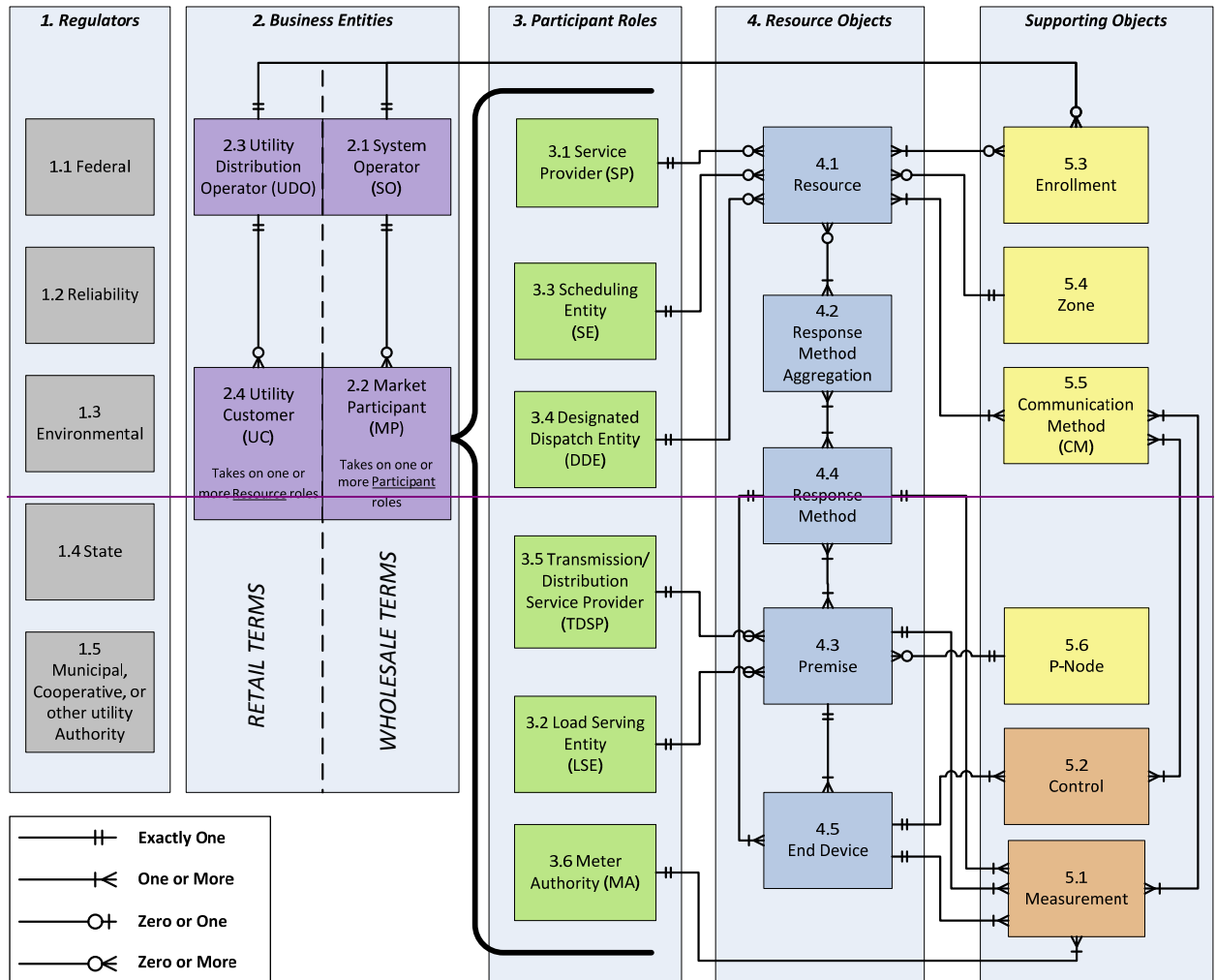
business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



For Quadrant:
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Wholesale Electric Quadrant (WEQ)
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Mechanism for Energy Transactions – for NIST
PAP04

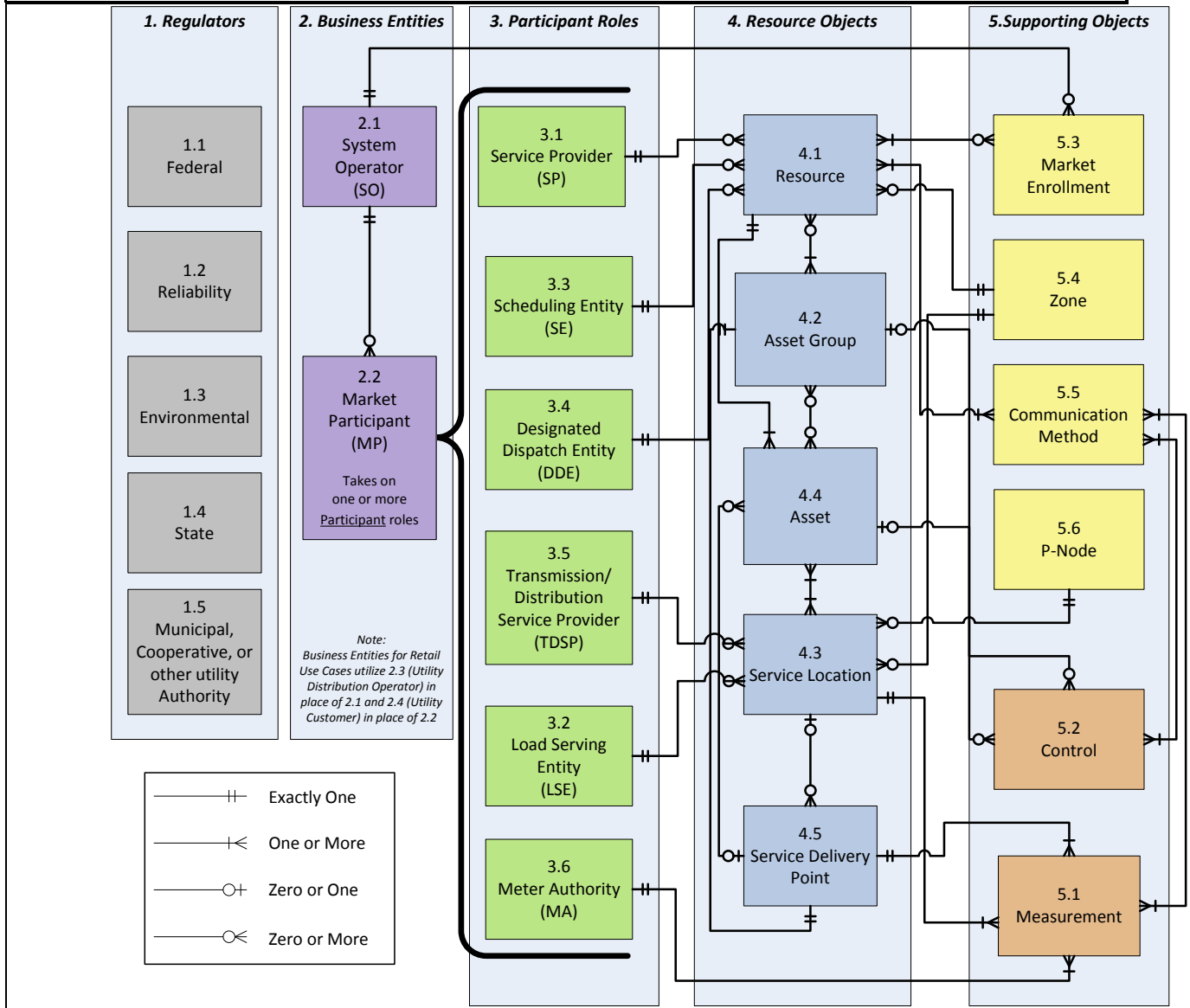
Figure 1A- Sample Entity-Relationship Model for Smart Grid Use Cases





For Quadrant:
Requesters:
Request No.:
Request Title:

Wholesale Electric Quadrant (WEQ)
Smart Grid Interoperability Panel
2010 WEQ Annual Plan Item 6(b)(ii)
Phase Two - Requirements Specifications for
Common Scheduling-Schedule Communication
Mechanism for Energy Transactions – for NIST
PAP04





For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	Smart Grid Interoperability Panel
Request No.:	2010 WEQ Annual Plan Item 6(b)(ii)
Request Title:	Phase Two - Requirements Specifications for Common <u>Scheduling-Schedule Communication</u> Mechanism for Energy Transactions – for NIST PAP04

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ Annual Plan Item 6(b)(ii) – “Develop Requirements and Use Cases for PAP 04 – Scheduling Model - Phase 2”

b. Description of Recommendation:

The Smart Grid Standards Subcommittee is recommending that changes be made to the Executive Summary and Introduction of the Business Practice Standards.

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the use of dates/times within a broad spectrum of energy transactions. The scope of this effort has been limited to Demand Response Programs in order to meet NIST’s deadline for this effort. No further action is required to satisfy the request of NIST.

Additionally, the recommendation addresses the direction provided by the WEQ Executive Committee on July 7, 2010, and the resolution passed by the Board of Directions on June 24, 2010.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
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- July 22, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd072210notes.doc
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
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Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



For Quadrant:	Wholesale Electric Quadrant (WEQ)
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Additional links

- WEQ Executive Committee Motions July 7, 2010
http://www.naesb.org/pdf4/weq_ec070710motions.doc
- Board of Directors Resolution June 24, 2010
<http://www.naesb.org/pdf4/bd062410a4.doc>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY: The Master Data Requirements List contains the list of data elements used in the use cases that were developed for PAP 03 and PAP 09 in the phase one effort.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

RECOMMENDED STANDARDS:

WEQ-020.1 Smart Grid Standards Data Requirements Table

Introduction

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to replace applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

WEQ-020.1 Alphabetical Listing by Data Element Name

** Listing by Category ID and Category Element ID begins on page 45*

<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>2-Location</u>	<u>2</u>	<u>10</u>	<u>Address1</u>	<u>Address line 1</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>11</u>	<u>Address2</u>	<u>Address line 2</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>16</u>	<u>Ancillary Service Award - Cleared Price</u>	<u>Awarded Price</u>	<u>The market clearing price for the cleared ancillary service product MW.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>	<u>End Time of the ancillary service Award</u>	<u>A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>14</u>	<u>Ancillary Service Award - Interval Start Time</u>	<u>Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval</u>	<u>The start time of a specific ancillary service schedule interval</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>15</u>	<u>Ancillary Service Award - Interval Value</u>	<u>The awarded Value for the Time Interval within the ancillary service Award</u>	<u>The value associated with a specific ancillary service schedule interval</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>12</u>	<u>Ancillary Service Award - Start Time</u>	<u>Start Time of the ancillary service Award</u>	<u>A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>0</u>	<u>Ancillary Service Instruction ID</u>	-	<u>Unique identifier assigned to each ancillary service instruction.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>20</u>	<u>Ancillary Service Product Qualification Type</u>	<u>Type of Qualification</u>	<u>Examples include initial, requalification, etc.</u>	-	-	<u>Y</u>	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	-	-	-	Y	-	-	Y
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource	-	-	-	Y	-	-	-
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified	-	-	-	Y	-	-	-
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID	-	Unique identifier assigned to each ancillary service schedule.	-	-	Y	-	-	-
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies	-	-	-	Y	-	-	-
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.	-	-	Y	-	-	Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets	-	-	-	Y	-	-	Y
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset	-	-	-	Y	-	-	Y
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset	-	-	-	-	-	-	Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>6-Device and Qualification</u>	<u>6</u>	<u>80</u>	<u>Asset Manufacturer</u>	<u>Manufacturer of the Asset</u>	-	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>81</u>	<u>Asset Model</u>	<u>Model identifier of the Asset, assigned by the Manufacturer</u>	-	-	-	-	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>51</u>	<u>Asset Multiplier</u>	<u>Number of identical Assets within the Service Location</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>13</u>	<u>Asset Name</u>	<u>The name of the asset</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>90</u>	<u>Asset Operator ID</u>	<u>The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.</u>	-	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>91</u>	<u>Asset Operator Name</u>	<u>The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.</u>	-	-	-	-	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).	-	-	-	-	-	-	Y
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).	-	-	-	-	-	-	Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.	-	-	-	-	-	Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer	-	-	-	-	-	-	Y
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch	-	-	-	Y	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.	-	-	Y	-	-	-
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.	-	-	Y	-	-	Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline	-	-	-	Y	-	-	Y
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load	-	-	-	Y	-	-	-
9-Energy Market	9	21	Breaker Status	Status of the Breaker for the Resource	-	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	-	-	-	Y	-	-	-
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location	-	-	-	Y	-	-	-
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid	-	-	-	Y	-	-	-
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market	-	-	-	Y	-	-	-
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.	-	-	Y	-	-	-
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.	-	-	Y	-	-	-
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.	-	-	Y	-	-	-
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>11-Capacity Market</u>	<u>11</u>	<u>10</u>	<u>Capacity Type</u>	<u>Type of Capacity</u>	<u>Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>11</u>	<u>Capacity Type description</u>	<u>Description of the Type of Capacity</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>12</u>	<u>City</u>	<u>City</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>50</u>	<u>Competitive Choice Area</u>	<u>Flag set if the Service Location is in an area with Competitive Choice</u>	-	-	-	<u>Y</u>	-	-	-
<u>4-Grid Connection</u>	<u>4</u>	<u>12</u>	<u>Connect Voltage</u>	<u>Voltage level</u>	<u>Voltage at connection.</u>	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>72</u>	<u>Connection Address</u>	<u>Address associated with the Connection Type</u>	<u>Example: Address of ICCP Connection, IP address</u>	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>71</u>	<u>Connection Type</u>	<u>Additional type of connection associated with the Service Delivery Point</u>	<u>Example: ICCP Connection, IP address</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>72</u>	<u>Constraint Interval</u>	<u>The timeframe over which the constraint type applies.</u>	<u>Typically daily, hourly, weekly, date</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.	-	-	Y	-	-	Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval	-	-	-	Y	-	-	Y
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.	-	-	Y	-	-	-
3-Contact	3	991	Contact Comments	Comments associated with the Contact	-	-	-	Y	-	-	-
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to be used.	-	-	Y	-	-	-
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.	-	-	Y	-	-	-



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						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>3-Contact</u>	<u>3</u>	<u>23</u>	<u>Contact Middle Name</u>	<u>Middle Name of the Contact</u>	-	-	-	<u>Y</u>	-	-	-
<u>3-Contact</u>	<u>3</u>	<u>11</u>	<u>Contact Priority</u>	<u>Order in which this Contact should be selected</u>	<u>This is used when multiple contacts are defined.</u>	-	-	<u>Y</u>	-	-	-
<u>3-Contact</u>	<u>3</u>	<u>10</u>	<u>Contact Type</u>	<u>Interest code associated with a Contact</u>	<u>This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.</u>	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>15</u>	<u>Country</u>	<u>Country</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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<u>12-Event and Performance</u>	<u>12</u>	<u>51</u>	<u>Criticality Level</u>	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility Defined	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>291</u>	<u>CT Ratio</u>	Ratio of the Current Transformer	-	-	-	<u>Y</u>	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>15</u>	<u>Currency</u>	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)	-	<u>Y</u>	-	-	<u>Y</u>	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>228</u>	<u>Date of Last Meter Test</u>	Date of Last Test of the Meter	-	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>31</u>	<u>Day Ahead Flag</u>	<u>Flag set if the Resource will be participating in the Day-Ahead market</u>	-	-	-	<u>Y</u>	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>38</u>	<u>Delivery Interval</u>	<u>The duration over which the product is available for physical consumption</u>	-	<u>Y</u>	-	-	<u>Y</u>	-	<u>Y</u>
<u>14-Price and Product</u>	<u>14</u>	<u>37</u>	<u>Delivery Time</u>	<u>Time at which the product is available for physical consumption</u>	-	<u>Y</u>	-	-	<u>Y</u>	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>14</u>	<u>Demand Response Controlling Entity</u>	-	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>13</u>	<u>Demand Response Provider</u>	-	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>16</u>	<u>Deployment MW</u>	<u>Absolute or relative Deployment quantity</u>	<u>Expressed as an absolute or relative (%) MW value.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>11</u>	<u>Deployment Type</u>	<u>Type of Deployment</u>	<u>Examples are: Advanced (Normal), Immediate, Audit/Test</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>80</u>	<u>Designated Dispatch Entity ID</u>	<u>Identifier assigned to the Designated Dispatch Entity</u>	<u>The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.</u>	-	-	<u>Y</u>	-	-	-



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						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>81</u>	<u>Designated Dispatch Entity Name</u>	<u>Name of the Designated Dispatch Entity</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>70</u>	<u>Device Class</u>	-	Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event. 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>991</u>	<u>Distributed Generator Comments</u>	<u>Comments associated with the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-



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<u>6-Device and Qualification</u>	<u>6</u>	<u>32</u>	<u>Distributed Generator Fuel Type</u>	<u>Type of Fuel consumed by the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>34</u>	<u>Distributed Generator Manufacturer</u>	<u>Manufacturer of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>39</u>	<u>Distributed Generator Name</u>	<u>Name of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>33</u>	<u>Distributed Generator Permit Type</u>	<u>Type of environmental authorization required to operate the Distributed Generator</u>	<u>The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>30</u>	<u>Distributed Generator Type</u>	<u>Type of Distributed Generator</u>	<u>This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.</u>	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>24</u>	<u>DR Bus Load MW</u>	<u>Instantaneous Bus Load of a Demand Resource providing Ancillary Services</u>	<u>Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR</u>	-	-	<u>Y</u>	-	-	-



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<u>13-Direct Load Control</u>	<u>13</u>	<u>11</u>	<u>DR Control Command: Direct Load Control Type</u>	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset	-	-	-	-	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>12</u>	<u>DR Control Command: Direct Load Control Value</u>	Value associated with the Direct Load Control Type.	-	-	-	-	-	-	<u>Y</u>
<u>1-General Asset / Resource</u>	<u>1</u>	<u>22</u>	<u>DR Resource Group ID</u>	Grouping of Resources that can respond to the same DR signal	-	-	-	-	-	-	<u>Y</u>
<u>3-Contact</u>	<u>3</u>	<u>12</u>	<u>DUNS Number</u>	DUNS business number	-	-	-	<u>Y</u>	-	-	-
<u>13-Direct Load Control</u>	<u>13</u>	<u>13</u>	<u>Duty Cycle</u>	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value of 0xFF indicates the field	-	-	-	-	-	-	<u>Y</u>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				is not used." (from SEP2.0)							
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.	-	-	Y	-	-	Y
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	-	-	-	Y	-	-	Y
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	-	-	-	Y	-	-	Y
2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	-	-	-	Y	-	-	Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline	-	-	-	Y	-	-	Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>12-Event and Performance</u>	<u>12</u>	<u>23</u>	<u>Energy Baseline Value</u>	<u>Calculated Energy Baseline</u>	<u>A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>9-Energy Market</u>	<u>9</u>	<u>13</u>	<u>Energy Schedule - Cleared MW Interval Value</u>	<u>The Energy Value of cleared MW for the Time Interval within the Energy Schedule</u>	<u>The offered energy MW that have cleared the market.</u>	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>14</u>	<u>Energy Schedule - Cleared Price</u>	<u>Awarded Price</u>	<u>The market clearing price for the cleared energy MW.</u>	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>11</u>	<u>Energy Schedule - End Time</u>	<u>End Time of the Energy Schedule</u>	<u>A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).</u>	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>12</u>	<u>Energy Schedule - Interval Start Time</u>	<u>Start Time of the Energy Interval within the Energy Schedule</u>	<u>The start time of a specific energy schedule interval</u>	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>10</u>	<u>Energy Schedule - Start Time</u>	<u>Start Time of the Energy Schedule</u>	<u>A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>25</u>	<u>Enrollment End Date</u>	<u>Date of Termination of Enrollment</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>22</u>	<u>Enrollment Status</u>	<u>Status of the Enrollment for the Facility or Resource</u>	<u>Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>991</u>	<u>Event & Performance comments</u>	<u>Comments associated with Event and Performance data</u>	-	-	-	<u>Y</u>	-	-	-
<u>13-Direct Load Control</u>	<u>13</u>	<u>14</u>	<u>Event Control</u>	<u>Event Control options for randomized start or end times: 1= Randomize Start time, 0=Randomized Start not Applied 1= Randomize End time, 0=Randomized End not Applied. (from SEP2.0)</u>	-	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>12</u>	<u>Event Day</u>	<u>Operating Date of Start of Event</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>13</u>	<u>Event Description</u>	<u>Description of the Event</u>	-	-	-	<u>Y</u>	-	-	-



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For Quadrant: Wholesale Electric Quadrant
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Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>18</u>	<u>Event End Time</u>	<u>Time of End of deployment period</u>	<u>Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>10</u>	<u>Event ID</u>	<u>Identifier assigned to the Event</u>	<u>An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>19</u>	<u>Event Modification Number</u>	<u>A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>112</u>	<u>Event Modification Reason Code</u>	<u>The reason the event is being cancelled or modified.</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>14</u>	<u>Event Start Time</u>	<u>Time of Start of deployment period for Event</u>	<u>The Deployment Period is the period of time from the Deployment to Release/Recall.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>12-Event and Performance</u>	<u>12</u>	<u>17</u>	<u>Event Status</u>	<u>Status of the Event</u>	<u>Examples include: initiated, completed, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>15</u>	<u>Exception Conditions</u>	<u>This is used to report that the load controller may not behave as commanded because of a variety of conditions including:</u> • Faults in device • Customer override.	-	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>991</u>	<u>External Entity Comments</u>	<u>Comments associated with the External Entity</u>	-	-	-	<u>Y</u>	-	-	-
<u>3-Contact</u>	<u>3</u>	<u>21</u>	<u>First Name</u>	<u>First Name of the Contact</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>41</u>	<u>GenBillingID</u>	<u>Billing Identifier assigned to the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>40</u>	<u>GenEMSID</u>	<u>Alias or point Identifier assigned to the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>991</u>	<u>General Resource Comments</u>	<u>General comments associated with the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>20</u>	<u>GPS Coordinates</u>	<u>Latitude and longitude</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>4-Grid Connection</u>	<u>4</u>	<u>991</u>	<u>Grid Connection Comments</u>	<u>Comments associated with the Grid Connection of the Resource</u>	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>11</u>	<u>Have Engineering Diagram</u>	<u>Flag set if One-Line Diagrams have been submitted</u>	-	-	-	<u>Y</u>	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>13</u>	<u>Identifier Source (product)</u>	<u>The Identifier Source references the product identification scheme for the Product Identifier.</u>	-	<u>Y</u>	-	-	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>37</u>	<u>In-Service Date</u>	<u>Date the Distributed Generator became operational</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>36</u>	<u>Installation Date of Distributed Generator</u>	<u>Date of Installation of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>0</u>	<u>Instruction ID</u>	-	<u>Unique identifier assigned to each instruction.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>41</u>	<u>Interconnection Agreement Type</u>	<u>Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>42</u>	<u>Interconnection Limits</u>	<u>Limits associated with the Interconnection of the Distributed Generator or Service Location</u>	-	-	-	<u>Y</u>	-	-	-
<u>3-Contact</u>	<u>3</u>	<u>22</u>	<u>Last Name</u>	<u>Last Name of the Contact</u>	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>30</u>	<u>Lead Time</u>	<u>Time between the advanced notification and deployment</u>	<u>Notification is the transmittal of a Deployment message.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>16</u>	<u>Load Control State</u>	<u>The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.</u>	-	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>113</u>	<u>Load Level Value</u>	<u>Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).</u>	-	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>52</u>	<u>Load Resource Control Device</u>	<u>Type of Control Device at a Service Location or deployed by a Response Method</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>30</u>	<u>Load Serving Entity ID</u>	<u>Identifier assigned to the LSE</u>	<u>The Load-Serving Entity serves end users and sells electric energy to end users.</u>	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE	-	-	-	Y	-	-	-
2-Location	2	991	Location Comments	Comments associated with the Service Location	-	-	-	Y	-	-	-
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor	-	-	-	Y	-	-	-
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.	-	-	Y	-	-	-
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator	-	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market	-	-	-	Y	-	-	-
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).	-	-	Y	-	-	Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>6-Device and Qualification</u>	<u>6</u>	<u>28</u>	<u>Maximum Error</u>	<u>Error of the Meter, including end-to-end Maximum Error</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>2293</u>	<u>Measurement Interval</u>	<u>Interval of time between Measurement readings</u>	<u>This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.</u>	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>32</u>	<u>Measurement Value (CIM)</u>	<u>Value of the interval reading</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>31</u>	<u>Measurement Value Timestamp (CIM)</u>	<u>The time when the value was last updated</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>34</u>	<u>Measurement Value Type</u>	<u>The type of measurement value.</u>	<u>The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>26</u>	<u>Meter Accuracy Class</u>	<u>Accuracy Class of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>2296</u>	<u>Meter Asset Comments</u>	<u>Comments associated with the Meter Asset</u>	-	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>60</u>	<u>Meter Authority ID</u>	<u>Identifier assigned to the Metering Authority</u>	<u>The Metering Authority provides electric usage data necessary to determine the performance of a Resource.</u>	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>61</u>	<u>Meter Authority Name</u>	<u>Name of the Metering Authority</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>10</u>	<u>Meter Configuration</u>	<u>Configuration of the Meter at the Facility</u>	<u>The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>224</u>	<u>Meter Correction Factors</u>	<u>Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>227</u>	<u>Meter Device QA Plan</u>	<u>Quality Assurance plan for maintenance and testing of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>20</u>	<u>Meter ID</u>	<u>Identifier assigned to the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>221</u>	<u>Meter Installation Date</u>	<u>Date of Installation of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>50</u>	<u>Meter Installation Provider ID</u>	<u>Identifier assigned to the Meter Installation Provider</u>	-	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the competitive meter entity for the meter device.	-	-	Y	-	-	-
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	23	Meter Model	Model of the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units	-	-	-	Y	-	-	-
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	29	Meter Phase	Specific Phase information	-	-	-	Y	-	-	-
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator	-	-	-	Y	-	-	-
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter	-	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>6-Device and Qualification</u>	<u>6</u>	<u>225</u>	<u>Meter Test Criteria</u>	<u>Test Criteria required to qualify the installation of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>226</u>	<u>Meter Test Frequency</u>	<u>Frequency of Tests of the Meter</u>	<u>Expressed in months.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229</u> <u>1</u>	<u>Meter Test Results</u>	<u>Results of Tests of the Meter</u>	<u>These are specific to the meter type.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>21</u>	<u>Meter Type</u>	<u>Type of Meter installed at the Facility</u>	<u>Examples: RTU, CT/PT, etc.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>21</u>	<u>Min Gen MW</u>	<u>Minimum MW available for dispatch</u>	<u>When required as part of an enrollment request, this value acts as a default.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>22</u>	<u>MinGenCost</u>	<u>The cost per hour for each Min Gen MW value.</u>	<u>The cost per hour for each MinGenMW value.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>40</u>	<u>Minimum Payment Nomination</u>	<u>Strike price for the economic dispatch of the energy component of the capacity program</u>	<u>Expressed in Price/MW.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>31</u>	<u>Nameplate Rating</u>	<u>Manufacturer's output rating of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>20</u>	<u>NERC CIP Security - Availability</u>	<u>CIP Security Classification for Availability</u>	-	-	-	<u>Y</u>	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>0-Common Message Parameters</u>	<u>0</u>	<u>21</u>	<u>NERC CIP Security - Confidentiality</u>	<u>CIP Security Classification for Confidentiality</u>	-	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>	<u>CIP Security Classification for Integrity</u>	-	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>60</u>	<u>NERC Control Area</u>	<u>The NERC control area of the resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>23</u>	<u>Nominal Capacity</u>	<u>Nominated load</u>	<u>Expressed as a decimal value.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>44</u>	<u>Normal Breaker Status</u>	<u>Status of the Breaker for the Service Location under Normal operating conditions</u>	<u>Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>38</u>	<u>Normal Load Rating</u>	<u>Average load picked up by the Distributed Generator during the applicable performance hours</u>	-	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>111</u>	<u>Notification Acknowledgement</u>	<u>This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>8-Offer Parameters</u>	<u>8</u>	<u>38</u>	<u>Offer Commit Status</u>	<u>Commitment status of offer</u>	<u>Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>39</u>	<u>Offer Dispatch Status</u>	<u>Dispatch Status of Offer</u>	<u>Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule.</u> <u>May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria:</u> <u>• All events in a program indefinitely (unspecified time period)</u> <u>• Specific DR Event</u> <u>• All events in a specific time period.</u> <u>• Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>30</u>	<u>Offer Dispatch Type</u>	<u>Type of Offer</u>	<u>Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>36</u>	<u>Offer Expiration Date</u>	<u>Date of Expiration of the Offer</u>	<u>This applies to DAM only.</u>	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>8-Offer Parameters</u>	<u>8</u>	<u>12</u>	<u>Offer Limit Interval</u>	<u>Offer Limit Interval</u>	<u>The period over which the offer limit applies, i.e., hour, day, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>11</u>	<u>Offer Limit Type</u>	<u>Type of Offer Limit</u>	<u>The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>10</u>	<u>Offer Limit Value</u>	<u>Offer Limit Value</u>	<u>Expressed in MW or hours. Multiple Limit Types are applicable.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>331</u>	<u>Offer Price Curve Slope</u>	<u>Flag to smoothe offer segments from step function to slope</u>	-	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>33</u>	<u>Offer Segment Hour</u>	<u>Hour of Segment of the Offer</u>	<u>NOTE: When required as part of an enrollment request, this value becomes the default.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>31</u>	<u>Offer Segment MW</u>	<u>Energy of Segment of the Offer</u>	<u>The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>32</u>	<u>Offer Segment Price</u>	<u>Price of Segment of the Offer</u>	<u>NOTE: When required as part of an enrollment request, this value becomes the default.</u>	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>15</u>	<u>Operator Comment</u>	<u>Additional Event information provided by the Operator</u>	-	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>23</u>	<u>Output MVAR</u>	<u>Reactive Power Output of the Distributed Generator</u>	<u>Expressed in Mvar</u>	-	-	<u>Y</u>	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW	-	-	Y	-	-	-
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable	-	Y	-	-	-	-	-
6-Device and Qualification	6	11	Parent Meter id	Flag set if the Meter is a Master or Parent Meter	-	-	-	Y	-	-	-
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak	-	-	-	Y	-	-	-
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.	-	-	Y	-	-	-
11-Capacity Market	11	20	Peak Value	Measurement of Peak	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.	-	-	Y	-	-	-
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	-	-	-	Y	-	-	-
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource	-	-	-	Y	-	-	Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.	-	-	Y	-	-	Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	-	-	-	Y	-	-	Y
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation	-	-	-	Y	-	-	-
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y	-	-	-	-	-
14-Price and Product	14	34	Price Component Value	The value of the price component.	-	Y	-	-	-	-	-
14-Price and Product	14	35	Price Location	The location at which the price is applicable.	-	Y	-	-	-	-	-
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y	-	-	-	-	-
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.	-	-	Y	-	-	-
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price	-	Y	-	-	Y	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>14-Price and Product</u>	<u>14</u>	<u>10</u>	<u>Product Name</u>	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	<u>Y</u>	-	-	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>31</u>	<u>Product Price</u>	The sum of all Price Component Values for a given product (Total Price).		<u>Y</u>	-	-	-	-	<u>Y</u>
<u>14-Price and Product</u>	<u>14</u>	<u>32</u>	<u>Product Price Factor</u>	Terms of use attribute of Product Price	Examples: Price absolute, Price relative, Price multiplier	<u>Y</u>	-	-	<u>Y</u>	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>12</u>	<u>Product Sub-type</u>	Used to further define product types		<u>Y</u>	-	-	<u>Y</u>	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>11</u>	<u>Product Type</u>	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	<u>Y</u>	-	-	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>10</u>	<u>Program ID</u>	Program Identifier	The identifier of the program	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>11</u>	<u>Program Name</u>	Name of the Program		-	-	<u>Y</u>	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>222</u>	<u>PT Ratio</u>	Ratio of the Potential Transformer		-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>24</u>	<u>Qualified Capacity</u>	Nominal ICAP derated for performance	Derated based on past performance.	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>25</u>	<u>Ramp Rate Direction</u>	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.	-	-	<u>Y</u>	-	-	<u>Y</u>



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Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>8-Offer Parameters</u>	<u>8</u>	<u>24</u>	<u>Ramp Rate Segment</u>	<u>Energy of Segment of the Ramp Rate</u>	<u>The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>23</u>	<u>Ramp Rate Type</u>	<u>Type of Ramp Rate</u>	<u>Examples are: Normal, Emergency, Regulation.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>26</u>	<u>Ramp Rate Value</u>	<u>Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction</u>	<u>The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>32</u>	<u>Real Time Flag</u>	<u>Flag set if the Resource will be participating in the Real-Time market</u>	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>32</u>	<u>Regulation Base Point</u>	<u>Per-interval Regulation dispatch instruction</u>	<u>Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.</u>	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>13</u>	<u>Rejection Code Type</u>	<u>Type of rejection message</u>	<u>Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.</u>	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>14</u>	<u>Rejection Code Value</u>	<u>Code referring to the reason for a rejection message</u>	<u>Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.</u>	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>30</u>	<u>Reporting Interval</u>	<u>Interval size required for Reporting</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>24</u>	<u>Requalification Requirement</u>	<u>Flag set if Requalification is Required</u>	-	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>26</u>	<u>Requalification Test Date</u>	<u>Date the Resource will retest its ability to deliver a product or service</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>31</u>	<u>Reserve Pickup Flag</u>	<u>Flag set if this is a Reserve Pickup schedule</u>	<u>Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).</u>	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>	<u>A Resource may be an individual asset or a group of assets that represent a dispatchable entity.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>1-General Asset / Resource</u>	<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>24</u>	<u>Resource Qualification Test Date</u>	<u>Date the Resource demonstrated its ability to deliver a product or service</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>23</u>	<u>Resource Type</u>	<u>Type of Resource</u>	<u>Examples are: load reduction (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program</u>	<u>7</u>	<u>41</u>	<u>Response Method ID</u>	<u>Identifier assigned to the Response Method</u>	-	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>Enrollment</u>											
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>42</u>	<u>Response Method Name</u>	<u>Name of the Response Method</u>	-	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>40</u>	<u>Response Method Type</u>	<u>Type of Response Method</u>	<u>Expressed as a response type code</u>	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>43</u>	<u>Response Method Value</u>	<u>Value of the Response Method</u>	<u>The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.</u>	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>34</u>	<u>Response Time</u>	<u>The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load.</u>	-	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>33</u>	<u>Response Value</u>	<u>Response</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>44</u>	<u>Retail Rate</u>	<u>Retail Rate</u>	<u>Expressed as Price per kWh</u>	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>41</u>	<u>Retail Rate Code</u>	<u>Code representing the Retail Rate for the Service Location</u>	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>43</u>	<u>Retail Rate Description</u>	<u>Description of the Retail Rate</u>	<u>This can also be used for comments associated with the Retail Rate.</u>	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>40</u>	<u>Retail Rate ID</u>	<u>Identifier assigned to the Retail Rate</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>42</u>	<u>Retail Rate Name</u>	<u>Name of the Retail Rate for the Service Location</u>	-	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>42</u>	<u>Schedule Description</u>	<u>Description of the Offer</u>	-	-	-	<u>Y</u>	-	-	-
<u>9-Energy Market</u>	<u>9</u>	<u>15</u>	<u>Schedule ID</u>	-	<u>Unique identifier assigned to each schedule.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>41</u>	<u>Schedule Name</u>	<u>Name or tag of the Offer</u>	-	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>43</u>	<u>Schedule Status</u>	<u>Status of the Offer</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>70</u>	<u>Scheduling Entity ID</u>	<u>Identifier assigned to the Scheduling Entity</u>	<u>A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.</u>	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>71</u>	<u>Scheduling Entity Name</u>	<u>Name of the Scheduling Entity</u>	-	-	-	<u>Y</u>	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider or the Resource.	-	-	Y	-	-	-
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.	-	-	Y	-	-	Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.	-	-	Y	-	-	Y
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider	-	-	-	Y	-	-	-
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.	-	-	Y	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>12-Event and Performance</u>	<u>12</u>	<u>50</u>	<u>Simple Signal Levels</u>	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL	-	-	-	-	-	-	<u>Y</u>
<u>14-Price and Product</u>	<u>14</u>	<u>40</u>	<u>Source Location Identifier</u>	The identifier of the source location of the product for which the price applies	-	<u>Y</u>	-	-	<u>Y</u>	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>41</u>	<u>Source Location Identifier Type</u>	The type of source location of the product for which the price applies	-	<u>Y</u>	-	-	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>34</u>	<u>Startup Cost</u>	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>37</u>	<u>Startup Cost Type</u>	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>13</u>	<u>State/Province</u>	State or Province two-letter code	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>13-Direct Load Control</u>	<u>13</u>	<u>10</u>	<u>Status Check</u>	A signal to require the DR resource status to be sent back. (Only applicable to Direct Load Control)	-	-	-	-	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>35</u>	<u>Strike Price</u>	Threshold Price	Expressed as a decimal value of price/MW.	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>332</u>	<u>Strike Price Type</u>	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>10</u>	<u>Submittal Date</u>	Timestamp for the sender's use	-	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>11</u>	<u>Submitted By</u>	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>12</u>	<u>Submitted Error</u>	ID of submission error detected	Common data element to capture any errors or exceptions during submission	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>21</u>	<u>Synchronization Test Date</u>	Target Date of Test of Synchronization to the grid	-	-	-	<u>Y</u>	-	-	-
<u>3-Contact</u>	<u>3</u>	<u>13</u>	<u>Third Party</u>	Flag set if the Contact is a third-party entity	-	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>22</u>	<u>Time Zone Name</u>	Name of the Time Zone in which the Service Location is located	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>3-Contact</u>	<u>3</u>	<u>20</u>	<u>Title</u>	<u>Title of the Contact</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>22</u>	<u>Transmission / Distribution Service Provider Account Number</u>	<u>Transmission / Distribution Service Provider's account number for the Resource</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>20</u>	<u>Transmission / Distribution Service Provider ID</u>	<u>Identifier assigned to the Transmission / Distribution Service Provider</u>	<u>The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.</u>	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>21</u>	<u>Transmission / Distribution Service Provider Name</u>	<u>Name of the Transmission / Distribution Service Provider</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>51</u>	<u>UFR Settings</u>	<u>Setting of the Under-Frequency Relay</u>	-	-	-	<u>Y</u>	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>14</u>	<u>Unit of Measure</u>	<u>Attribute of Product Identifier</u>	-	<u>Y</u>	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>52</u>	<u>Usage Information</u>	<u>Information about the near real time electricity usage of the DR Resource.</u>	-	-	-	-	-	-	<u>Y</u>



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>6-Device and Qualification</u>	<u>6</u>	<u>229</u> <u>2</u>	<u>VEE Compliance</u>	<u>Compliance standard for Validation, Editing, and Estimation</u>	<u>Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp.</u>	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>44</u>	<u>Verified Capability</u>	<u>Audited Capability</u>	<u>Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.</u>	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>45</u>	<u>Verified Capability Factor</u>	<u>Ratio of the Verified Capability to the qualified capability</u>	<u>Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.</u>	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>21</u>	<u>Weather Station</u>	<u>Weather Station code associated with the Service Location</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>46</u>	<u>Wholesale Delivery Point Status</u>	<u>Flag set if the Service Location is metered at the Wholesale level</u>	-	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>14</u>	<u>Zip/Postal Code</u>	<u>Zip or Postal Code</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is</u>	<u>A Zone is a physical or electrical region.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
				<u>located</u>							
<u>2-Location</u>	<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the Zone in which the Service Location is located</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>	<u>Examples: Capacity, Dispatch, Price, Load, etc.</u>	-	-	<u>Y</u>	-	-	-



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Listing by Category ID and Category Element ID

<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>0-Common Message Parameters</u>	<u>0</u>	-	<u>Common Message Parameters</u>	-	-	-	-	-	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>10</u>	<u>Submittal Date</u>	<u>Timestamp for the sender's use</u>	-	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>11</u>	<u>Submitted By</u>	<u>User ID of submitter</u>	<u>Common data element to indicate the user ID of the entity submitting the data</u>	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>12</u>	<u>Submitted Error</u>	<u>ID of submission error detected</u>	<u>Common data element to capture any errors or exceptions during submission</u>	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>13</u>	<u>Rejection Code Type</u>	<u>Type of rejection message</u>	<u>Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.</u>	-	-	<u>Y</u>	-	-	-
<u>0-Common Message Parameters</u>	<u>0</u>	<u>14</u>	<u>Rejection Code Value</u>	<u>Code referring to the reason for a rejection message</u>	<u>Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.</u>	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	-	-	-	Y	-	-	-
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	-	-	-	Y	-	-	-
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	-	-	-	Y	-	-	-
1-General Asset / Resource	1	-	General Asset/Resource	-	-	-	-	-	-	-	-
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.	-	-	Y	-	-	Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location	-	-	-	Y	-	-	-
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset	-	-	-	Y	-	-	Y
1-General Asset / Resource	1	13	Asset Name	The name of the asset	-	-	-	Y	-	-	-
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.	-	-	Y	-	-	Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource	-	-	-	Y	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>1-General Asset / Resource</u>	<u>1</u>	<u>22</u>	<u>DR Resource Group ID</u>	<u>Grouping of Resources that can respond to the same DR signal</u>		-	-	-	-	-	<u>Y</u>
<u>1-General Asset / Resource</u>	<u>1</u>	<u>30</u>	<u>Asset Group ID</u>	<u>The identifier of a group of assets</u>	<u>An Asset Group is a logical entity that has a reportable interval-level consumption.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>1-General Asset / Resource</u>	<u>1</u>	<u>31</u>	<u>Asset Group Name</u>	<u>Name of the aggregated group of assets</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>1-General Asset / Resource</u>	<u>1</u>	<u>40</u>	<u>GenEMSID</u>	<u>Alias or point Identifier assigned to the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>41</u>	<u>GenBillingID</u>	<u>Billing Identifier assigned to the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>50</u>	<u>Business Segment</u>	<u>SIC or NAICS code of the Service Location</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>51</u>	<u>Batch Load Flag</u>	<u>Flag set if the Resource is a Batch Load</u>	-	-	-	<u>Y</u>	-	-	-
<u>1-General Asset / Resource</u>	<u>1</u>	<u>991</u>	<u>General Resource Comments</u>	<u>General comments associated with the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	-	<u>Location</u>	-	-	-	-	-	-	-	-
<u>2-Location</u>	<u>2</u>	<u>10</u>	<u>Address1</u>	<u>Address line 1</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>11</u>	<u>Address2</u>	<u>Address line 2</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>12</u>	<u>City</u>	<u>City</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>13</u>	<u>State/Province</u>	<u>State or Province two-letter code</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>2-Location</u>	<u>2</u>	<u>14</u>	<u>Zip/Postal Code</u>	<u>Zip or Postal Code</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>15</u>	<u>Country</u>	<u>Country</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>20</u>	<u>GPS Coordinates</u>	<u>Latitude and longitude</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>21</u>	<u>Weather Station</u>	<u>Weather Station code associated with the Service Location</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>22</u>	<u>Time Zone Name</u>	<u>Name of the Time Zone in which the Service Location is located</u>	-	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the Zone in which the Service Location is located</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is located</u>	<u>A Zone is a physical or electrical region.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>	<u>Examples: Capacity, Dispatch, Price, Load, etc.</u>	-	-	<u>Y</u>	-	-	-
<u>2-Location</u>	<u>2</u>	<u>40</u>	<u>Electrical Node ID</u>	<u>Identifier assigned to the Electrical Node at which the Service Location is connected</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>2-Location</u>	<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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Request No.: 2010 WEQ Annual Plan Item 6(a-c)
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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	-	-	-	Y	-	-	Y
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.	-	-	Y	-	-	Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	-	-	-	Y	-	-	Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	-	-	-	Y	-	-	-
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location	-	-	-	Y	-	-	-
2-Location	2	60	NERC Control Area	The NERC control area of the resource	-	-	-	Y	-	-	-
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address	-	-	Y	-	-	-
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address	-	-	Y	-	-	-
2-Location	2	991	Location Comments	Comments associated with the Service Location	-	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	-	Contact	-	-	-	-	-	-	-	-
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.	-	-	Y	-	-	-
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.	-	-	Y	-	-	-
3-Contact	3	12	DUNS Number	DUNS business number	-	-	-	Y	-	-	-
3-Contact	3	13	Third Party	Flag set if the Contact is a third-party entity	-	-	-	Y	-	-	-
3-Contact	3	20	Title	Title of the Contact	-	-	-	Y	-	-	-
3-Contact	3	21	First Name	First Name of the Contact	-	-	-	Y	-	-	-
3-Contact	3	22	Last Name	Last Name of the Contact	-	-	-	Y	-	-	-
3-Contact	3	23	Contact Middle Name	Middle Name of the Contact	-	-	-	Y	-	-	-
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to be used.	-	-	Y	-	-	-
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.	-	-	Y	-	-	-



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						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>3-Contact</u>	<u>3</u>	<u>32</u>	<u>Contact Method Priority</u>	<u>Order in which a Communication Method should be selected for a Contact</u>	<u>A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.</u>	-	-	<u>Y</u>	-	-	-
<u>3-Contact</u>	<u>3</u>	<u>991</u>	<u>Contact Comments</u>	<u>Comments associated with the Contact</u>	-	-	-	<u>Y</u>	-	-	-
<u>4-Grid Connection</u>	<u>4</u>	-	<u>Grid Connection</u>	-	-	-	-	-	-	-	-
<u>4-Grid Connection</u>	<u>4</u>	<u>10</u>	<u>Loss Factor Type</u>	<u>Type of Loss Factor</u>	-	-	-	<u>Y</u>	-	-	-
<u>4-Grid Connection</u>	<u>4</u>	<u>11</u>	<u>Loss Factor Value</u>	<u>Loss Factor</u>	<u>Expressed as a decimal value.</u>	-	-	<u>Y</u>	-	-	-
<u>4-Grid Connection</u>	<u>4</u>	<u>12</u>	<u>Connect Voltage</u>	<u>Voltage level</u>	<u>Voltage at connection.</u>	-	-	<u>Y</u>	-	-	-
<u>4-Grid Connection</u>	<u>4</u>	<u>991</u>	<u>Grid Connection Comments</u>	<u>Comments associated with the Grid Connection of the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	-	<u>Business Entity Relationships</u>	-	-	-	-	-	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>11</u>	<u>Service Provider ID</u>	<u>Identifier assigned to the Service Provider</u>	<u>The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>12</u>	<u>Service Provider Name</u>	<u>Name of the Service Provider</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>13</u>	<u>Demand Response Provider</u>	-	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>14</u>	<u>Demand Response Controlling Entity</u>	-	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>20</u>	<u>Transmission / Distribution Service Provider ID</u>	<u>Identifier assigned to the Transmission / Distribution Service Provider</u>	<u>The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.</u>	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>21</u>	<u>Transmission / Distribution Service Provider Name</u>	<u>Name of the Transmission / Distribution Service Provider</u>	-	-	-	<u>Y</u>	-	-	-
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>22</u>	<u>Transmission / Distribution Service Provider Account Number</u>	<u>Transmission / Distribution Service Provider's account number for the Resource</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.	-	-	Y	-	-	-
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	This can also be used for comments associated with the Retail Rate.	-	-	Y	-	-	-
5-Business Entity Relationships	5	44	Retail Rate	Retail Rate	Expressed as Price per kWh	-	-	Y	-	-	-
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider	-	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	51	<u>Meter Installation Provider Name</u>	<u>Name of the Meter Installation Provider</u>	<u>This is the competitive meter entity for the meter device.</u>	-	-	Y	-	-	-
5-Business Entity Relationships	5	60	<u>Meter Authority ID</u>	<u>Identifier assigned to the Metering Authority</u>	<u>The Metering Authority provides electric usage data necessary to determine the performance of a Resource.</u>	-	-	Y	-	-	-
5-Business Entity Relationships	5	61	<u>Meter Authority Name</u>	<u>Name of the Metering Authority</u>	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	70	<u>Scheduling Entity ID</u>	<u>Identifier assigned to the Scheduling Entity</u>	<u>A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.</u>	-	-	Y	-	-	-
5-Business Entity Relationships	5	71	<u>Scheduling Entity Name</u>	<u>Name of the Scheduling Entity</u>	-	-	-	Y	-	-	-
5-Business Entity Relationships	5	80	<u>Designated Dispatch Entity ID</u>	<u>Identifier assigned to the Designated Dispatch Entity</u>	<u>The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.</u>	-	-	Y	-	-	-
5-Business Entity Relationships	5	81	<u>Designated Dispatch Entity Name</u>	<u>Name of the Designated Dispatch Entity</u>	-	-	-	Y	-	-	-



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						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>90</u>	<u>Asset Operator ID</u>	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.	-	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>91</u>	<u>Asset Operator Name</u>	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.	-	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>92</u>	<u>Asset Owner ID</u>	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).	-	-	-	-	-	-	<u>Y</u>
<u>5-Business Entity Relationships</u>	<u>5</u>	<u>93</u>	<u>Asset Owner Name</u>	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).	-	-	-	-	-	-	<u>Y</u>



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5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity	-	-	-	Y	-	-	-
6-Device and Qualification	6	-	Device and Qualification	-	-	-	-	-	-	-	-
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.	-	-	Y	-	-	-
6-Device and Qualification	6	11	Parent Meter id	Flag set if the Meter is a Master or Parent Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.	-	-	Y	-	-	-
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter	-	-	-	Y	-	-	-
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer	-	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>6-Device and Qualification</u>	<u>6</u>	<u>223</u>	<u>Meter Installer License</u>	<u>Professional License Number of the Installer of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>224</u>	<u>Meter Correction Factors</u>	<u>Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>225</u>	<u>Meter Test Criteria</u>	<u>Test Criteria required to qualify the installation of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>226</u>	<u>Meter Test Frequency</u>	<u>Frequency of Tests of the Meter</u>	<u>Expressed in months.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>227</u>	<u>Meter Device QA Plan</u>	<u>Quality Assurance plan for maintenance and testing of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>228</u>	<u>Date of Last Meter Test</u>	<u>Date of Last Test of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229</u>	<u>Meter Qualification Date</u>	<u>Date of Qualification of the Meter by the Metering Authority or System Operator</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229 1</u>	<u>Meter Test Results</u>	<u>Results of Tests of the Meter</u>	<u>These are specific to the meter type.</u>	-	-	<u>Y</u>	-	-	-



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<u>6-Device and Qualification</u>	<u>6</u>	<u>229 2</u>	<u>VEE Compliance</u>	<u>Compliance standard for Validation, Editing, and Estimation</u>	<u>Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229 3</u>	<u>Measurement Interval</u>	<u>Interval of time between Measurement readings</u>	<u>This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229 4</u>	<u>ANSI Compliance</u>	<u>ANSI standard with which the Meter complies</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229 5</u>	<u>Meter Owner</u>	<u>Owner of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>229 6</u>	<u>Meter Asset Comments</u>	<u>Comments associated with the Meter Asset</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>23</u>	<u>Meter Model</u>	<u>Model of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>24</u>	<u>Meter Rating</u>	<u>Load Rating of the Meter</u>	-	-	-	<u>Y</u>	-	-	-



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<u>6-Device and Qualification</u>	<u>6</u>	<u>25</u>	<u>Meter Multiplier (kH)</u>	<u>Multiplier used to convert pulses into power units</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>26</u>	<u>Meter Accuracy Class</u>	<u>Accuracy Class of the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>27</u>	<u>Meter Loss Compensation</u>	<u>Line Losses included in the Meter</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>28</u>	<u>Maximum Error</u>	<u>Error of the Meter, including end-to-end Maximum Error</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>29</u>	<u>Meter Phase</u>	<u>Specific Phase information</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>291</u>	<u>CT Ratio</u>	<u>Ratio of the Current Transformer</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>30</u>	<u>Distributed Generator Type</u>	<u>Type of Distributed Generator</u>	<u>This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>31</u>	<u>Nameplate Rating</u>	<u>Manufacturer's output rating of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>32</u>	<u>Distributed Generator Fuel Type</u>	<u>Type of Fuel consumed by the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-



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<u>6-Device and Qualification</u>	<u>6</u>	<u>33</u>	<u>Distributed Generator Permit Type</u>	<u>Type of environmental authorization required to operate the Distributed Generator</u>	<u>The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.</u>	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>34</u>	<u>Distributed Generator Manufacturer</u>	<u>Manufacturer of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>35</u>	<u>Manufactured Date of Distributed Generator</u>	<u>Date of Manufacturer of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>36</u>	<u>Installation Date of Distributed Generator</u>	<u>Date of Installation of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>37</u>	<u>In-Service Date</u>	<u>Date the Distributed Generator became operational</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>38</u>	<u>Normal Load Rating</u>	<u>Average load picked up by the Distributed Generator during the applicable performance hours</u>	-	-	-	<u>Y</u>	-	-	-
<u>6-Device and Qualification</u>	<u>6</u>	<u>39</u>	<u>Distributed Generator Name</u>	<u>Name of the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP	-	-	-	Y	-	-	-
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location	-	-	-	Y	-	-	-
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid	-	-	-	Y	-	-	-
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.	-	-	Y	-	-	-
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	-	-	-	Y	-	-	-
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	-	-	-	Y	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.	-	-	Y	-	-	-
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay	-	-	-	Y	-	-	-
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	-	-	-	Y	-	-	-
6-Device and Qualification	6	70	Device Class	-	Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event. 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved	-	-	-	-	-	Y



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<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>80</u>	<u>Asset Manufacturer</u>	<u>Manufacturer of the Asset</u>	-	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>81</u>	<u>Asset Model</u>	<u>Model identifier of the Asset, assigned by the Manufacturer</u>	-	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>82</u>	<u>Asset Version</u>	<u>Model version identifier, assigned by the Manufacturer</u>	-	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>83</u>	<u>Asset Manufacture Date</u>	<u>Date of Manufacture of the Asset</u>	-	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>84</u>	<u>Asset Type</u>	<u>Type of Asset</u>	<u>Examples are: load reduction (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.</u>	-	-	-	-	-	<u>Y</u>
<u>6-Device and Qualification</u>	<u>6</u>	<u>991</u>	<u>Distributed Generator Comments</u>	<u>Comments associated with the Distributed Generator</u>	-	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	-	<u>Market/Program Enrollment</u>	-	-	-	-	-	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>10</u>	<u>Program ID</u>	<u>Program Identifier</u>	<u>The identifier of the program</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	11	Program Name	Name of the Program	-	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service	-	-	-	Y	-	-	Y
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment	-	-	-	Y	-	-	Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>26</u>	<u>Requalification Test Date</u>	<u>Date the Resource will retest its ability to deliver a product or service</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>30</u>	<u>Lead Time</u>	<u>Time between the advanced notification and deployment</u>	<u>Notification is the transmittal of a Deployment message.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>31</u>	<u>Day Ahead Flag</u>	<u>Flag set if the Resource will be participating in the Day-Ahead market</u>	-	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>32</u>	<u>Real Time Flag</u>	<u>Flag set if the Resource will be participating in the Real-Time market</u>	-	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>33</u>	<u>Self-Schedule Flag</u>	<u>Flag set if the Resource is Self-Deploying</u>	<u>Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider or the Resource.</u>	-	-	<u>Y</u>	-	-	-
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>34</u>	<u>Response Time</u>	<u>The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load.</u>	-	-	-	-	-	-	<u>Y</u>
<u>7-Market / Program Enrollment</u>	<u>7</u>	<u>40</u>	<u>Response Method Type</u>	<u>Type of Response Method</u>	<u>Expressed as a response type code</u>	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	41	Response Method ID	Identifier assigned to the Response Method	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.	-	-	Y	-	-	-
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.	-	-	Y	-	-	-
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.	-	-	Y	-	-	-
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	-	-	-	Y	-	-	-
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment	-	-	-	Y	-	-	-
8-Offer Parameters	8	-	Offer Parameters	-	-	-	-	-	-	-	-
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are applicable.	-	-	Y	-	-	Y
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.	-	-	Y	-	-	Y
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.	-	-	Y	-	-	Y
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource	-	-	-	Y	-	-	Y
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.	-	-	Y	-	-	Y
8-Offer Parameters	8	22	MinGenCost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.	-	-	Y	-	-	Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.	-	-	Y	-	-	Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)	-	-	Y	-	-	Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.	-	-	Y	-	-	Y
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.	-	-	Y	-	-	Y
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)	-	-	Y	-	-	-
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)	-	-	Y	-	-	-
8-Offer Parameters	8	32	Offer Segment Price	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>8-Offer Parameters</u>	<u>8</u>	<u>33</u>	<u>Offer Segment Hour</u>	<u>Hour of Segment of the Offer</u>	<u>NOTE: When required as part of an enrollment request, this value becomes the default.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>34</u>	<u>Startup Cost</u>	<u>Cost of starting a response activity</u>	<u>NOTE: When required as part of an enrollment request, this value becomes the default.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>35</u>	<u>Strike Price</u>	<u>Threshold Price</u>	<u>Expressed as a decimal value of price/MW.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>36</u>	<u>Offer Expiration Date</u>	<u>Date of Expiration of the Offer</u>	<u>This applies to DAM only.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>37</u>	<u>Startup Cost Type</u>	<u>Type of startup cost</u>	<u>The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.</u>	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>38</u>	<u>Offer Commit Status</u>	<u>Commitment status of offer</u>	<u>Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)	-	-	Y	-	-	Y
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smoothe offer segments from step function to slope	-	-	-	Y	-	-	-
8-Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.	-	-	Y	-	-	-
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer	-	-	-	Y	-	-	-
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer	-	-	-	Y	-	-	-



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<u>8-Offer Parameters</u>	<u>8</u>	<u>42</u>	<u>Schedule Description</u>	<u>Description of the Offer</u>	-	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>43</u>	<u>Schedule Status</u>	<u>Status of the Offer</u>	-	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>50</u>	<u>Portfolio Name</u>	<u>Name of an aggregation of Resources for market participation</u>	-	-	-	<u>Y</u>	-	-	-
<u>8-Offer Parameters</u>	<u>8</u>	<u>71</u>	<u>Constraint Type</u>	<u>Type of operational, schedule or offer constraint</u>	<u>Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>72</u>	<u>Constraint Interval</u>	<u>The timeframe over which the constraint type applies.</u>	<u>Typically daily, hourly, weekly, date</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>8-Offer Parameters</u>	<u>8</u>	<u>73</u>	<u>Constraint Value</u>	<u>Value of the Constraint Type and Interval</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>9-Energy</u>	<u>9</u>	-	<u>Energy Market</u>	-	-	-	-	-	-	-	-



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Market											
9-Energy Market	9	0	Instruction ID	-	Unique identifier assigned to each instruction.	-	-	Y	-	-	-
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).	-	-	Y	-	-	Y
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).	-	-	Y	-	-	-
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval	-	-	Y	-	-	-
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.	-	-	Y	-	-	-
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.	-	-	Y	-	-	-
9-Energy Market	9	15	Schedule ID	-	Unique identifier assigned to each schedule.	-	-	Y	-	-	-



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9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.	-	-	Y	-	-	-
9-Energy Market	9	21	Breaker Status	Status of the Breaker for the Resource	-	-	-	Y	-	-	-
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW	-	-	Y	-	-	-
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar	-	-	Y	-	-	-
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR	-	-	Y	-	-	-



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9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.	-	-	Y	-	-	-
10-Ancillary Service Market	10	-	Ancillary Service Market	-	-	-	-	-	-	-	-
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID	-	Unique identifier assigned to each ancillary service instruction.	-	-	Y	-	-	-
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	-	-	-	Y	-	-	Y
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted	-	-	-	Y	-	-	-
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.	-	-	Y	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>	<u>End Time of the ancillary service Award</u>	<u>A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>14</u>	<u>Ancillary Service Award - Interval Start Time</u>	<u>Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval</u>	<u>The start time of a specific ancillary service schedule interval</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>15</u>	<u>Ancillary Service Award - Interval Value</u>	<u>The awarded Value for the Time Interval within the ancillary service Award</u>	<u>The value associated with a specific ancillary service schedule interval</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>16</u>	<u>Ancillary Service Award - Cleared Price</u>	<u>Awarded Price</u>	<u>The market clearing price for the cleared ancillary service product MW.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>17</u>	<u>Ancillary Service Schedule ID</u>	-	<u>Unique identifier assigned to each ancillary service schedule.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>20</u>	<u>Ancillary Service Product Qualification Type</u>	<u>Type of Qualification</u>	<u>Examples include initial, requalification, etc.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>21</u>	<u>Synchronization Test Date</u>	<u>Target Date of Test of Synchronization to the grid</u>	-	-	-	<u>Y</u>	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>22</u>	<u>Ancillary Service Product Type Qualification Date</u>	<u>Date of Qualification of the Resource</u>	-	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>23</u>	<u>Ancillary Service Product Type Qualified</u>	<u>Type of Ancillary Service Product(s) for which the Resource has Qualified</u>	-	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>24</u>	<u>Requalification Requirement</u>	<u>Flag set if Requalification is Required</u>	-	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>31</u>	<u>Reserve Pickup Flag</u>	<u>Flag set if this is a Reserve Pickup schedule</u>	<u>Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).</u>	-	-	<u>Y</u>	-	-	-



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>32</u>	<u>Regulation Base Point</u>	<u>Per-interval Regulation dispatch instruction</u>	<u>Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.</u>	-	-	<u>Y</u>	-	-	-
<u>10-Ancillary Service Market</u>	<u>10</u>	<u>33</u>	<u>Base Load MW</u>	<u>Level of Load at time of dispatch</u>	-	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	-	<u>Capacity Market</u>	-	-	-	-	-	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>10</u>	<u>Capacity Type</u>	<u>Type of Capacity</u>	<u>Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>11</u>	<u>Capacity Type description</u>	<u>Description of the Type of Capacity</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>20</u>	<u>Peak Value</u>	<u>Measurement of Peak</u>	-	-	-	<u>Y</u>	-	-	-



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
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<u>11-Capacity Market</u>	<u>11</u>	<u>21</u>	<u>Peak Type</u>	<u>Type of measurement of Peak</u>	<u>Examples are: Annual, Monthly, Weekly, and Seasonal.</u>	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>22</u>	<u>Peak Date/Time</u>	<u>Date and Time of measurement of Peak</u>	-	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>23</u>	<u>Nominal Capacity</u>	<u>Nominated load</u>	<u>Expressed as a decimal value.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>24</u>	<u>Qualified Capacity</u>	<u>Nominal ICAP derated for performance</u>	<u>Derated based on past performance.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>30</u>	<u>Capacity Obligation Period Type</u>	<u>Type of Capacity Obligation Time Period within which the Resource is obligated</u>	<u>Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.</u>	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>31</u>	<u>Capacity Obligation Period</u>	<u>Period of time for which the Capacity Resource is Obligated</u>	<u>Examples include: month, season, year, etc.</u>	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>40</u>	<u>Minimum Payment Nomination</u>	<u>Strike price for the economic dispatch of the energy component of the capacity program</u>	<u>Expressed in Price/MW.</u>	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>41</u>	<u>Capacity Supply Obligation</u>	<u>Capacity Obligation</u>	<u>This may result from an auction or other clearing mechanism.</u>	-	-	<u>Y</u>	-	-	-
<u>11-Capacity Market</u>	<u>11</u>	<u>50</u>	<u>Capacity Reference ID</u>	<u>Identifier assigned to the External System award</u>	<u>An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.</u>	-	-	<u>Y</u>	-	-	-



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Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>11-Capacity Market</u>	<u>11</u>	<u>991</u>	<u>Capacity Comments</u>	<u>Comments associated with the Capacity market</u>	-	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	-	<u>Event and Performance</u>	-	-	-	-	-	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>10</u>	<u>Event ID</u>	<u>Identifier assigned to the Event</u>	<u>An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>11</u>	<u>Deployment Type</u>	<u>Type of Deployment</u>	<u>Examples are: Advanced (Normal), Immediate, Audit/Test</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>12</u>	<u>Event Day</u>	<u>Operating Date of Start of Event</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>13</u>	<u>Event Description</u>	<u>Description of the Event</u>	-	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>14</u>	<u>Event Start Time</u>	<u>Time of Start of deployment period for Event</u>	<u>The Deployment Period is the period of time from the Deployment to Release/Recall.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>15</u>	<u>Operator Comment</u>	<u>Additional Event information provided by the Operator</u>	-	-	-	<u>Y</u>	-	-	-



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<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>16</u>	<u>Deployment MW</u>	<u>Absolute or relative Deployment quantity</u>	<u>Expressed as an absolute or relative (%) MW value.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>17</u>	<u>Event Status</u>	<u>Status of the Event</u>	<u>Examples include: initiated, completed, etc.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>18</u>	<u>Event End Time</u>	<u>Time of End of deployment period</u>	<u>Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>19</u>	<u>Event Modification Number</u>	<u>A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>111</u>	<u>Notification Acknowledgement</u>	<u>This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>12-Event and Performance</u>	<u>12</u>	<u>112</u>	<u>Event Modification Reason Code</u>	<u>The reason the event is being cancelled or modified.</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>113</u>	<u>Load Level Value</u>	<u>Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).</u>	-	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>21</u>	<u>Baseline Dates</u>	<u>Dates of days used to calculate the Energy Baseline</u>	<u>The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>22</u>	<u>Baseline Exclusion Dates</u>	<u>Dates of days Excluded from the calculation of the Energy Baseline</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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<u>12-Event and Performance</u>	<u>12</u>	<u>23</u>	<u>Energy Baseline Value</u>	<u>Calculated Energy Baseline</u>	<u>A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.</u>	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>24</u>	<u>Energy Baseline Timestamp</u>	<u>Timestamp of Energy Baseline</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>30</u>	<u>Reporting Interval</u>	<u>Interval size required for Reporting</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>31</u>	<u>Measurement Value Timestamp (CIM)</u>	<u>The time when the value was last updated</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>32</u>	<u>Measurement Value (CIM)</u>	<u>Value of the interval reading</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>33</u>	<u>Response Value</u>	<u>Response</u>	-	-	-	<u>Y</u>	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>12-Event and Performance</u>	<u>12</u>	<u>34</u>	<u>Measurement Value Type</u>	<u>The type of measurement value.</u>	<u>The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).</u>	-	-	<u>Y</u>	-	-	-
<u>12-Event and Performance</u>	<u>12</u>	<u>50</u>	<u>Simple Signal Levels</u>	<u>Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL</u>	-	-	-	-	-	-	<u>Y</u>



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<u>12-Event and Performance</u>	<u>12</u>	<u>51</u>	<u>Criticality Level</u>	<u>This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or combination with other Load Control Event fields supported by this device.</u>	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. <u>Criticality Level Level Description Participation</u> 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility Defined	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>52</u>	<u>Usage Information</u>	<u>Information about the near real time electricity usage of the DR Resource.</u>	-	-	-	-	-	-	<u>Y</u>
<u>12-Event and Performance</u>	<u>12</u>	<u>991</u>	<u>Event & Performance comments</u>	<u>Comments associated with Event and Performance data</u>	-	-	-	<u>Y</u>	-	-	-
<u>13-Direct Load Control</u>	<u>13</u>	-	<u>Direct Load Control</u>	-	-	-	-	-	-	-	-



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						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>10</u>	<u>Status Check</u>	A signal to require the DR resource status to be sent back. (Only applicable to Direct Load Control)	-	-	-	-	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>11</u>	<u>DR Control Command: Direct Load Control Type</u>	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset	-	-	-	-	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>12</u>	<u>DR Control Command: Direct Load Control Value</u>	Value associated with the Direct Load Control Type.	-	-	-	-	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>13</u>	<u>Duty Cycle</u>	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value	-	-	-	-	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				of 0xFF indicates the field is not used." (from SEP2.0)							
<u>13-Direct Load Control</u>	<u>13</u>	<u>14</u>	<u>Event Control</u>	Event Control options for randomized start or end times: 1= Randomize Start time, 0=Randomized Start not Applied 1= Randomize End time, 0=Randomized End not Applied. (from SEP2.0)	-	-	-	-	-	-	<u>Y</u>
<u>13-Direct Load Control</u>	<u>13</u>	<u>15</u>	<u>Exception Conditions</u>	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.	-	-	-	-	-	-	<u>Y</u>



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
<u>13-Direct Load Control</u>	<u>13</u>	<u>16</u>	<u>Load Control State</u>	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.	-	-	-	-	-	-	Y
<u>14-Price and Product</u>	<u>14</u>	-	<u>Price and Product</u>	-	-	-	-	-	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>10</u>	<u>Product Name</u>	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y	-	-	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>11</u>	<u>Product Type</u>	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y	-	-	-	-	Y
<u>14-Price and Product</u>	<u>14</u>	<u>12</u>	<u>Product Sub-type</u>	Used to further define product types	-	Y	-	-	Y	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>13</u>	<u>Identifier Source (product)</u>	The Identifier Source references the product identification scheme for the Product Identifier.	-	Y	-	-	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier	-	Y	-	-	-	-	Y
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)	-	Y	-	-	Y	-	Y
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price	-	Y	-	-	Y	-	-
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable	-	Y	-	-	-	-	-
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).	-	Y	-	-	-	-	Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price absolute, Price relative, Price multiplier	Y	-	-	Y	-	-
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y	-	-	-	-	-
14-Price and Product	14	34	Price Component Value	The value of the price component.	-	Y	-	-	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03 and PAP 09

<u>Category</u>	<u>Category ID</u>	<u>Category Element ID</u>	<u>Data Element</u>	<u>Short Description</u>	<u>Long Description</u>	<u>Wholesale</u>			<u>Retail</u>		
						<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>	<u>PAP 03</u>	<u>PAP 04</u>	<u>PAP 09</u>
<u>14-Price and Product</u>	<u>14</u>	<u>35</u>	<u>Price Location</u>	<u>The location at which the price is applicable.</u>		<u>Y</u>	-	-	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>36</u>	<u>Price Type</u>	<u>Time characteristic of the price</u>	<u>The type of price (day-ahead, real-time, etc.).</u>	<u>Y</u>	-	-	-	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>37</u>	<u>Delivery Time</u>	<u>Time at which the product is available for physical consumption</u>		<u>Y</u>	-	-	<u>Y</u>	-	<u>Y</u>
<u>14-Price and Product</u>	<u>14</u>	<u>38</u>	<u>Delivery Interval</u>	<u>The duration over which the product is available for physical consumption</u>		<u>Y</u>	-	-	<u>Y</u>	-	<u>Y</u>
<u>14-Price and Product</u>	<u>14</u>	<u>40</u>	<u>Source Location Identifier</u>	<u>The identifier of the source location of the product for which the price applies</u>		<u>Y</u>	-	-	<u>Y</u>	-	-
<u>14-Price and Product</u>	<u>14</u>	<u>41</u>	<u>Source Location Identifier Type</u>	<u>The type of source location of the product for which the price applies</u>		<u>Y</u>	-	-	-	-	-



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

4. Supporting Documentation

a. Description of Request:

2010 REQ Annual Plan Item 9 and 2010 WEQ Annual Plan Item 6 – “Develop Smart Grid Wholesale and Retail Electric Standards”

b. Description of Recommendation:

This recommendation provides the data requirements related to the use cases developed for Priority Action Plan 03 and 09 as part of the phase one effort

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the development of standard DR and DER signals.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- March 11, 2010 Meeting Notes – To be posted
- March 18, 2010 Meeting Notes – To be posted
- March 25, 2010 Meeting Notes – To be posted
- April 1, 2010 Meeting Notes – To be posted
- April 8, 2010 Meeting Notes – To be posted
- April 29, 2010 Meeting Notes – To be posted
- May 13, 2010 Meeting Notes – To be posted
- May 20, 2010 Meeting Notes – To be posted
- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [RequirementsElements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY: The Master Data [RequirementsElements](#) List contains the list of data elements used in the use cases that were developed for PAP 03 and PAP 09 in the phase one effort.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
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Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [RequirementsElements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

RECOMMENDED STANDARDS:

WEQ-020.1 Smart Grid Standards Data [RequirementsElements](#) Table

Introduction

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to [\(i\) require the use of any of these data elements, \(ii\) require the provision or purchase of any products, programs, rates, markets or services, or \(iii\) supersede or replace](#) applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

WEQ-020.1 Alphabetical Listing by Data Element Name

* Listing by Category ID and Category Element ID begins on page [4545](#)

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	10	Address1	Address line 1				Y			Y
2-Location	2	11	Address2	Address line 2				Y			Y



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Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	16	Ancillary Service Award - Cleared Price	Awarded Price	The market clearing price for the cleared ancillary service product MW.			Y			
10-Ancillary Service Market	10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	The start time of a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award	The value associated with a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID		Unique identifier assigned to each ancillary service instruction.			Y			
10-Ancillary Service Market	10	20	Ancillary Service Product Qualification Type	Type of Qualification	Examples include initial, requalification, etc.			Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide				Y			Y
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource				Y			
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified				Y			
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID		Unique identifier assigned to each ancillary service schedule.			Y			
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies				Y			
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.			Y			Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets				Y			Y
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset				Y			Y
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset							Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	80	Asset Manufacturer	Manufacturer of the Asset							Y
6-Device and Qualification	6	81	Asset Model	Model identifier of the Asset, assigned by the Manufacturer							Y
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location				Y			
1-General Asset / Resource	1	13	Asset Name	The name of the asset				Y			
5-Business Entity Relationships	5	90	Asset Operator ID	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	91	Asset Operator Name	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.						Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer							Y
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch				Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.			Y			
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.			Y			Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline				Y			Y
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load				Y			
9-Energy Market	9	21	Breaker Status	Status of the Breaker for the Resource				Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				Y			
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location				Y			
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid				Y			
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market				Y			
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.			Y			
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.			Y			
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.			Y			
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.			Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	10	Capacity Type	Type of Capacity	Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.			Y			Y
11-Capacity Market	11	11	Capacity Type description	Description of the Type of Capacity				Y			Y
2-Location	2	12	City	City				Y			Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice				Y			
4-Grid Connection	4	12	Connect Voltage	Voltage level	Voltage at connection.			Y			
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address			Y			
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address			Y			
8-Offer Parameters	8	72	Constraint Interval	The timeframe over which the constraint type applies.	Typically daily, hourly, weekly, date			Y			Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.			Y			Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval				Y			Y
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.			Y			
3-Contact	3	991	Contact Comments	Comments associated with the Contact				Y			
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to which may be used.			Y			
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	23	Contact Middle Name	Middle Name of the Contact				Y			
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.			Y			
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.			Y			
2-Location	2	15	Country	Country				Y			Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	51	Criticality Level	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or in combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility						Y
6-Device and Qualification	6	291	CT Ratio	Ratio of the Current Transformer				Y			
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)		Y			Y		Y
6-Device and Qualification	6	228	Date of Last Meter Test	Date of Last Test of the Meter				Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market				Y			
14-Price and Product	14	38	Delivery Interval	The duration over which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	37	Delivery Time	Time at which the product is available for physical consumption		Y			Y		Y
5-Business Entity Relationships	5	14	Demand Response Controlling Entity		An identifier for the Service Provider issuing the DR event deployment instructions.						Y
5-Business Entity Relationships	5	13	Demand Response Provider		The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.						Y
12-Event and Performance	12	16	Deployment MW	Absolute or relative Deployment quantity	Expressed as an absolute or relative (%) MW value.			Y			Y
12-Event and Performance	12	11	Deployment Type	Type of Deployment	Examples are: Advanced (Normal), Immediate, Audit/Test			Y			Y
5-Business Entity Relationships	5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity				Y			
6-Device and Qualification	6	70	Device Class		Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event. 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved						Y
6-Device and Qualification	6	991	Distributed Generator Comments	Comments associated with the Distributed Generator				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator				Y			
6-Device and Qualification	6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	39	Distributed Generator Name	Name of the Distributed Generator				Y			
6-Device and Qualification	6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.			Y			
6-Device and Qualification	6	30	Distributed Generator Type	Type of Distributed Generator	This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.			Y			
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR			Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	11	DR Control Command: Direct Load Control Type	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset							Y
13-Direct Load Control	13	12	DR Control Command: Direct Load Control Value	Value associated with the Direct Load Control Type.							Y
1-General Asset / Resource	1	22	DR Resource Group ID	Grouping of Resources that can respond to the same DR signal							Y
3-Contact	3	12	DUNS Number	DUNS business number				Y			
13-Direct Load Control	13	13	Duty Cycle	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value of 0xFF indicates the field							Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				is not used." (from SEP2.0)							
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.			Y			Y
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached				Y			Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	23	Energy Baseline Value	Calculated Energy Baseline	A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.			Y			Y
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.			Y			
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.			Y			
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval			Y			
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment				Y			Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated			Y			Y
12-Event and Performance	12	991	Event & Performance comments	Comments associated with Event and Performance data				Y			
13-Direct Load Control	13	14	Event Control	Event Control options for randomized start or end times: 1= Randomized Start time, 0=Randomized Start not Applied 1= Randomized End time, 0=Randomized End not Applied. (from SEP2.0)							Y
12-Event and Performance	12	12	Event Day	Operating Date of Start of Event				Y			Y
12-Event and Performance	12	13	Event Description	Description of the Event				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	18	Event End Time	Time of End of deployment period	Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.			Y			Y
12-Event and Performance	12	10	Event ID	Identifier assigned to the Event	An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.			Y			Y
12-Event and Performance	12	19	Event Modification Number	A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.				Y			Y
12-Event and Performance	12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.				Y			Y
12-Event and Performance	12	14	Event Start Time	Time of Start of deployment period for Event	The Deployment Period is the period of time from the Deployment to Release/Recall.			Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	17	Event Status	Status of the Event	Examples include: initiated, completed, etc.			Y			Y
13-Direct Load Control	13	15	Exception Conditions	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.							Y
5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity				Y			
3-Contact	3	21	First Name	First Name of the Contact				Y			
1-General Asset / Resource	1	41	GenBillingID	Billing Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	40	GenEMSID	Alias or point Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	991	General Resource Comments	General comments associated with the Resource				Y			
2-Location	2	20	GPS Coordinates	Latitude and longitude				Y			Y
4-Grid Connection	4	991	Grid Connection Comments	Comments associated with the Grid Connection of the Resource				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted				Y			
14-Price and Product	14	13	Identifier Source (product)	The Identifier Source references the product identification scheme for the Product Identifier.		Y					
6-Device and Qualification	6	37	In-Service Date	Date the Distributed Generator became operational				Y			
6-Device and Qualification	6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator				Y			
9-Energy Market	9	0	Instruction ID		Unique identifier assigned to each instruction.			Y			
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP				Y			
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location				Y			
3-Contact	3	22	Last Name	Last Name of the Contact				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	30	Lead Time	Time between the advanced notification and deployment	Notification is the transmittal of a Deployment message.			Y			Y
13-Direct Load Control	13	16	Load Control State	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.							Y
12-Event and Performance	12	113	Load Level Value	Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).							Y
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				Y			
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE				Y			
2-Location	2	991	Location Comments	Comments associated with the Service Location				Y			
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor				Y			
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.			Y			
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator				Y			Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market				Y			
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer				Y			
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment				Y			
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).			Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error				Y			
6-Device and Qualification	6	2293	Measurement Interval	Interval of time between Measurement readings	This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.			Y			
12-Event and Performance	12	32	Measurement Value (CIM)	Value of the interval reading				Y			Y
12-Event and Performance	12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated				Y			Y
12-Event and Performance	12	34	Measurement Value Type	The type of measurement value.	The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).			Y			
6-Device and Qualification	6	26	Meter Accuracy Class	Accuracy Class of the Meter				Y			
6-Device and Qualification	6	2296	Meter Asset Comments	Comments associated with the Meter Asset				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	60	Meter Authority ID	Identifier assigned to the Metering Authority	The Metering Authority provides electric usage data necessary to determine the performance of a Resource.			Y			
5-Business Entity Relationships	5	61	Meter Authority Name	Name of the Metering Authority				Y			
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.			Y			
6-Device and Qualification	6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter				Y			
6-Device and Qualification	6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter				Y			
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter				Y			
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter				Y			
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the ~~competitive~~ meter entity for the meter device.			Y			
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	[Are these Meter elements correctly checked Y for Wholesale but not for Retail?]			Y			
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter				Y			
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter				Y			
6-Device and Qualification	6	23	Meter Model	Model of the Meter				Y			
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units				Y			
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter				Y			
6-Device and Qualification	6	29	Meter Phase	Specific Phase information				Y			
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator				Y			
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter				Y			
6-Device and Qualification	6	226	Meter Test Frequency	Frequency of Tests of the Meter	Expressed in months.			Y			
6-Device and Qualification	6	229 1	Meter Test Results	Results of Tests of the Meter	These are specific to the meter type.			Y			
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.			Y			
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.			Y			Y
8-Offer Parameters	8	22	MinGenCost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.			Y			Y
11-Capacity Market	11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	Expressed in Price/MW.			Y			
6-Device and Qualification	6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator				Y			
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality				Y			
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity				Y			
2-Location	2	60	NERC Control Area	The NERC control area of the resource				Y			
11-Capacity Market	11	23	Nominal Capacity	Nominated load	Expressed as a decimal value.			Y			Y
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.			Y			
6-Device and Qualification	6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours				Y			
12-Event and Performance	12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	38	Offer Commit Status	Commitment status of offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.			Y			Y
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)			Y			Y
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)			Y			
8-Offer Parameters	8	36	Offer Expiration Date	Date of Expiration of the Offer	This applies to DAM only.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.			Y			Y
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.			Y			Y
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are may be applicable.			Y			Y
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smooth offer segments from step function to slope				Y			
8-Offer Parameters	8	33	Offer Segment Hour	Hour of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			
8-Offer Parameters	8	32	Offer Segment Price	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
12-Event and Performance	12	15	Operator Comment	Additional Event information provided by the Operator				Y			
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW			Y			
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable		Y					
6-Device and Qualification	6	11	Parent Meter id	Flag set if the Meter is a Master or Parent Meter				Y			
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak				Y			
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.			Y			
11-Capacity Market	11	20	Peak Value	Measurement of Peak				Y			
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.			Y			
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement				Y			
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource				Y			Y



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2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.			Y			Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location				Y			Y
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation				Y			
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y					
14-Price and Product	14	34	Price Component Value	The value of the price component.		Y					
14-Price and Product	14	35	Price Location	The location at which the price is applicable.		Y					
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y					
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.			Y			
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price		Y			Y		



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Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	10	Product Name	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y					
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).		Y					Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier	Y			Y		
14-Price and Product	14	12	Product Sub-type	Used to further define product types		Y			Y		
14-Price and Product	14	11	Product Type	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y					Y
7-Market / Program Enrollment	7	10	Program ID	Program Identifier	The identifier of the program			Y			Y
7-Market / Program Enrollment	7	11	Program Name	Name of the Program				Y			Y
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer				Y			
11-Capacity Market	11	24	Qualified Capacity	Nominal ICAP derated for performance	Derated based on past performance.			Y			Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.			Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.			Y			Y
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.			Y			Y
7-Market / Program Enrollment	7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.			Y			
0-Common Message Parameters	0	13	Rejection Code Type	Type of rejection message	Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.			Y			
0-Common Message Parameters	0	14	Rejection Code Value	Code referring to the reason for a rejection message	Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.			Y			
12-Event and Performance	12	30	Reporting Interval	Interval size required for Reporting				Y			Y
10-Ancillary Service Market	10	24	Requalification Requirement	Flag set if Requalification is Required				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service				Y			Y
10-Ancillary Service Market	10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).			Y			
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.			Y			Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource				Y			
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.			Y			Y
7-Market / Program	7	41	Response Method ID	Identifier assigned to the Response Method				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Enrollment											
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method				Y			
7-Market / Program Enrollment	7	40	Response Method Type	Type of Response Method	Expressed as a response type code			Y			
7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.			Y			
7-Market / Program Enrollment	7	34	Response Time	The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load.							Y
12-Event and Performance	12	33	Response Value	Response				Y			Y
5-Business Entity Relationships	5	44	Retail Rate	Retail Rate	Expressed as Price per kWh *[Why are these retail items (40-44) checked Y for wholesale and unchecked for retail?]			Y			
5-Business Entity Relationships	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	*			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	*This can also be used for comments associated with the Retail Rate.			Y			
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	*			Y			
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	*			Y			
8-Offer Parameters	8	42	Schedule Description	Description of the Offer				Y			
9-Energy Market	9	15	Schedule ID		Unique identifier assigned to each schedule.			Y			
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer				Y			
8-Offer Parameters	8	43	Schedule Status	Status of the Offer				Y			
5-Business Entity Relationships	5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.			Y			
5-Business Entity Relationships	5	71	Scheduling Entity Name	Name of the Scheduling Entity				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider [Is this a defined term for WEQ and REQ?] or the Resource.			Y			
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.			Y			Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location				Y			
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.			Y			Y
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider				Y			
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	50	Simple Signal Levels	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL							Y
14-Price and Product	14	40	Source Location Identifier	The identifier of the source location of the product for which the price applies		Y			Y		
14-Price and Product	14	41	Source Location Identifier Type	The type of source location of the product for which the price applies		Y					
8-Offer Parameters	8	34	Startup Cost	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	37	Startup Cost Type	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.			Y			
2-Location	2	13	State/Province	State or Province two-letter code				Y			Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	10	Status Check	A signal to require the DR resource status to be sent back. (Only applicable to Direct Load Control)							Y
8-Offer Parameters	8	35	Strike Price	Threshold Price	Expressed as a decimal value of price/MW.			Y			
8-Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.			Y			
0-Common Message Parameters	0	10	Submittal Date	Timestamp for the sender's use				Y			
0-Common Message Parameters	0	11	Submitted By	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data			Y			
0-Common Message Parameters	0	12	Submitted Error	ID of submission error detected	Common data element to capture any errors or exceptions during submission			Y			
10-Ancillary Service Market	10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid				Y			
3-Contact	3	13	Third Party	Flag set if the Contact is a third-party entity				Y			
2-Location	2	22	Time Zone Name	Name of the Time Zone in which the Service Location is located				Y			



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	20	Title	Title of the Contact				Y			
5-Business Entity Relationships	5	22	Transmission / Distribution Service Provider Account Number	Transmission / Distribution Service Provider's account number for the Resource				Y			Y
5-Business Entity Relationships	5	20	Transmission / Distribution Service Provider ID	Identifier assigned to the Transmission / Distribution Service Provider	The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.			Y			
5-Business Entity Relationships	5	21	Transmission / Distribution Service Provider Name	Name of the Transmission / Distribution Service Provider				Y			
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay				Y			
14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier		Y					Y
12-Event and Performance	12	52	Usage Information	Information about the near real time electricity usage of the DR Resource.							Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp .			Y			
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.			Y			
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.			Y			
2-Location	2	21	Weather Station	Weather Station code associated with the Service Location				Y			Y
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				Y			
2-Location	2	14	Zip/Postal Code	Zip or Postal Code				Y			Y
2-Location	2	31	Zone	Name of the Zone in which the Service Location is	A Zone is a physical or electrical region.			Y			Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				located							
2-Location	2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				Y			Y
2-Location	2	32	Zone Type	Type of Zone	Examples: Capacity, Dispatch, Price, Load, etc.			Y			



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Listing by Category ID and Category Element ID

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	10	Submittal Date	Timestamp for the sender's use				Y			
0-Common Message Parameters	0	11	Submitted By	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data			Y			
0-Common Message Parameters	0	12	Submitted Error	ID of submission error detected	Common data element to capture any errors or exceptions during submission			Y			
0-Common Message Parameters	0	13	Rejection Code Type	Type of rejection message	Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.			Y			
0-Common Message Parameters	0	14	Rejection Code Value	Code referring to the reason for a rejection message	Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability				Y			
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality				Y			
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity				Y			
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.			Y			Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location				Y			
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset				Y			Y
1-General Asset / Resource	1	13	Asset Name	The name of the asset				Y			
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.			Y			Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
1-General Asset / Resource	1	22	DR Resource Group ID	Grouping of Resources that can respond to the same DR signal							Y
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.			Y			Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets				Y			Y
1-General Asset / Resource	1	40	GenEMSID	Alias or point Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	41	GenBillingID	Billing Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location				Y			
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load				Y			
1-General Asset / Resource	1	991	General Resource Comments	General comments associated with the Resource				Y			
2-Location	2	10	Address1	Address line 1				Y			Y
2-Location	2	11	Address2	Address line 2				Y			Y
2-Location	2	12	City	City				Y			Y
2-Location	2	13	State/Province	State or Province two-letter code				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	14	Zip/Postal Code	Zip or Postal Code				Y			Y
2-Location	2	15	Country	Country				Y			Y
2-Location	2	20	GPS Coordinates	Latitude and longitude				Y			Y
2-Location	2	21	Weather Station	Weather Station code associated with the Service Location				Y			Y
2-Location	2	22	Time Zone Name	Name of the Time Zone in which the Service Location is located				Y			
2-Location	2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				Y			Y
2-Location	2	31	Zone	Name of the Zone in which the Service Location is located	A Zone is a physical or electrical region.			Y			Y
2-Location	2	32	Zone Type	Type of Zone	Examples: Capacity, Dispatch, Price, Load, etc.			Y			
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected				Y			Y



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2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached				Y			Y
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.			Y			Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location				Y			Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice				Y			
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location				Y			
2-Location	2	60	NERC Control Area	The NERC control area of the resource				Y			
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address			Y			
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address			Y			
2-Location	2	991	Location Comments	Comments associated with the Service Location				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.			Y			
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.			Y			
3-Contact	3	12	DUNS Number	DUNS business number				Y			
3-Contact	3	13	Third Party	Flag set if the Contact is a third-party entity				Y			
3-Contact	3	20	Title	Title of the Contact				Y			
3-Contact	3	21	First Name	First Name of the Contact				Y			
3-Contact	3	22	Last Name	Last Name of the Contact				Y			
3-Contact	3	23	Contact Middle Name	Middle Name of the Contact				Y			
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to which may be used.			Y			
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.			Y			
3-Contact	3	991	Contact Comments	Comments associated with the Contact				Y			
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor				Y			
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.			Y			
4-Grid Connection	4	12	Connect Voltage	Voltage level	Voltage at connection.			Y			
4-Grid Connection	4	991	Grid Connection Comments	Comments associated with the Grid Connection of the Resource				Y			
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.			Y			Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider				Y			
5-Business Entity Relationships	5	13	Demand Response Provider		The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.						Y
5-Business Entity Relationships	5	14	Demand Response Controlling Entity		An identifier for the Service Provider issuing the DR event deployment instructions.						Y
5-Business Entity Relationships	5	20	Transmission / Distribution Service Provider ID	Identifier assigned to the Transmission / Distribution Service Provider	The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.			Y			
5-Business Entity Relationships	5	21	Transmission / Distribution Service Provider Name	Name of the Transmission / Distribution Service Provider				Y			
5-Business Entity Relationships	5	22	Transmission / Distribution Service Provider Account Number	Transmission / Distribution Service Provider's account number for the Resource				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.			Y			
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE				Y			
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	*[Why are these retail items (40-44) checked Y for wholesale and unchecked for retail?]			Y			
5-Business Entity Relationships	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	*			Y			
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	*			Y			
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	*This can also be used for comments associated with the Retail Rate.			Y			
5-Business Entity Relationships	5	44	Retail Rate	Retail Rate	*Expressed as Price per kWh			Y			
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the ~~competitive~~ meter entity for the meter device.			Y			
5-Business Entity Relationships	5	60	Meter Authority ID	Identifier assigned to the Metering Authority	The Metering Authority provides electric usage data necessary to determine the performance of a Resource.			Y			
5-Business Entity Relationships	5	61	Meter Authority Name	Name of the Metering Authority				Y			
5-Business Entity Relationships	5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.			Y			
5-Business Entity Relationships	5	71	Scheduling Entity Name	Name of the Scheduling Entity				Y			
5-Business Entity Relationships	5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.			Y			
5-Business Entity Relationships	5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	90	Asset Operator ID	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	91	Asset Operator Name	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity				Y			
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.			Y			
6-Device and Qualification	6	11	Parent Meter id	Flag set if the Meter is a Master or Parent Meter				Y			
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter				Y			
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.			Y			
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter				Y			
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter				Y			
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	[Are these Meter elements correctly checked Y for Wholesale but not for Retail?]			Y			
6-Device and Qualification	6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter				Y			
6-Device and Qualification	6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter				Y			
6-Device and Qualification	6	226	Meter Test Frequency	Frequency of Tests of the Meter	Expressed in months.			Y			
6-Device and Qualification	6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter				Y			
6-Device and Qualification	6	228	Date of Last Meter Test	Date of Last Test of the Meter				Y			
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator				Y			
6-Device and Qualification	6	229 1	Meter Test Results	Results of Tests of the Meter	These are specific to the meter type.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229 2	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp .			Y			
6-Device and Qualification	6	229 3	Measurement Interval	Interval of time between Measurement readings	This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.			Y			
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies				Y			
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter				Y			
6-Device and Qualification	6	229 6	Meter Asset Comments	Comments associated with the Meter Asset				Y			
6-Device and Qualification	6	23	Meter Model	Model of the Meter				Y			
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units				Y			
6-Device and Qualification	6	26	Meter Accuracy Class	Accuracy Class of the Meter				Y			
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter				Y			
6-Device and Qualification	6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error				Y			
6-Device and Qualification	6	29	Meter Phase	Specific Phase information				Y			
6-Device and Qualification	6	291	CT Ratio	Ratio of the Current Transformer				Y			
6-Device and Qualification	6	30	Distributed Generator Type	Type of Distributed Generator	This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.			Y			
6-Device and Qualification	6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator				Y			
6-Device and Qualification	6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.			Y			
6-Device and Qualification	6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator				Y			
6-Device and Qualification	6	37	In-Service Date	Date the Distributed Generator became operational				Y			
6-Device and Qualification	6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours				Y			
6-Device and Qualification	6	39	Distributed Generator Name	Name of the Distributed Generator				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP				Y			
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location				Y			
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid				Y			
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.			Y			
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				Y			
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.			Y			
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay				Y			
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				Y			
6-Device and Qualification	6	70	Device Class		Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event. 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved						Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	80	Asset Manufacturer	Manufacturer of the Asset							Y
6-Device and Qualification	6	81	Asset Model	Model identifier of the Asset, assigned by the Manufacturer							Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer							Y
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset							Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.						Y
6-Device and Qualification	6	991	Distributed Generator Comments	Comments associated with the Distributed Generator				Y			
7-Market / Program Enrollment	7	10	Program ID	Program Identifier	The identifier of the program			Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	11	Program Name	Name of the Program				Y			Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market				Y			
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).			Y			Y
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.			Y			Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated			Y			Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.			Y			Y
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	30	Lead Time	Time between the advanced notification and deployment	Notification is the transmittal of a Deployment message.			Y			Y
7-Market / Program Enrollment	7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market				Y			
7-Market / Program Enrollment	7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market				Y			
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider [Is this a defined term for WEQ and REQ?] or the Resource.			Y			
7-Market / Program Enrollment	7	34	Response Time	The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load.							Y
7-Market / Program Enrollment	7	40	Response Method Type	Type of Response Method	Expressed as a response type code			Y			



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7-Market / Program Enrollment	7	41	Response Method ID	Identifier assigned to the Response Method				Y			
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method				Y			
7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.			Y			
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.			Y			
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.			Y			
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement				Y			
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment				Y			
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are may be applicable.			Y			Y
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.			Y			Y
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.			Y			Y
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource				Y			Y
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.			Y			Y
8-Offer Parameters	8	22	MinGenCost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.			Y			Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.			Y			Y



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8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.			Y			Y
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.			Y			Y
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)			Y			
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			
8-Offer Parameters	8	32	Offer Segment Price	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			



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8-Offer Parameters	8	33	Offer Segment Hour	Hour of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	34	Startup Cost	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	35	Strike Price	Threshold Price	Expressed as a decimal value of price/MW.			Y			
8-Offer Parameters	8	36	Offer Expiration Date	Date of Expiration of the Offer	This applies to DAM only.			Y			
8-Offer Parameters	8	37	Startup Cost Type	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.			Y			
8-Offer Parameters	8	38	Offer Commit Status	Commitment status of offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.			Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)			Y			Y
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smooth the offer segments from step function to slope				Y			
8-Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.			Y			
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer				Y			
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer				Y			



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Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	42	Schedule Description	Description of the Offer				Y			
8-Offer Parameters	8	43	Schedule Status	Status of the Offer				Y			
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation				Y			
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.			Y			Y
8-Offer Parameters	8	72	Constraint Interval	The timeframe over which the constraint type applies.	Typically daily, hourly, weekly, date			Y			Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval				Y			Y



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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	0	Instruction ID		Unique identifier assigned to each instruction.			Y			
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			Y
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval			Y			
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.			Y			
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.			Y			
9-Energy Market	9	15	Schedule ID		Unique identifier assigned to each schedule.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.			Y			
9-Energy Market	9	21	Breaker Status	Status of the Breaker for the Resource				Y			
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW			Y			
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar			Y			
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.			Y			
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID		Unique identifier assigned to each ancillary service instruction.			Y			
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide				Y			Y
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted				Y			
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	The start time of a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award	The value associated with a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	16	Ancillary Service Award - Cleared Price	Awarded Price	The market clearing price for the cleared ancillary service product MW.			Y			
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID		Unique identifier assigned to each ancillary service schedule.			Y			
10-Ancillary Service Market	10	20	Ancillary Service Product Qualification Type	Type of Qualification	Examples include initial, requalification, etc.			Y			
10-Ancillary Service Market	10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource				Y			
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified				Y			
10-Ancillary Service Market	10	24	Requalification Requirement	Flag set if Requalification is Required				Y			
10-Ancillary Service Market	10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.			Y			
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch				Y			
11-Capacity Market	11	10	Capacity Type	Type of Capacity	Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.			Y			Y
11-Capacity Market	11	11	Capacity Type description	Description of the Type of Capacity				Y			Y
11-Capacity Market	11	20	Peak Value	Measurement of Peak				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.			Y			
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak				Y			
11-Capacity Market	11	23	Nominal Capacity	Nominated load	Expressed as a decimal value.			Y			Y
11-Capacity Market	11	24	Qualified Capacity	Nominal ICAP derated for performance	Derated based on past performance.			Y			Y
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.			Y			
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.			Y			
11-Capacity Market	11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	Expressed in Price/MW.			Y			
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.			Y			
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.			Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market				Y			
12-Event and Performance	12	10	Event ID	Identifier assigned to the Event	An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.			Y			Y
12-Event and Performance	12	11	Deployment Type	Type of Deployment	Examples are: Advanced (Normal), Immediate, Audit/Test			Y			Y
12-Event and Performance	12	12	Event Day	Operating Date of Start of Event				Y			Y
12-Event and Performance	12	13	Event Description	Description of the Event				Y			
12-Event and Performance	12	14	Event Start Time	Time of Start of deployment period for Event	The Deployment Period is the period of time from the Deployment to Release/Recall.			Y			Y
12-Event and Performance	12	15	Operator Comment	Additional Event information provided by the Operator				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	16	Deployment MW	Absolute or relative Deployment quantity	Expressed as an absolute or relative (%) MW value.			Y			Y
12-Event and Performance	12	17	Event Status	Status of the Event	Examples include: initiated, completed, etc.			Y			Y
12-Event and Performance	12	18	Event End Time	Time of End of deployment period	Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.			Y			Y
12-Event and Performance	12	19	Event Modification Number	A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.				Y			Y
12-Event and Performance	12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.				Y			Y
12-Event and Performance	12	113	Load Level Value	Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).							Y
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.			Y			Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	23	Energy Baseline Value	Calculated Energy Baseline	A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.			Y			Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline				Y			Y
12-Event and Performance	12	30	Reporting Interval	Interval size required for Reporting				Y			Y
12-Event and Performance	12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated				Y			Y
12-Event and Performance	12	32	Measurement Value (CIM)	Value of the interval reading				Y			Y
12-Event and Performance	12	33	Response Value	Response				Y			Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	34	Measurement Value Type	The type of measurement value.	The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).			Y			
12-Event and Performance	12	50	Simple Signal Levels	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL							Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	51	Criticality Level	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or in combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility						Y
12-Event and Performance	12	52	Usage Information	Information about the near real time electricity usage of the DR Resource.							Y
12-Event and Performance	12	991	Event & Performance comments	Comments associated with Event and Performance data				Y			



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	10	Status Check	A signal to require the DR resource status to be sent back. (Only applicable to Direct Load Control)							Y
13-Direct Load Control	13	11	DR Control Command: Direct Load Control Type	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset							Y
13-Direct Load Control	13	12	DR Control Command: Direct Load Control Value	Value associated with the Direct Load Control Type.							Y
13-Direct Load Control	13	13	Duty Cycle	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value							Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				of 0xFF indicates the field is not used." (from SEP2.0)							
13-Direct Load Control	13	14	Event Control	Event Control options for randomized start or end times: 1= Randomized Start time, 0=Randomized Start not Applied 1= Randomized End time, 0=Randomized End not Applied. (from SEP2.0)							Y
13-Direct Load Control	13	15	Exception Conditions	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.							Y



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	16	Load Control State	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.							Y
14-Price and Product	14	10	Product Name	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y					
14-Price and Product	14	11	Product Type	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y					Y
14-Price and Product	14	12	Product Sub-type	Used to further define product types		Y			Y		
14-Price and Product	14	13	Identifier Source (product)	The Identifier Source references the product identification scheme for the Product Identifier.		Y					



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier		Y					Y
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)		Y			Y		Y
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price		Y			Y		
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable		Y					
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).		Y					Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier	Y			Y		
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y					
14-Price and Product	14	34	Price Component Value	The value of the price component.		Y					



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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	35	Price Location	The location at which the price is applicable.		Y					
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y					
14-Price and Product	14	37	Delivery Time	Time at which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	38	Delivery Interval	The duration over which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	40	Source Location Identifier	The identifier of the source location of the product for which the price applies		Y			Y		
14-Price and Product	14	41	Source Location Identifier Type	The type of source location of the product for which the price applies		Y					



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Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

4. Supporting Documentation

a. Description of Request:

2010 REQ Annual Plan Item 9 and 2010 WEQ Annual Plan Item 6 – “Develop Smart Grid Wholesale and Retail Electric Standards”

b. Description of Recommendation:

This recommendation provides the data [requirements elements](#) related to the use cases developed for Priority Action Plan 03 and 09 as part of the phase one effort

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the development of standard DR and DER signals.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- March 11, 2010 Meeting Notes – To be posted
- March 18, 2010 Meeting Notes – To be posted
- March 25, 2010 Meeting Notes – To be posted
- April 1, 2010 Meeting Notes – To be posted
- April 8, 2010 Meeting Notes – To be posted
- April 29, 2010 Meeting Notes – To be posted
- May 13, 2010 Meeting Notes – To be posted
- May 20, 2010 Meeting Notes – To be posted
- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [RequirementsElements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☐ Principle
☐ Definition
☐ Business Practice Standard
☐ Document
☒ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY: The Master Data [RequirementsElements](#) List contains the list of data elements used in the use cases that were developed for PAP 03 and PAP 09 in the phase one effort.



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RECOMMENDED STANDARDS:

WEQ-020.1 Smart Grid Standards Data [RequirementsElements](#) Table

Introduction

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to [\(i\) require the use of any of these data elements, \(ii\) require the provision or purchase of any products, programs, rates, markets or services, or \(iii\) supersede](#) applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

~~All data element names and implied or stated structures are not intended to specify specific message payloads or information object. The intent is to clearly specify the business information that may be necessary to be exchanged to make effective and reasonable business decisions, and NAESB understands that standards or implementations that do not directly use such schemas and element names may conform to these requirements through clearly defined mapping documentation.~~

Capitalization of words within the Short Description or Long Description of a data element refers to the name of another data element within this Master Data Element List, not a NAESB defined term.

WEQ-020.1.1 1 Alphabetical Listing by Data Element Name

Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



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* Listing by Category ID and Category Element ID begins on page 245 in section WEQ-020.1.2

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	10	Address1	Address line 1				Y			Y
2-Location	2	11	Address2	Address line 2				Y			Y
10-Ancillary Service Market	10	16	Ancillary Service Award - Cleared Price	Awarded Price	The market clearing price for the cleared ancillary service product MW.			Y			
10-Ancillary Service Market	10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	The start time of a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award	The value associated with a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID	<u>Unique identifier assigned to each ancillary service instruction.-</u>	<u>Unique identifier assigned to each ancillary service instruction.</u>			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	20	Ancillary Service Product Qualification Type	Type of Qualification	Examples include initial, requalification, etc.			Y			
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide				Y			Y
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource				Y			
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified				Y			
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID	~~-Unique identifier assigned to each ancillary service schedule.~~	~~Unique identifier assigned to each ancillary service schedule.~~			Y			
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies				Y			
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.			Y			Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets				Y			Y
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset							Y
6-Device and Qualification	6	80	Asset Manufacturer	Manufacturer of the Asset							Y
6-Device and Qualification	6	81	Asset Model	Model identifier of the Asset, assigned by the Manufacturer							Y
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location				Y			
1-General Asset / Resource	1	13	Asset Name	The name of the asset				Y			
5-Business Entity Relationships	5	90	Asset Operator ID	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	91	Asset Operator Name	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction or response (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.						Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer							Y
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.			Y			
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.			Y			Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline				Y			Y
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load				Y			
9-Energy Market	9	21	Breaker Status	Status of the Breaker for the Resource				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				Y			
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location				Y			
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid				Y			
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market				Y			
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.			Y			
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.			Y			
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.			Y			
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	10	Capacity Type	Type of Capacity	Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.			Y			Y
11-Capacity Market	11	11	~~Capacity Type~~ <u>Capacity Type Description</u>	Description of the Type of Capacity				Y			Y
2-Location	2	12	City	City				Y			Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice				Y			
4-Grid Connection	4	12	Connect Voltage	Voltage level	Voltage at connection.			Y			
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address			Y			
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address			Y			
8-Offer Parameters	8	72	Constraint Interval	The timeframe over which the constraint type applies.	Typically daily, hourly, weekly, date			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.			Y			Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval				Y			Y
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.			Y			
3-Contact	3	991	Contact Comments	Comments associated with the Contact				Y			
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to which may be used.			Y			
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	23	Contact MiddleMiddle Name	Middle Name of the Contact				Y			
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.			Y			
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.			Y			
2-Location	2	15	Country	Country				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	51	Criticality Level	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or in combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility						Y
6-Device and Qualification	6	291	CT Ratio	Ratio of the Current Transformer				Y			
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)		Y			Y		Y
6-Device and Qualification	6	228	Date of Last Meter Test	Date of Last Test of the Meter				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market				Y			
14-Price and Product	14	38	Delivery Interval	The duration over which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	37	Delivery Time	Time at which the product is available for physical consumption		Y			Y		Y
5-Business Entity Relationships	5	14	Demand Response Controlling Entity	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>						Y
5-Business Entity Relationships	5	13	Demand Response Provider	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>						Y
12-Event and Performance	12	16	Deployment MW	Absolute or relative Deployment quantity	Expressed as an absolute or relative (%) MW value.			Y			Y
12-Event and Performance	12	11	Deployment Type	Type of Deployment	Examples are: Advanced (Normal), Immediate, Audit/Test			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.			Y			
5-Business Entity Relationships	5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity				Y			
6-Device and Qualification	6	70	Device Class	<u>Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event.</u> 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting	<u>Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event.</u> 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved						Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved							
6-Device and Qualification	6	991	Distributed Generator Comments	Comments associated with the Distributed Generator				Y			
6-Device and Qualification	6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	39	Distributed Generator Name	Name of the Distributed Generator				Y			
6-Device and Qualification	6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.			Y			
6-Device and Qualification	6	30	Distributed Generator Type	Type of Distributed Generator	This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.			Y			
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR			Y			
13-Direct Load Control	13	11	DR Control Command: Direct Load Control Type	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	12	DR Control Command: Direct Load Control Value	Value associated with the Direct Load Control Type.							Y
1-General Asset / Resource	1	22	DR Resource Group ID	Grouping of Resources that can respond to the same DR signal							Y
3-Contact	3	12	DUNS Number	DUNS business number				Y			
13-Direct Load Control	13	13	Duty Cycle	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value of 0xFF indicates the field is not used." (from SEP2.0)							Y
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.			Y			Y
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				connected							
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached				Y			Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline				Y			Y
12-Event and Performance	12	23	Energy Baseline Value	Calculated Energy Baseline	A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.			Y			Y
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.			Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.			Y			
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval			Y			
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			Y
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment				Y			Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated			Y			Y
12-Event and Performance	12	991	Event & ~~Performance~~ Comments	Comments associated with Event and Performance data				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	14	Event Control	Event Control options for randomized start or end times: 1= Randomized Start time, 0=Randomized Start not Applied 1= Randomized End time, 0=Randomized End not Applied. (from SEP2.0)							Y
12-Event and Performance	12	12	Event Day	Operating Date of Start of Event				Y			Y
12-Event and Performance	12	13	Event Description	Description of the Event				Y			
12-Event and Performance	12	18	Event End Time	Time of End of deployment period	Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.			Y			Y
12-Event and Performance	12	10	Event ID	Identifier assigned to the Event	An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	19	Event Modification Number	A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.				Y			Y
12-Event and Performance	12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.				Y			Y
12-Event and Performance	12	14	Event Start Time	Time of Start of deployment period for Event	The Deployment Period is the period of time from the Deployment to Release/Recall.			Y			Y
12-Event and Performance	12	17	Event Status	Status of the Event	Examples include: initiated, completed, etc.			Y			Y
13-Direct Load Control	13	15	Exception Conditions	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.							Y
5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity				Y			
3-Contact	3	21	First Name	First Name of the Contact				Y			
1-General Asset / Resource	1	41	Gen_Billing_ID	Billing Identifier assigned to the Resource				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
1-General Asset / Resource	1	40	Gen_EMS_ID	Alias or point Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	991	General Resource Comments	General comments associated with the Resource				Y			
2-Location	2	20	GPS Coordinates	Latitude and longitude				Y			Y
4-Grid Connection	4	991	Grid Connection Comments	Comments associated with the Grid Connection of the Resource				Y			
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted				Y			
14-Price and Product	14	13	Identifier Source (product)	The Identifier Source references the product identification scheme for the Product Identifier.		Y					
6-Device and Qualification	6	37	In-Service Date	Date the Distributed Generator became operational				Y			
6-Device and Qualification	6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator				Y			
9-Energy Market	9	0	Instruction ID	<u>-Unique identifier assigned to each instruction.</u>	<u>Unique identifier assigned to each instruction.</u>			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP				Y			
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location				Y			
3-Contact	3	22	Last Name	Last Name of the Contact				Y			
7-Market / Program Enrollment	7	30	Lead Time	Time between the advanced notification and deployment	Notification is the transmittal of a Deployment message.			Y			Y
13-Direct Load Control	13	16	Load Control State	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.							Y
12-Event and Performance	12	113	Load Level Value	Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				Y			
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.			Y			
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE				Y			
2-Location	2	991	Location Comments	Comments associated with the Service Location				Y			
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor				Y			
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.			Y			
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator				Y			Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market				Y			
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment				Y			
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).			Y			Y
6-Device and Qualification	6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error				Y			
6-Device and Qualification	6	229 3	Measurement Interval	Interval of time between Measurement readings	This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.			Y			
12-Event and Performance	12	32	Measurement Value (CIM)	Value of the interval reading				Y			Y
12-Event and Performance	12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated				Y			Y
12-Event and Performance	12	34	Measurement Value Type	The type of measurement value.	The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).			Y			
6-Device and Qualification	6	26	Meter Accuracy Class	Accuracy Class of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229 6	Meter Asset Comments	Comments associated with the Meter Asset				Y			
5-Business Entity Relationships	5	60	Meter Authority ID	Identifier assigned to the Metering Authority	The Metering Authority provides electric usage data necessary to determine the performance of a Resource.			Y			
5-Business Entity Relationships	5	61	Meter Authority Name	Name of the Metering Authority				Y			
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.			Y			
6-Device and Qualification	6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter				Y			
6-Device and Qualification	6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter				Y			
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter				Y			
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider				Y			
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the competitive -meter entity for the meter device.			Y			
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	[Are these Meter elements correctly checked Y for Wholesale but not for Retail?]			Y			
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter				Y			
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter				Y			
6-Device and Qualification	6	23	Meter Model	Model of the Meter				Y			
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units				Y			
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter				Y			
6-Device and Qualification	6	29	Meter Phase	Specific Phase information				Y			
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				Operator							
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter				Y			
6-Device and Qualification	6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter				Y			
6-Device and Qualification	6	226	Meter Test Frequency	Frequency of Tests of the Meter	Expressed in months.			Y			
6-Device and Qualification	6	229 1	Meter Test Results	Results of Tests of the Meter	These are specific to the meter type.			Y			
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.			Y			
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.			Y			Y
8-Offer Parameters	8	22	Min_Gen_Cost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.			Y			Y
11-Capacity Market	11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	Expressed in Price/MW.			Y			
6-Device and Qualification	6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability				Y			
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality				Y			
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity				Y			
2-Location	2	60	NERC Control Area	The NERC control area of the resource				Y			
11-Capacity Market	11	23	Nominal Capacity	Nominated load	Expressed as a decimal value.			Y			Y
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.			Y			
6-Device and Qualification	6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.				Y			Y
8-Offer Parameters	8	38	Offer Commit Status	Commitment status of offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.			Y			Y
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)			Y			
8-Offer Parameters	8	36	Offer Expiration Date	Date of Expiration of the Offer	This applies to DAM only.			Y			
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.			Y			Y
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.			Y			Y
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are may be applicable.			Y			Y
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smooth offer segments from step function to slope				Y			
8-Offer Parameters	8	33	Offer Segment Hour	Hour of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			
8-Offer Parameters	8	32	Offer Segment	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
			Price		default.						
12-Event and Performance	12	15	Operator Comment	Additional Event information provided by the Operator				Y			
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar			Y			
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW			Y			
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable		Y					
6-Device and Qualification	6	11	Parent ~~Meter~~ <u>Meter ID</u>	Flag set if the Meter is a Master or Parent Meter				Y			
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak				Y			
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.			Y			
11-Capacity Market	11	20	Peak Value	Measurement of Peak				Y			
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement				Y			
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource				Y			Y
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.			Y			Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location				Y			Y
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation				Y			
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y					
14-Price and Product	14	34	Price Component Value	The value of the price component.		Y					
14-Price and Product	14	35	Price Location	The location at which the price is applicable.		Y					
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y					

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.			Y			
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price		Y			Y		
14-Price and Product	14	10	Product Name	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y					
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).		Y					Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier	Y			Y		
14-Price and Product	14	12	Product Sub-type	Used to further define product types		Y			Y		
14-Price and Product	14	11	Product Type	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y					Y
7-Market / Program Enrollment	7	10	Program ID	Program Identifier	The identifier of the program			Y			Y
7-Market / Program Enrollment	7	11	Program Name	Name of the Program				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer				Y			
11-Capacity Market	11	24	Qualified Capacity	Nominal ~~ICAP~~ installed capacity (ICAP) derated for performance	Derated based on past performance.			Y			Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.			Y			Y
8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.			Y			Y
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.			Y			Y
7-Market / Program Enrollment	7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market				Y			

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RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.			Y			
0-Common Message Parameters	0	13	Rejection Code Type	Type of rejection message	Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.			Y			
0-Common Message Parameters	0	14	Rejection Code Value	Code referring to the reason for a rejection message	Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.			Y			
12-Event and Performance	12	30	Reporting Interval	Interval size required for Reporting				Y			Y
10-Ancillary Service Market	10	24	Requalification Requirement	Flag set if Requalification is Required				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service				Y			Y
10-Ancillary Service Market	10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).			Y			
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.			Y			Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource				Y			
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction or response (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	41	Response Method ID	Identifier assigned to the Response Method				Y			
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method				Y			
7-Market / Program Enrollment	7	40	Response Method Type	Type of Response Method	Expressed as a response type code			Y			
7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.			Y			
7-Market / Program Enrollment	7	34	Response Time	The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load <u>or produce energy.</u>							Y
12-Event and Performance	12	33	Response Value	Response				Y			Y
5-Business Entity Relationships	5	44	Retail Rate	Retail Rate	Expressed as Price per kWh <u>*[Why are these retail items (40-44) checked Y for wholesale and unchecked for retail?]</u>			Y			
5-Business Entity	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	<u>*</u>			Y			

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Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Relationships											
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	*This can also be used for comments associated with the Retail Rate.			Y			
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	*			Y			
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	*			Y			
8-Offer Parameters	8	42	Schedule Description	Description of the Offer				Y			
9-Energy Market	9	15	Schedule ID	<u>-Unique identifier assigned to each schedule.</u>	<u>Unique identifier assigned to each schedule.</u>			Y			
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer				Y			
8-Offer Parameters	8	43	Schedule Status	Status of the Offer				Y			
5-Business Entity Relationships	5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.			Y			
5-Business Entity Relationships	5	71	Scheduling Entity Name	Name of the Scheduling Entity				Y			

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider ~~Is this a defined term for WEQ and REQ?~~ or the Resource.			Y			
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.			Y			Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location				Y			
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.			Y			Y
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider				Y			
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	50	Simple Signal Levels	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL							Y
14-Price and Product	14	40	Source Location Identifier	The identifier of the source location of the product for which the price applies		Y			Y		
14-Price and Product	14	41	Source Location Identifier Type	The type of source location of the product for which the price applies		Y					
8-Offer Parameters	8	34	Startup Cost	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	37	Startup Cost Type	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.			Y			
2-Location	2	13	State/Province	State or Province two-letter code				Y			Y
13-Direct Load Control	13	10	Status Check	A signal to require the DR resource status to be sent back. (Only applicable to Direct							Y

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				Load Control)							
8- Offer Parameters	8	35	Strike Price	Threshold Price	Expressed as a decimal value of price/MW.			Y			
8- Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.			Y			
0- Common Message Parameters	0	10	Submittal Date	Timestamp for the sender's use				Y			
0- Common Message Parameters	0	11	Submitted By	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data			Y			
0- Common Message Parameters	0	12	Submitted Error	ID of submission error detected	Common data element to capture any errors or exceptions during submission			Y			
10- Ancillary Service Market	10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid				Y			
3- Contact	3	13	Third Party	Flag set if the Contact is a third-party entity				Y			
2- Location	2	22	Time Zone Name	Name of the Time Zone in which the Service Location is located				Y			
3- Contact	3	20	Title	Title of the Contact				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	22	Transmission / Distribution Service Provider Account Number	Transmission / Distribution Service Provider's account number for the Resource				Y			Y
5-Business Entity Relationships	5	20	Transmission / Distribution Service Provider ID	Identifier assigned to the Transmission / Distribution Service Provider	The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.			Y			
5-Business Entity Relationships	5	21	Transmission / Distribution Service Provider Name	Name of the Transmission / Distribution Service Provider				Y			
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay				Y			
14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier		Y					Y
12-Event and Performance	12	52	Usage Information	Information about the near real time electricity usage of the DR Resource.							Y

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp .			Y			
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.			Y			
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.			Y			
2-Location	2	21	Weather Station	Weather Station code associated with the Service Location				Y			Y
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				Y			
2-Location	2	14	Zip/Postal Code	Zip or Postal Code				Y			Y
2-Location	2	31	Zone	Name of the Zone in which the Service Location is	A Zone is a physical or electrical region.			Y			Y

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Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				located							
2-Location	2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				Y			Y
2-Location	2	32	Zone Type	Type of Zone	Examples: Capacity, Dispatch, Price, Load, etc.			Y			

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WEQ-020.1.2 Listing by Category ID and Category Element ID

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0		Common Message Parameters								
0-Common Message Parameters	0	10	Submittal Date	Timestamp for the sender's use				Y			
0-Common Message Parameters	0	11	Submitted By	User ID of submitter	Common data element to indicate the user ID of the entity submitting the data			Y			
0-Common Message Parameters	0	12	Submitted Error	ID of submission error detected	Common data element to capture any errors or exceptions during submission			Y			
0-Common Message Parameters	0	13	Rejection Code Type	Type of rejection message	Rejection code type is categorizing the different kinds of rejection messages associated with enrollment, qualification, offers or meter data. May be combined with comments to provide details beyond the type of rejection.			Y			
0-Common Message Parameters	0	14	Rejection Code Value	Code referring to the reason for a rejection message	Rejection code related to the type of rejection. May be combined with comments to provide details beyond the type of rejection.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
0-Common Message Parameters	0	20	NERC CIP Security - Availability	CIP Security Classification for Availability				Y			
0-Common Message Parameters	0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality				Y			
0-Common Message Parameters	0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity				Y			
1-General Asset / Resource	1		General Asset/Resource								
1-General Asset / Resource	1	10	Service Location ID	Identifier assigned to the Service Location	The location at which connection to the transmission or distribution system is made.			Y			Y
1-General Asset / Resource	1	11	Service Location Name	Name of the Service Location				Y			
1-General Asset / Resource	1	12	Asset ID	The unique identifier of the asset				Y			Y
1-General Asset / Resource	1	13	Asset Name	The name of the asset				Y			
1-General Asset / Resource	1	20	Resource ID	Identifier assigned to the Resource	A Resource may be an individual asset or a group of assets that represent a dispatchable entity.			Y			Y
1-General Asset / Resource	1	21	Resource Name	Name of the Resource				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
1-General Asset / Resource	1	22	DR Resource Group ID	Grouping of Resources that can respond to the same DR signal							Y
1-General Asset / Resource	1	30	Asset Group ID	The identifier of a group of assets	An Asset Group is a logical entity that has a reportable interval-level consumption.			Y			Y
1-General Asset / Resource	1	31	Asset Group Name	Name of the aggregated group of assets				Y			Y
1-General Asset / Resource	1	40	Gen_EMS_ID	Alias or point Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	41	Gen_Billing_ID	Billing Identifier assigned to the Resource				Y			
1-General Asset / Resource	1	50	Business Segment	SIC or NAICS code of the Service Location				Y			
1-General Asset / Resource	1	51	Batch Load Flag	Flag set if the Resource is a Batch Load				Y			
1-General Asset / Resource	1	991	General Resource Comments	General comments associated with the Resource				Y			
2-Location	2		Location								
2-Location	2	10	Address1	Address line 1				Y			Y
2-Location	2	11	Address2	Address line 2				Y			Y
2-Location	2	12	City	City				Y			Y
2-Location	2	13	State/Province	State or Province two-letter code				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	14	Zip/Postal Code	Zip or Postal Code				Y			Y
2-Location	2	15	Country	Country				Y			Y
2-Location	2	20	GPS Coordinates	Latitude and longitude				Y			Y
2-Location	2	21	Weather Station	Weather Station code associated with the Service Location				Y			Y
2-Location	2	22	Time Zone Name	Name of the Time Zone in which the Service Location is located				Y			
2-Location	2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				Y			Y
2-Location	2	31	Zone	Name of the Zone in which the Service Location is located	A Zone is a physical or electrical region.			Y			Y
2-Location	2	32	Zone Type	Type of Zone	Examples: Capacity, Dispatch, Price, Load, etc.			Y			
2-Location	2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected				Y			Y
2-Location	2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
2-Location	2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached				Y			Y
2-Location	2	43	PNode	Name of the Price Node associated with the Service Location	The P-Node is the price location of the Service Location in the transmission and/or distribution network.			Y			Y
2-Location	2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location				Y			Y
2-Location	2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice				Y			
2-Location	2	51	Asset Multiplier	Number of identical Assets within the Service Location				Y			
2-Location	2	60	NERC Control Area	The NERC control area of the resource				Y			
2-Location	2	71	Connection Type	Additional type of connection associated with the Service Delivery Point	Example: ICCP Connection, IP address			Y			
2-Location	2	72	Connection Address	Address associated with the Connection Type	Example: Address of ICCP Connection, IP address			Y			
2-Location	2	991	Location Comments	Comments associated with the Service Location				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3		Contact								
3-Contact	3	10	Contact Type	Interest code associated with a Contact	This is a classification defining the function a particular contact serves. It supports "who to call for what needs" decisions. Examples are: Primary, Secondary, Billing, Third Party, and Authorized Representative.			Y			
3-Contact	3	11	Contact Priority	Order in which this Contact should be selected	This is used when multiple contacts are defined.			Y			
3-Contact	3	12	DUNS Number	DUNS business number				Y			
3-Contact	3	13	Third Party	Flag set if the Contact is a third-party entity				Y			
3-Contact	3	20	Title	Title of the Contact				Y			
3-Contact	3	21	First Name	First Name of the Contact				Y			
3-Contact	3	22	Last Name	Last Name of the Contact				Y			
3-Contact	3	23	Contact Middle Name	Middle Name of the Contact				Y			
3-Contact	3	30	Contact Method	Method of communication with the Contact	This identifies the various types of communication options (phone, email, etc.) to which may be used.			Y			
3-Contact	3	31	Contact Address Data	Method-dependent Address of the Contact	This identifies specific information required for the contact method selected.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
3-Contact	3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	A Communication Method is the medium by which an object communicates with another object for instruction, measurement, or control. The user specifies the sequence in which each medium is to be used when being contacted.			Y			
3-Contact	3	991	Contact Comments	Comments associated with the Contact				Y			
4-Grid Connection	4		Grid Connection								
4-Grid Connection	4	10	Loss Factor Type	Type of Loss Factor				Y			
4-Grid Connection	4	11	Loss Factor Value	Loss Factor	Expressed as a decimal value.			Y			
4-Grid Connection	4	12	Connect Voltage	Voltage level	Voltage at connection.			Y			
4-Grid Connection	4	991	Grid Connection Comments	Comments associated with the Grid Connection of the Resource				Y			
5-Business Entity Relationships	5		Business Entity Relationships								
5-Business Entity Relationships	5	11	Service Provider ID	Identifier assigned to the Service Provider	The Service Provider coordinates Resources to deliver electricity products and services to a market or distribution operator.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	12	Service Provider Name	Name of the Service Provider				Y			
5-Business Entity Relationships	5	13	Demand Response Provider	<u>-The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>	<u>The entity that is responsible for delivering Demand reductions from Demand Resources and is compensated for providing such Demand Response products.</u>						Y
5-Business Entity Relationships	5	14	Demand Response Controlling Entity	<u>An identifier for the Service Provider issuing the DR event deployment instructions.-</u>	<u>An identifier for the Service Provider issuing the DR event deployment instructions.</u>						Y
5-Business Entity Relationships	5	20	Transmission / Distribution Service Provider ID	Identifier assigned to the Transmission / Distribution Service Provider	The Transmission / Distribution Service Provider operates a local electricity transmission and/or distribution system.			Y			
5-Business Entity Relationships	5	21	Transmission / Distribution Service Provider Name	Name of the Transmission / Distribution Service Provider				Y			

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RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data **Requirements Elements** List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	22	Transmission / Distribution Service Provider Account Number	Transmission / Distribution Service Provider's account number for the Resource				Y			Y
5-Business Entity Relationships	5	30	Load Serving Entity ID	Identifier assigned to the LSE	The Load-Serving Entity serves end users and sells electric energy to end users.			Y			
5-Business Entity Relationships	5	31	Load Serving Entity Name	Name of the LSE				Y			
5-Business Entity Relationships	5	40	Retail Rate ID	Identifier assigned to the Retail Rate	<u>*[Why are these retail items (40-44) checked Y for wholesale and unchecked for retail?]</u>			Y			
5-Business Entity Relationships	5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	<u>*</u>			Y			
5-Business Entity Relationships	5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	<u>*</u>			Y			
5-Business Entity Relationships	5	43	Retail Rate Description	Description of the Retail Rate	<u>*</u> This can also be used for comments associated with the Retail Rate.			Y			
5-Business Entity	5	44	Retail Rate	Retail Rate	<u>*</u> Expressed as Price per kWh			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Relationships											
5-Business Entity Relationships	5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider				Y			
5-Business Entity Relationships	5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	This is the competitive meter entity for the meter device.			Y			
5-Business Entity Relationships	5	60	Meter Authority ID	Identifier assigned to the Metering Authority	The Metering Authority provides electric usage data necessary to determine the performance of a Resource.			Y			
5-Business Entity Relationships	5	61	Meter Authority Name	Name of the Metering Authority				Y			
5-Business Entity Relationships	5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	A Scheduling Entity submits bids and/or offers and receives Schedules and Awards.			Y			
5-Business Entity Relationships	5	71	Scheduling Entity Name	Name of the Scheduling Entity				Y			
5-Business Entity Relationships	5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	The Designated Dispatch Entity receives and processes Demand Resource Dispatch instructions or market information and may provide response information.			Y			

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5-Business Entity Relationships	5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity				Y			
5-Business Entity Relationships	5	90	Asset Operator ID	The identifier of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	91	Asset Operator Name	The name of the business entity that operates the DR assets. This is the entity that has physical control of the asset and control of the capability to participate in DR Events.							Y
5-Business Entity Relationships	5	92	Asset Owner ID	The Identifier of the business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
5-Business Entity Relationships	5	93	Asset Owner Name	The Name of business entity that owns the DR assets (entity that has the right to use or transfer use of the asset).							Y
5-Business Entity Relationships	5	991	External Entity Comments	Comments associated with the External Entity				Y			
6-Device and Qualification	6		Device and Qualification								
6-Device and Qualification	6	10	Meter Configuration	Configuration of the Meter at the Facility	The CIM defines the Meter as the physical asset that performs the metering role of the ServiceDeliveryPoint. It is used for measuring consumption and detecting events.			Y			
6-Device and Qualification	6	11	Parent Meter ID	Flag set if the Meter is a Master or Parent Meter				Y			
6-Device and Qualification	6	20	Meter ID	Identifier assigned to the Meter				Y			
6-Device and Qualification	6	21	Meter Type	Type of Meter installed at the Facility	Examples: RTU, CT/PT, etc.			Y			
6-Device and Qualification	6	22	Meter Manufacturer	Manufacturer of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	221	Meter Installation Date	Date of Installation of the Meter				Y			
6-Device and Qualification	6	222	PT Ratio	Ratio of the Potential Transformer				Y			
6-Device and Qualification	6	223	Meter Installer License	Professional License Number of the Installer of the Meter	<u>[Are these Meter elements correctly checked Y for Wholesale but not for Retail?]</u>			Y			
6-Device and Qualification	6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter				Y			
6-Device and Qualification	6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter				Y			
6-Device and Qualification	6	226	Meter Test Frequency	Frequency of Tests of the Meter	Expressed in months.			Y			
6-Device and Qualification	6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter				Y			
6-Device and Qualification	6	228	Date of Last Meter Test	Date of Last Test of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator				Y			
6-Device and Qualification	6	229 1	Meter Test Results	Results of Tests of the Meter	These are specific to the meter type.			Y			
6-Device and Qualification	6	229 2	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	Validation, Editing, and Estimation is the process of taking raw meter data and performing validation and, as necessary, editing and estimation of corrupt or missing data, to create validated data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering, Volume Two, Published 12/05/00, http://www.naesb.org/REQ/req_form.asp .			Y			
6-Device and Qualification	6	229 3	Measurement Interval	Interval of time between Measurement readings	This is the time between electricity meter recordings. The Measurement records the consumption or supply of an End Device. An End Device is a physical end-use device that consumes or supplies electricity.			Y			
6-Device and Qualification	6	229 4	ANSI Compliance	ANSI standard with which the Meter complies				Y			
6-Device and Qualification	6	229 5	Meter Owner	Owner of the Meter				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	229 6	Meter Asset Comments	Comments associated with the Meter Asset				Y			
6-Device and Qualification	6	23	Meter Model	Model of the Meter				Y			
6-Device and Qualification	6	24	Meter Rating	Load Rating of the Meter				Y			
6-Device and Qualification	6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units				Y			
6-Device and Qualification	6	26	Meter Accuracy Class	Accuracy Class of the Meter				Y			
6-Device and Qualification	6	27	Meter Loss Compensation	Line Losses included in the Meter				Y			
6-Device and Qualification	6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error				Y			
6-Device and Qualification	6	29	Meter Phase	Specific Phase information				Y			
6-Device and Qualification	6	291	CT Ratio	Ratio of the Current Transformer				Y			
6-Device and Qualification	6	30	Distributed Generator Type	Type of Distributed Generator	This technology characteristic of the Distributed Generator, such as combined cycle, induction, etc.			Y			

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6-Device and Qualification	6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator				Y			
6-Device and Qualification	6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator				Y			
6-Device and Qualification	6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	The Environmental Authority is a regulatory authority responsible for the development, reporting, and enforcement of environmental activities.			Y			
6-Device and Qualification	6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	35	Manufactured Date of Distributed Generator	Date of Manufacturer of the Distributed Generator				Y			Y
6-Device and Qualification	6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator				Y			
6-Device and Qualification	6	37	In-Service Date	Date the Distributed Generator became operational				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours				Y			
6-Device and Qualification	6	39	Distributed Generator Name	Name of the Distributed Generator				Y			
6-Device and Qualification	6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP				Y			
6-Device and Qualification	6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location				Y			
6-Device and Qualification	6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid				Y			
6-Device and Qualification	6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	Normal Operations is the time following Release/Recall during which a System Operator or Service Provider may require a Demand Resource to have returned its Load consumption to normal levels and to be available again for Deployment.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				Y			
6-Device and Qualification	6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				Y			
6-Device and Qualification	6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	This is used for load that is typically netted with internal generation.			Y			
6-Device and Qualification	6	51	UFR Settings	Setting of the Under-Frequency Relay				Y			
6-Device and Qualification	6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				Y			

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6-Device and Qualification	6	70	Device Class		Note: From SEP2.0 Enumeration representing the Device Class to apply the current Load Control Event. 0 HVAC compressor or furnace 1 Strip Heaters/Baseboard Heaters 2 Water Heater 3 Pool Pump/Spa/Jacuzzi 4 Smart Appliances 5 Irrigation Pump 6 Managed Commercial & Industrial (C&I) loads 7 Simple misc. (Residential On/Off) loads 8 Exterior Lighting 9 Interior Lighting 10 Electric Vehicle 11 Generation Systems 12 to 15 Reserved						Y
6-Device and Qualification	6	80	Asset Manufacturer	Manufacturer of the Asset							Y
6-Device and Qualification	6	81	Asset Model	Model identifier of the Asset, assigned by the Manufacturer							Y
6-Device and Qualification	6	82	Asset Version	Model version identifier, assigned by the Manufacturer							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
6-Device and Qualification	6	83	Asset Manufacture Date	Date of Manufacture of the Asset							Y
6-Device and Qualification	6	84	Asset Type	Type of Asset	Examples are: load reduction or response (curtailable or interruptible load), generation, combination, DG, renewable, storage, etc.						Y
6-Device and Qualification	6	991	Distributed Generator Comments	Comments associated with the Distributed Generator				Y			
7-Market / Program Enrollment	7		Market/Program Enrollment								
7-Market / Program Enrollment	7	10	Program ID	Program Identifier	The identifier of the program			Y			Y
7-Market / Program Enrollment	7	11	Program Name	Name of the Program				Y			Y
7-Market / Program Enrollment	7	12	Market	Type of wholesale market				Y			
7-Market / Program Enrollment	7	13	Market Product	Market Product	Product types include the following: energy, capacity, regulation, operating reserves (spinning or non-spin).			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
7-Market / Program Enrollment	7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	Market Enrollment is the collection of enrollment or tariff data for a Demand Resource to provide a specific market product or service.			Y			Y
7-Market / Program Enrollment	7	22	Enrollment Status	Status of the Enrollment for the Facility or Resource	Examples: Pending Enrollment, Approved Enrollment, Under Review, Denied, Separated			Y			Y
7-Market / Program Enrollment	7	23	Resource Type	Type of Resource	Examples are: load reduction or response (curtailable or interruptible load), distributed generation, combination, renewable, storage, etc.			Y			Y
7-Market / Program Enrollment	7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	25	Enrollment End Date	Date of Termination of Enrollment				Y			Y
7-Market / Program Enrollment	7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service				Y			Y
7-Market / Program Enrollment	7	30	Lead Time	Time between the advanced notification and deployment	Notification is the transmittal of a Deployment message.			Y			Y
7-Market / Program	7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Enrollment				Ahead market							
7-Market / Program Enrollment	7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market				Y			
7-Market / Program Enrollment	7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	Self-Deployment is the Deployment via established Communication Methods initiated by the Service Provider Is this a defined term for WEQ and REQ? or the Resource.			Y			
7-Market / Program Enrollment	7	34	Response Time	The amount of time before an asset/resource is capable of meeting its full performance, in response to a request by a Service Provider to shed load or produce energy .							Y
7-Market / Program Enrollment	7	40	Response Method Type	Type of Response Method	Expressed as a response type code			Y			
7-Market / Program Enrollment	7	41	Response Method ID	Identifier assigned to the Response Method				Y			
7-Market / Program Enrollment	7	42	Response Method Name	Name of the Response Method				Y			

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7-Market / Program Enrollment	7	43	Response Method Value	Value of the Response Method	The Demand Response Value is the quantity of modified electrical consumption by a Demand Resource, expressed as MW.			Y			
7-Market / Program Enrollment	7	44	Verified Capability	Audited Capability	Auditing is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods AFTER the Enrollment process.			Y			
7-Market / Program Enrollment	7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	Qualification is the validation of performance, conducted by the System Operator, of certain Response Aggregation Methods DURING the Enrollment process.			Y			
7-Market / Program Enrollment	7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement				Y			
7-Market / Program Enrollment	7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	Based on NAESB M&V terms.			Y			
7-Market / Program Enrollment	7	991	Market Enrollment Comments	Comments associated with the Enrollment				Y			
8-Offer Parameters	8		Offer Parameters								
8-Offer Parameters	8	10	Offer Limit Value	Offer Limit Value	Expressed in MW or hours. Multiple Limit Types are may be applicable.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	11	Offer Limit Type	Type of Offer Limit	The limit may be associated with the bidding parameters of a resource. These may include limit types such as seasonal rating, reasonability, economic and ramp limits.			Y			Y
8-Offer Parameters	8	12	Offer Limit Interval	Offer Limit Interval	The period over which the offer limit applies, i.e., hour, day, etc.			Y			Y
8-Offer Parameters	8	20	Physical Min Gen	Minimum Operating Level of a Resource				Y			Y
8-Offer Parameters	8	21	Min Gen MW	Minimum MW available for dispatch	When required as part of an enrollment request, this value acts as a default.			Y			Y
8-Offer Parameters	8	22	Min_Gen_Cost	The cost per hour for each Min Gen MW value.	The cost per hour for each MinGenMW value.			Y			Y
8-Offer Parameters	8	23	Ramp Rate Type	Type of Ramp Rate	Examples are: Normal, Emergency, Regulation.			Y			Y
8-Offer Parameters	8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	The end value of the Ramp Rate step, monotonically increasing or decreasing (as indicated by the Ramp Rate Direction), expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			Y
8-Offer Parameters	8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	Valid directions are: Upward, Downward, Both.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	The NERC definition of Ramp Rate is the rate, expressed in megawatts per minute, by which a generator changes its output. For a Demand Resource, the Ramp Rate is the rate, expressed in megawatts per minute, by which a Demand Resource changes its Load.			Y			Y
8-Offer Parameters	8	30	Offer Dispatch Type	Type of Offer	Examples are Flexible (resource follows basepoint signals) or Fixed (resource requests DA commitment and RT schedules of 15 minutes or greater)			Y			
8-Offer Parameters	8	31	Offer Segment MW	Energy of Segment of the Offer	The end value of the offer step, monotonically increasing, expressed in MW (NOTE: When required as part of an enrollment request, this value becomes the default)			Y			
8-Offer Parameters	8	32	Offer Segment Price	Price of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	33	Offer Segment Hour	Hour of Segment of the Offer	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	34	Startup Cost	Cost of starting a response activity	NOTE: When required as part of an enrollment request, this value becomes the default.			Y			
8-Offer Parameters	8	35	Strike Price	Threshold Price	Expressed as a decimal value of price/MW.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	36	Offer Expiration Date	Date of Expiration of the Offer	This applies to DAM only.			Y			
8-Offer Parameters	8	37	Startup Cost Type	Type of startup cost	The type of Start Up Cost included in the offer. Options may include: Select cold, intermediate, hot or shutdown.			Y			
8-Offer Parameters	8	38	Offer Commit Status	Commitment status of offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, must-run, not participating, outage run status, override status, etc.			Y			Y
8-Offer Parameters	8	39	Offer Dispatch Status	Dispatch Status of Offer	Product-specific commitment status types included with offer. Examples include: economic, emergency, not participating, not qualified, and self-schedule. May also be used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria: • All events in a program indefinitely (unspecified time period) • Specific DR Event • All events in a specific time period. • Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity)			Y			Y

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Request No.: 2010 REQ Annual Plan Item 6(a-c)
Request Title: Master Data [Requirements Elements](#) List for Business Practice Standards associated with NIST PAP 03 and PAP 09

Category	Category ID	Category Element ID	Data Element	Short Description	Long Description	Wholesale			Retail		
						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	331	Offer Price Curve Slope	Flag to smooth the offer segments from step function to slope				Y			
8-Offer Parameters	8	332	Strike Price Type	Type of strike price	Indicates the type of strike price. Options may include: buy or sell.			Y			
8-Offer Parameters	8	40	Market Clearing Day	Market Clearing Day of the Offer				Y			
8-Offer Parameters	8	41	Schedule Name	Name or tag of the Offer				Y			
8-Offer Parameters	8	42	Schedule Description	Description of the Offer				Y			
8-Offer Parameters	8	43	Schedule Status	Status of the Offer				Y			
8-Offer Parameters	8	50	Portfolio Name	Name of an aggregation of Resources for market participation				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
8-Offer Parameters	8	71	Constraint Type	Type of operational, schedule or offer constraint	Types of operational, offer or schedule parameters. Examples include: Select Operational Minimum Runtime, Schedule Minimum Runtime, Operational Maximum Runtime, Schedule Maximum Runtime, Minimum Load, Maximum Load, Minimum Downtime, Minimum Starts, Maximum Energy, Maximum Starts, Time of Day schedule constraints, Black out date, Maximum consecutive days of participation, Maximum calls per day, Minimum Advanced Notification, Minimum duration of participation, etc.			Y			Y
8-Offer Parameters	8	72	Constraint Interval	The timeframe over which the constraint type applies.	Typically daily, hourly, weekly, date			Y			Y
8-Offer Parameters	8	73	Constraint Value	Value of the Constraint Type and Interval				Y			Y
9-Energy Market	9		Energy Market								
9-Energy Market	9	0	Instruction ID	<u>Unique identifier assigned to each instruction.-</u>	<u>Unique identifier assigned to each instruction.-</u>			Y			
9-Energy Market	9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
9-Energy Market	9	11	Energy Schedule - End Time	End Time of the Energy Schedule	A Schedule is an energy profile for a Resource for a future time period, by scheduling time interval (typically hourly).			Y			
9-Energy Market	9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	The start time of a specific energy schedule interval			Y			
9-Energy Market	9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	The offered energy MW that have cleared the market.			Y			
9-Energy Market	9	14	Energy Schedule - Cleared Price	Awarded Price	The market clearing price for the cleared energy MW.			Y			
9-Energy Market	9	15	Schedule ID	~~Unique identifier assigned to each schedule.~~	~~Unique identifier assigned to each schedule.~~			Y			
9-Energy Market	9	20	Base Point	Per-interval dispatch instruction	A Dispatch is a real-time instruction to a Resource to move to a Base Point at a specific time (Resource-Specific Deployment) or a set of real-time instructions to multiple Resources (Bulk Deployment). A ~~Resource~~ Resource-Specific Deployment is the deployment, via established Communication Methods initiated by the System Operator, of one or more discrete and/or unique Resources designated to provide a selected service.			Y			
9-Energy	9	21	Breaker Status	Status of the Breaker for				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
Market				the Resource							
9-Energy Market	9	22	Output MW	Real Power Output of the Distributed Generator	Expressed in MW			Y			
9-Energy Market	9	23	Output MVAR	Reactive Power Output of the Distributed Generator	Expressed in Mvar			Y			
9-Energy Market	9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	Demand is the rate at which electric energy is being used by the customer (NERC Definition). Expressed in MW. This element only applies to DR			Y			
9-Energy Market	9	25	Set Point	Final dispatch target level	The real-time desired MW output signal calculated for a specific Resource by the Transmission Provider's control system on a specified periodicity that is equal to the current Energy Dispatch Target plus the Regulating Reserve Deployment instruction (which may be positive or negative) plus an adjustment to the Energy Dispatch Target to account for Contingency Reserve Deployment Instructions. The Setpoint Instruction represents the desired output level of the Resource.			Y			
10-Ancillary Service Market	10		Ancillary Service Market								
10-Ancillary Service Market	10	0	Ancillary Service Instruction ID	-Unique identifier assigned to each ancillary service	~~Unique identifier assigned to each ancillary service instruction.~~			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				instruction.							
10-Ancillary Service Market	10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide				Y			Y
10-Ancillary Service Market	10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted				Y			
10-Ancillary Service Market	10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	A Schedule is an ancillary service profile for a Resource for a future time period, by scheduling time interval.			Y			
10-Ancillary Service Market	10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	The start time of a specific ancillary service schedule interval			Y			
10-Ancillary Service Market	10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award	The value associated with a specific ancillary service schedule interval			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	16	Ancillary Service Award - Cleared Price	Awarded Price	The market clearing price for the cleared ancillary service product MW.			Y			
10-Ancillary Service Market	10	17	Ancillary Service Schedule ID	<u>-Unique identifier assigned to each ancillary service schedule.</u>	~~Unique identifier assigned to each ancillary service schedule.~~			Y			
10-Ancillary Service Market	10	20	Ancillary Service Product Qualification Type	Type of Qualification	Examples include initial, requalification, etc.			Y			
10-Ancillary Service Market	10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid				Y			
10-Ancillary Service Market	10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource				Y			
10-Ancillary Service Market	10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified				Y			
10-Ancillary Service Market	10	24	Requalification Requirement	Flag set if Requalification is Required				Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
10-Ancillary Service Market	10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	Reserve Service is a type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction Energy Service, based on reserve capacity requirements that are established to meet applicable reliability standards. Reserve Services are defined by short-term response rates (Ramp Period) and synchronization with the electricity grid (i.e., spinning and non-spinning reserves).			Y			
10-Ancillary Service Market	10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	Regulation Service is a type of Demand Response service in which a Demand Resource corrects for short-term changes in electricity use that might affect the stability of the power system, matching generation and load to maintain a desired frequency. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response deployment terms of the Event timelines, deadlines and durations.			Y			
10-Ancillary Service Market	10	33	Base Load MW	Level of Load at time of dispatch				Y			
11-Capacity Market	11		Capacity Market								

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	10	Capacity Type	Type of Capacity	Capacity Service is a type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to deliver upon deployment by the System Operator or Service Provider. Examples: Hourly, Monthly, etc.			Y			Y
11-Capacity Market	11	11	~~Capacity Type~~ Capacity Type Description	Description of the Type of Capacity				Y			Y
11-Capacity Market	11	20	Peak Value	Measurement of Peak				Y			
11-Capacity Market	11	21	Peak Type	Type of measurement of Peak	Examples are: Annual, Monthly, Weekly, and Seasonal.			Y			
11-Capacity Market	11	22	Peak Date/Time	Date and Time of measurement of Peak				Y			
11-Capacity Market	11	23	Nominal Capacity	Nominated load	Expressed as a decimal value.			Y			Y
11-Capacity Market	11	24	Qualified Capacity	Nominal ~~ICAP~~ installed capacity (ICAP) derated for performance	Derated based on past performance.			Y			Y
11-Capacity Market	11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	Examples are: All hours, Business hours 1, Business hours 2, Business Hours 3, Non-Business hours.			Y			

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
11-Capacity Market	11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is Obligated	Examples include: month, season, year, etc.			Y			
11-Capacity Market	11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	Expressed in Price/MW.			Y			
11-Capacity Market	11	41	Capacity Supply Obligation	Capacity Obligation	This may result from an auction or other clearing mechanism.			Y			
11-Capacity Market	11	50	Capacity Reference ID	Identifier assigned to the External System award	An Award is the selection of a Resource to provide energy, ancillary services, or capacity for a future time period. Expressed as a string.			Y			
11-Capacity Market	11	991	Capacity Comments	Comments associated with the Capacity market				Y			
12-Event and Performance	12		Event and Performance								
12-Event and Performance	12	10	Event ID	Identifier assigned to the Event	An Event consists of the time periods, deadlines, and transitions during which Demand Resources perform. The System Operator shall specify the duration and applicability of a Demand Response Event. Some deadlines, time periods, and transitions may not be not applicable to all products or services.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	11	Deployment Type	Type of Deployment	Examples are: Advanced (Normal), Immediate, Audit/Test			Y			Y
12-Event and Performance	12	12	Event Day	Operating Date of Start of Event				Y			Y
12-Event and Performance	12	13	Event Description	Description of the Event				Y			
12-Event and Performance	12	14	Event Start Time	Time of Start of deployment period for Event	The Deployment Period is the period of time from the Deployment to Release/Recall.			Y			Y
12-Event and Performance	12	15	Operator Comment	Additional Event information provided by the Operator				Y			
12-Event and Performance	12	16	Deployment MW	Absolute or relative Deployment quantity	Expressed as an absolute or relative (%) MW value.			Y			Y
12-Event and Performance	12	17	Event Status	Status of the Event	Examples include: initiated, completed, etc.			Y			Y
12-Event and Performance	12	18	Event End Time	Time of End of deployment period	Release/Recall is the notification, sent from the System Operator or Service Demand Response Provider to the Demand Resource, that the Deployment Period has ended or announcing the time that it will end.			Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	19	Event Modification Number	A modification number for the DR event. This is used to indicate if the DR Event has been modified by the Utility. Each time it is modified, this number is incremented.				Y			Y
12-Event and Performance	12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.				Y			Y
12-Event and Performance	12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.				Y			Y
12-Event and Performance	12	113	Load Level Value	Value of the load level to be achieved based on a set of enumerated values (e.g., moderate, high, etc.).							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	The Baseline Window is the window of time preceding, and optionally following, a Demand Response Event, over which electricity consumption data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.			Y			Y
12-Event and Performance	12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline				Y			Y
12-Event and Performance	12	23	Energy Baseline Value	Calculated Energy Baseline	A Baseline is an estimate of the electricity that would have been consumed by a Demand Resource in the absence of a Demand Response Event. The Baseline is compared to the actual metered electricity consumption during the Demand Response Event to determine the Demand Modification Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real time or after the fact.			Y			Y
12-Event and Performance	12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline				Y			Y
12-Event and Performance	12	30	Reporting Interval	Interval size required for Reporting				Y			Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated				Y			Y
12-Event and Performance	12	32	Measurement Value (CIM)	Value of the interval reading				Y			Y
12-Event and Performance	12	33	Response Value	Response				Y			Y
12-Event and Performance	12	34	Measurement Value Type	The type of measurement value.	The Measurement Value Type identifies the type of information provided in the Measurement Value. For example, the Measurement Value type could be energy (kWh/MWh) or demand (KW or MW).			Y			
12-Event and Performance	12	50	Simple Signal Levels	Used as an alternate and simplified representation of the DR signal, whether it be price based or a dispatch. Takes on a small number of finite levels such as NORMAL, MODERATE, and HIGH, SPECIAL							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
12-Event and Performance	12	51	Criticality Level	This field defines the level of criticality of this event. The action taken by load control devices for an event can be solely based on this value, or in combination with other Load Control Event fields supported by this device.	For example, additional fields such as Average Load Adjustment Percentage, Duty Cycle, Cooling Temperature Offset, Heating Temperature Offset, Cooling Temperature Set Point or Heating Temperature Set Point can be used in combination with the Criticality level. Criticality Level Level Description Participation 0 Reserved 1 Green Voluntary 2 1 Voluntary 3 2 Voluntary 4 3 Voluntary 5 4 Voluntary 6 5 Voluntary 7 Emergency Mandatory 8 Planned Outage Mandatory 9 Service Disconnect Mandatory 0x0A to 0x0F Utility Defined Utility						Y
12-Event and Performance	12	52	Usage Information	Information about the near real time electricity usage of the DR Resource.							Y
12-Event and Performance	12	991	Event & Performance comments Performance Comments	Comments associated with Event and Performance data				Y			
13-Direct Load Control	13		Direct Load Control								

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
13-Direct Load Control	13	10	Status Check	A signal to require the DR resource status to be sent back. (Only applicable to Direct Load Control)							Y
13-Direct Load Control	13	11	DR Control Command: Direct Load Control Type	The type of DR Direct Load Control Command: e.g. Set Point, Open/Close, Heating Temperature - offset/setpoint, Cooling Temperature - offset/setpoint, Load adjustment offset							Y
13-Direct Load Control	13	12	DR Control Command: Direct Load Control Value	Value associated with the Direct Load Control Type.							Y
13-Direct Load Control	13	13	Duty Cycle	"Duty Cycle : Defines the maximum On state duty cycle as a percentage of time. Example, if the value is 80, the device would be in an "on state" for 80% of the time for the duration of the event. Range of the value is 0 to 100. A value							Y

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
				of 0xFF indicates the field is not used." (from SEP2.0)							
13-Direct Load Control	13	14	Event Control	Event Control options for randomized start or end times: 1= Randomized Start time, 0=Randomized Start not Applied 1= Randomized End time, 0=Randomized End not Applied. (from SEP2.0)							Y
13-Direct Load Control	13	15	Exception Conditions	This is used to report that the load controller may not behave as commanded because of a variety of conditions including: • Faults in device • Customer override.							Y

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13-Direct Load Control	13	16	Load Control State	The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed.							Y
14-Price and Product	14		Price and Product								
14-Price and Product	14	10	Product Name	Same as 7.13 Market Product	An identifier for a particular electricity product offering: energy, capacity, ancillary services, etc.	Y					
14-Price and Product	14	11	Product Type	Defines the source and product	Classifications used within industry for trading energy. Examples: PJM Energy, NYISO 10-min Spin, etc.	Y					Y
14-Price and Product	14	12	Product Sub-type	Used to further define product types		Y			Y		
14-Price and Product	14	13	Identifier Source (product)	The Identifier Source references the product identification scheme for the Product Identifier.		Y					

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14-Price and Product	14	14	Unit of Measure	Attribute of Product Identifier		Y					Y
14-Price and Product	14	15	Currency	Economic unit of exchange in which the total price and price components are stated (e.g. dollars, euros)		Y			Y		Y
14-Price and Product	14	20	Product Identifier	Identifies specific product associated with the price		Y			Y		
14-Price and Product	14	30	Override Unit of Measure	Optional Attribute of Price object If this is used, then Unit of Measure is not applicable		Y					
14-Price and Product	14	31	Product Price	The sum of all Price Component Values for a given product (Total Price).		Y					Y
14-Price and Product	14	32	Product Price Factor	Terms of use attribute of Product Price	Examples: Price_absolute, Price_relative, Price_multiplier	Y			Y		
14-Price and Product	14	33	Price Component Type	The portion of the price to which the corresponding value applies.	Examples: Energy, congestion, losses	Y					
14-Price and Product	14	34	Price Component Value	The value of the price component.		Y					

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						PAP 03	PAP 04	PAP 09	PAP 03	PAP 04	PAP 09
14-Price and Product	14	35	Price Location	The location at which the price is applicable.		Y					
14-Price and Product	14	36	Price Type	Time characteristic of the price	The type of price (day-ahead, real-time, etc.).	Y					
14-Price and Product	14	37	Delivery Time	Time at which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	38	Delivery Interval	The duration over which the product is available for physical consumption		Y			Y		Y
14-Price and Product	14	40	Source Location Identifier	The identifier of the source location of the product for which the price applies		Y			Y		
14-Price and Product	14	41	Source Location Identifier Type	The type of source location of the product for which the price applies		Y					



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 Retail Annual Plan Item 6 (a-c)
Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

4. Supporting Documentation

a. Description of Request:

2010 REQ Annual Plan Item 9 and 2010 WEQ Annual Plan Item 6 – “Develop Smart Grid Wholesale and Retail Electric Standards”

b. Description of Recommendation:

This recommendation provides the data [requirements elements](#) related to the use cases developed for Priority Action Plan 03 and 09 as part of the phase one effort

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the development of standard DR and DER signals.

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- March 11, 2010 Meeting Notes – To be posted
- March 18, 2010 Meeting Notes – To be posted
- March 25, 2010 Meeting Notes – To be posted
- April 1, 2010 Meeting Notes – To be posted
- April 8, 2010 Meeting Notes – To be posted
- April 29, 2010 Meeting Notes – To be posted
- May 13, 2010 Meeting Notes – To be posted
- May 20, 2010 Meeting Notes – To be posted
- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc



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Request Title: Master Data Requirements List for Business Practice Standards associated with NIST PAP 03, PAP 04 and PAP 09

- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09

1. RECOMMENDED ACTION:

☒ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The ~~business process flow~~ business activity diagrams and use cases presented in these Business Practice Standards illustrate the standard interactions between a System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets.

RECOMMENDED STANDARDS:

In response to NIST's Priority Action Plan 9, this recommendation contains draft requirements specifications, in the form of ~~business process flow~~ business activity diagrams, ~~and~~ and data requirements for each interaction, to support the standardization of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. Common terminology from the NAESB Measurement and Verification Standards for Demand Response has been incorporated into the development of the ~~business process flow~~ business activity diagrams and use cases. As a result of the development of these

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



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Business Practice Standards, a standard set of actors and additional terminology will expand the existing NAESB documentation of associated terms and definitions for demand response.

WEQ-018

RECOMMENDED STANDARDS:

Executive Summary

Specifications for Wholesale Standard Demand Response Signals

The following addresses the business objectives and context for standardizing control and pricing signals for DR and DER as part of the Smart Grid implementation, which is called for by NIST PAP 09. The NAESB SGTF in cooperation with UCAIug, OpenSG Task Force, the ISO/RTO Council, and other organizations, have developed DR use cases that provide requirements for developing consistent DR control and pricing signal standards. This Business Practice Standard and data elements included herein are not intended to replace applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

The business process flow/business activity diagrams and use cases contained in this recommendation-Business Practice Standard address the requirements for standardizing the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. Additional Business Practice Standards under development through the NAESB SGTF will focus on other aspects of the PAP 09 objectives. To maintain consistency throughout materials developed by the NAESB SGTF, a master list of data elements and a common set of actors, terms and definitions have been adopted.

The following describes the end-to-end business process flow/business activity diagrams relating to the wholesale market communication/interactions between the System Operator (SO) and the SP/ various Market Participants common to all ISOs/RTOs that offer opportunities for demand resources to participate in organized wholesale electric markets.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09

Introduction

Specifications for Wholesale Standard Demand Response Signals

Purpose: ~~To accelerate the development of standards for Smart Grid Interoperability, NIST is working with all stakeholders of Smart Grid and has developed a set of PAPs¹. A number of PAPs (03, 04, and 09) are related to the use of Smart Grid technologies to enable DR and the integration of DER for DR purposes.~~

~~Specifically for PAP 09, NAESB, with support from UCAIug OpenSG task forces and the ISO/RTO Council, have responsibility to collect, analyze, and consolidate use cases and develop UML based use case models for DR. Such responsibility now falls under the NAESB SGTF.~~

~~NIST Smart Grid Interoperability² Roadmap leverages the GWAC interoperability framework. This framework calls for the establishment of business objectives, procedures and context before technical interoperability standards can be established. To apply this framework to the development of interoperability standards for DR Signals, it is clear that the industry needs an overarching business framework to guide the development of technical standards, given the complexity and range of DR programs.~~

The purpose of the following is to provide standards developers with a context for understanding the range of ~~scenarios~~ interactions between wholesale electricity market sSystem eOperators and Market Participants ~~to which DR programs and DERs may be applied and implemented~~ across the various electricity systems and jurisdictions in the United States of America with some overlaps to Canada. A major objective in producing these Business Practice Standards is to emphasize the importance of interoperability at all levels of the GWAC interoperability framework.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification purposes.

¹ [http://collaborate.nist.gov/twiki-sggrid/bin/view/ SmartGridInterimRoadmap/PriorityActionPlans](http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGridInterimRoadmap/PriorityActionPlans)

² ~~Interoperability is the capability of two or more networks, systems, devices, applications, or components to share and readily use information securely and effectively with little or no inconvenience to the user. The characteristics of interoperability as set forth in the GridWise[®] Interoperability Context Setting Framework are (1) exchange of meaningful, actionable information between two or more systems across organizational boundaries, (2) a shared understanding of the exchanged information, (3) an agreed expectation for the response to the information exchange, and (4) a requisite quality of service: reliability, fidelity, and security. The result of interoperability is that interfaces, systems, and devices are capable of being integrated, scalable, adaptable, and upgradable and utilize open standards to promote competitive technology and to avoid stranded investments. Interoperability can only be achieved if there is a seamless, end-to-end coordination and exchange of data between many organizations, interfaces, systems, and devices resulting in behavior changing information given to the consumer.~~



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Scope: There are certain principles and boundaries that have been established. These include:

1. Demand Response practices must be consistent with NERC and applicable regional reliability authority requirements.
2. All involved entities are registered through the applicable ISO/RTO market participant registration process, which may include credit checks. However, the specifics related to the business processes associated with Market Participant registration are not documented in these requirements.
3. Settlement input parameters are defined as an output to the measurement and performance business process. However, specific business processes associated with settlements are not documented in these requirements.
4. Intra-system operator information exchanges and specific ~~system operators~~ market rules, calculations, algorithms, and Performance Evaluation models are excluded.
5. Planning functions are not documented in these requirements. This includes, but is not limited to, long-term load forecasting and transmission planning.
6. Capacity auctions, awards processes, and resource certification are not documented in these requirements.
7. References in these Recommendations to "Dispatch", "Markets", and "Reliability", are made relative to Demand Response and apply to Demand Response resources only, not to Generation resources.
8. Compliance standards for Demand Response resources are determined by the market rules or other Governing Documents of the respective ~~system~~ System operator Operator and are specific to the product or service and the reliability need being addressed.

Business Practice Standards

018-1 Specifications for Wholesale Standard Demand Response Signals

The following describes the wholesale market ~~business process flow~~ business activity diagram and provides the necessary business context and reference architecture for use cases ~~that connect to the retail level between the System Operator and Market Participant. The descriptions provide a common linkage to the retail use cases presented in the companion specification for the Retail Electricity Quadrant.~~

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to replace applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.



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018-1.1 Conventions

- Glossary terms are ~~to be~~ capitalized.
- Implementation does not require every ~~communication~~~~interaction-flow~~~~interaction~~ shown in the ~~process-flow~~~~business activity diagram~~~~business activity diagrams~~.



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018-2 ACTORS

The actors listed in the table below are specific to this recommendation and are a subset of the actors and related objects defined in WEQ-000. Details on the relationships between the actors and related objects are further defined in Appendix A.

Table 1 - Actor Roles

Term	Actor ID ³
Designated Dispatch Entity	3.4
Load Serving Entity	3.2
Meter Authority	3.6
Scheduling Entity	3.3
Service Provider	3.1
System Operator	2.1
Transmission/Distribution Service Provider	3.5

³ The Actor ID shown in the table refers to the item number of the corresponding actor or related object in the Entity-Relationship Diagram provided in Appendix A. Definitions of the actors and related objects are included in WEQ-000.



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018-1.3

USE CASE OVERVIEW

The use cases presented in these Business Practice Standards represent a combination of three dimensions of demand response participation in wholesale markets: product, deployment, and performance evaluation method. As shown in the table below, product and deployment dimensions are identified by a single alphabetic character and performance evaluation methods are indicated by a numeric identifier; each character is separated by a dash (-). For example, use case E-R-1 refers to the use case for the energy (economic) product with a resource-specific deployment and performance evaluated using a Baseline.

The use cases included in this Business Practice Standard are not to be required or exhaustive and are provided for clarification purposes.

Table 2 - Use Case Dimensions

Product	
Energy (Economic)	E
Energy (Reliability)	R
Capacity	C
Reserve	V
Regulation	G
Deployment	
Bulk	B
Resource	R
Self	S
Performance Evaluation	
Baseline	1
MB/MA	2
MBL	3
MGO	4



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A sample of the use case list is shown in the table below. Appendix B contains the complete list of valid use case combinations.

Table 3 - Sample Use Case List

Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO

The Figure 1 illustrates the process flow business activity diagrams for use cases combinations that are considered to be representative of the types of demand response in wholesale electricity markets today. Each process flow business activity diagram description includes a table of the use cases to which the process flow business activity diagram applies, followed by the specific data elements that are exchanged in each numbered interaction shown in the business activity diagram.

The wholesale Demand Response end-to-end business process flow business activity diagram for the communication interactions between the SO and the Service Provider SP is comprised of four major functions:

- 1.0 Enrollment & Qualification,
- 2.0 Scheduling & Award Notification,
- 3.0 Deployment & Real-Time Communications,
- 4.0 Measurement & Performance.

Two additional processes activities are shown in the high-level business process flow, but are considered outside the scope of what is required for the communication interactions flow for demand response:

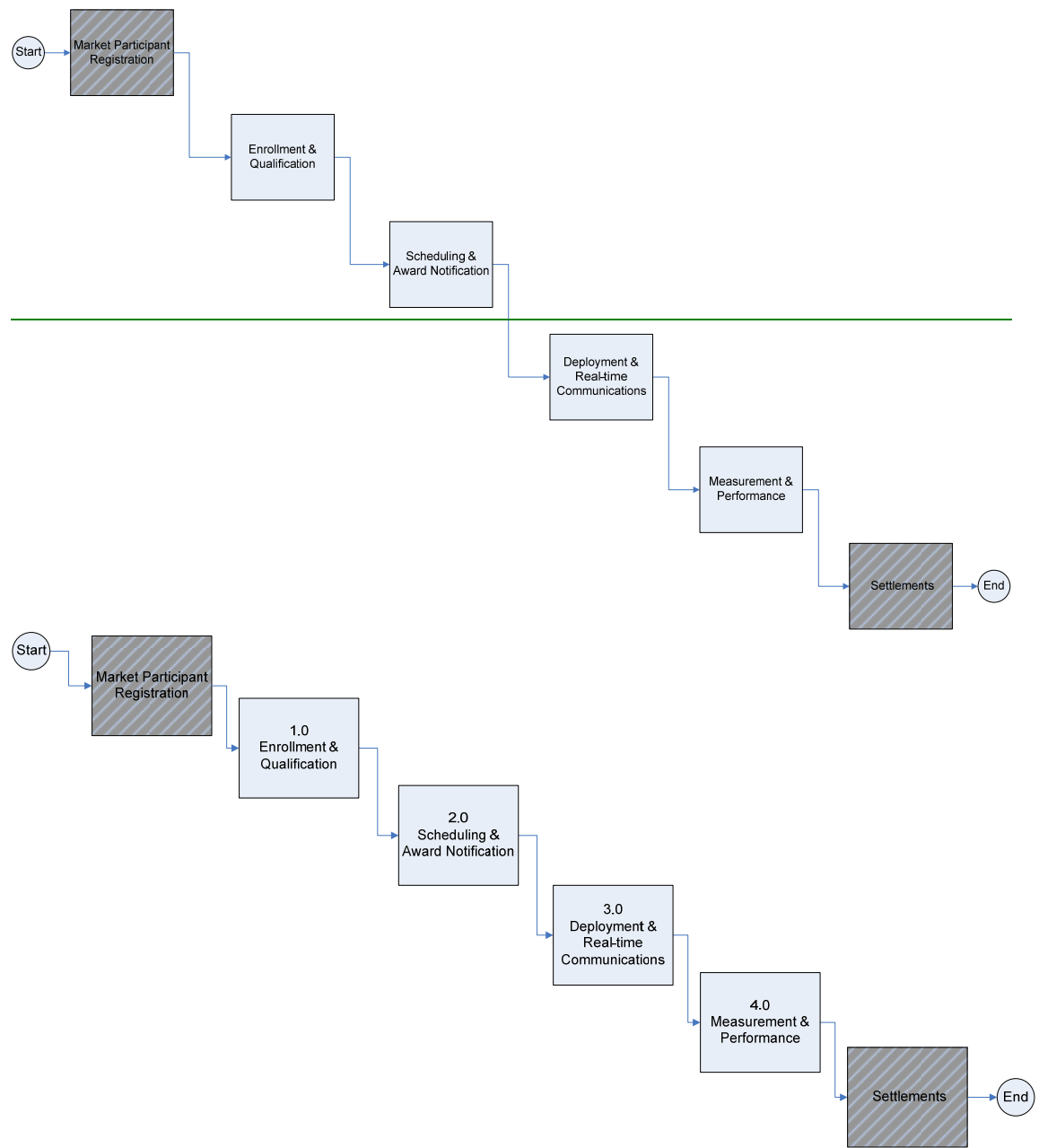
- Market Participant Registration
- Settlements



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Figure 1 - Demand Response





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Business activity diagrams are numbered using the sequence shown in Figure 1. If a business process is further specified, the second position in the number sequence indicates this specification, as in 2.1 – Scheduling and Award Notification – Economic and 2.2 – Scheduling and Award Notification – Reliability.

Interactions between the System Operator and the Market Participant are numbered for each business activity diagram. To continue with the example above, 2.1.1 – Offer Parameters, is the first interaction between the System Operator and Market Participant in the business activity diagram 2.1 – Scheduling and Award Notification – Economic.

A table containing the data elements used in the interactions of the business activity diagram is shown. The numbers of the interactions in the table correspond to the numbered interactions in the business activity diagram. Cells showing an “M” (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an “O” (optional) are data elements that may be left blank if not used in a given interaction.



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018-1.4 SPECIFIC USE CASES

018-1.4.1 Enrollment and Qualification

Overview: The Enrollment and Qualification process documents the steps required to enroll a Resource in a wholesale demand response program.

Use Cases: All valid use cases defined in these Business Practice Standards (see [Figure 2](#))

- The process begins when the SP submits an enrollment request to the SO.
- The SO processes the enrollment request, which may include interactions with the TDSP, LSE, MA and/or SE.
- The SO evaluates the enrollment request, which may include verification information from the TDSP, LSE, MA and/or SE.
- The result of the evaluation is the approval or rejection of the enrollment request.
 - o If the enrollment request has been rejected, the SO sends information to the SP, indicating the rejection details.
 - o If the enrollment request has been approved, a determination is made by the SO as to whether qualification of the Resource's capability is required prior to final approval.
 - If no qualification is required, the SO sends information to the SP, indicating the approval of the enrollment.
 - If qualification is required, the SO coordinates the qualification procedure with the SP.
 - If the Resource has failed to qualify, the SO sends information to the SP, indicating the qualification rejection details.
 - If the Resource achieves qualification, the SO sends information to the SP and enrollment is finalized.
- At the end of the Enrollment and Qualification process, the SO finalizes enrollment, notifies the SP and may also notify the TDSP, LSE, MA and/or SE.



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Activity Diagram and Data Flow:

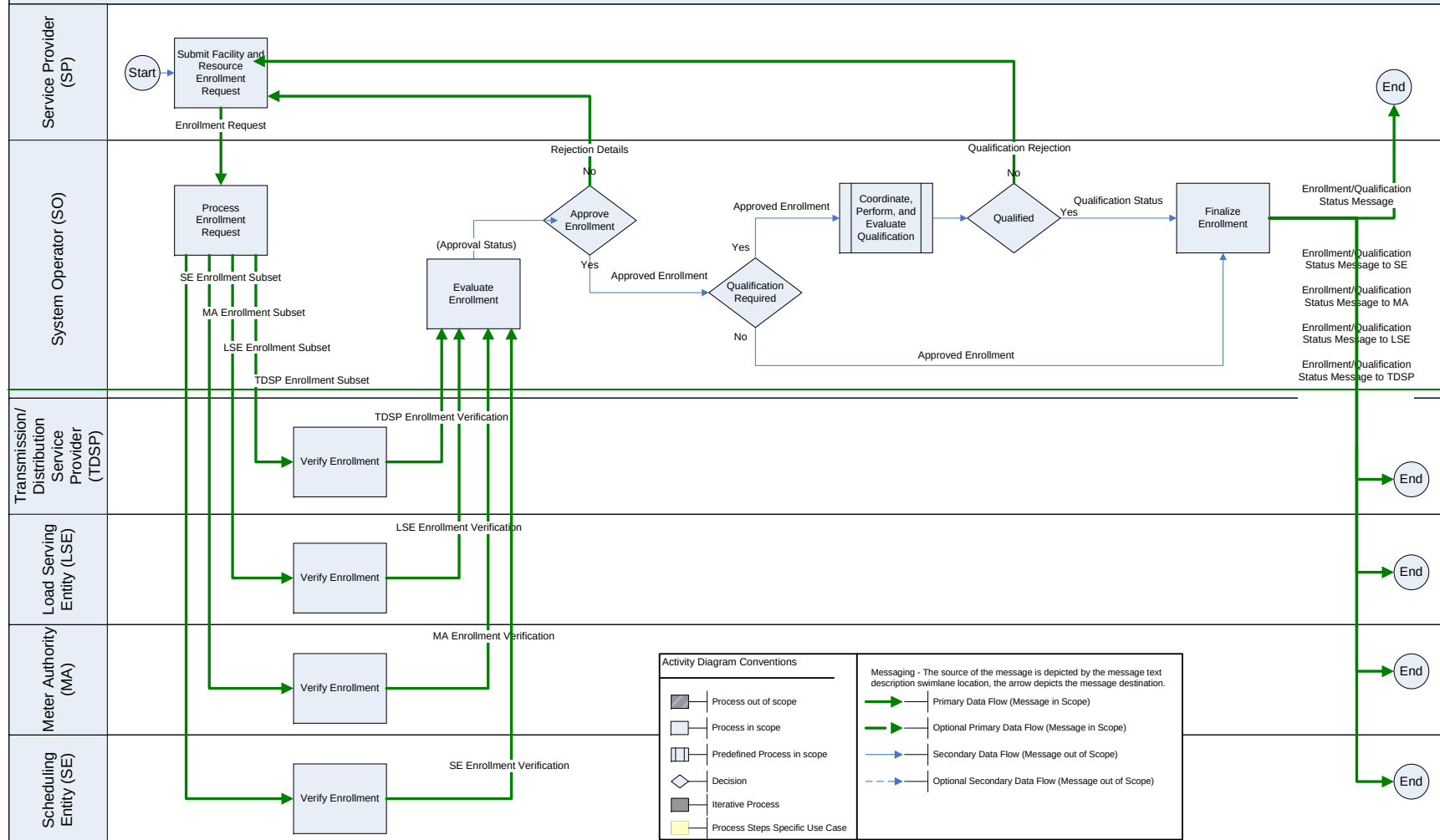
Figure 2 - Enrollment and Qualification



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Demand Response - Enrollment & Qualification





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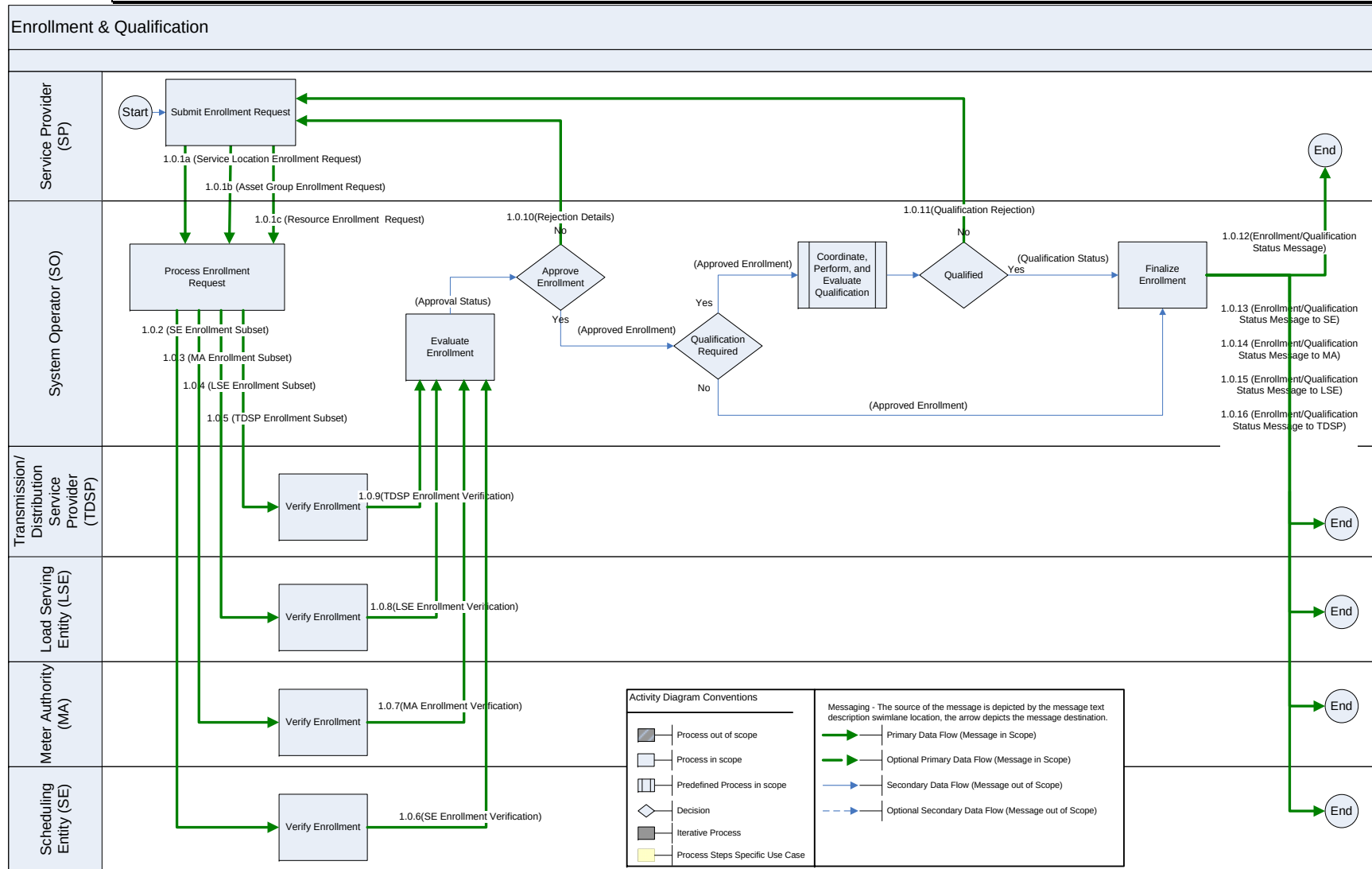


Table 4. Data Requirements by Interaction Number 1.0.1a through 1.0.9: Enrollment and Qualification

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			Process	1.0 Enrollment & Qualification										
			From	SP		SO				SE	MA	LSE	TDSP	
			To	SO		SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element			Short Description											
0	Common													
0	10	Submittal Date	<u>Timestamp for the sender's use</u>	<u>0</u>	<u>0</u>	<u>M</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>				
0	11	Submitted By	<u>User ID of submitter</u>	<u>0</u>	<u>0</u>	<u>M</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>				
0	12	Submitted Error	<u>ID of submission error detected</u>	<u>0</u>	<u>0</u>	<u>M</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>				
0	13	Rejection Code Type	<u>Type of rejection message</u>											
0	14	Rejection Code Value	<u>Code referring to the reason for a rejection message</u>											
0	20	NERC CIP Security - Availability	<u>CIP Security Classification for Availability</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
0	21	NERC CIP Security - Confidentiality	<u>CIP Security Classification for Confidentiality</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M	M	M	M	
1	General Asset/Resource														
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	M	M	M	M	
1	11	Service Location Name	Name of the Service Location	O	O	M	M	O	O	O	M	O	O	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	O	M	M	O	O	O	M	O	O	O	
1	30	Asset Group ID	The identifier of a group of assets	M	M	M	M	M	M	M	-	-	-	-	



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			Process	1.0 Enrollment & Qualification										
				From		SP		SO				SE	MA	LSE
			To											
				Interaction	1.0.1	1.0.1	1.0.1	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8
			a		b	c								
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
1	31	Asset Group Name	Name of the aggregated group of assets	M	M	M	M	M	M	M				
1	40	GenEMSID	Alias or point Identifier assigned to the Resource			M								
1	41	GenBillingID	Billing Identifier assigned to the Resource			M								
1	50	Business Segment	NAICS code of the Service Location	O	O	O								
1	51	Batch Load Flag	Flag set if the Resource is a Batch Load	O	O	O								
1	991	General Resource Comments	General comments associated with the Resource	O	O	O	O	O	O	O				
2		Location												
2	10	Address1	Address line 1	M	M	M	M	M	M	M	M			M
2	11	Address2	Address line 2	O	O	O	O	O	O	O	O			O
2	12	City	City	M	M	M	M	M	M	M	M			M

~~Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010~~



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>										
			From	SP		SO				SE	MA	LSE	TDSP	
			To	SO		SE	MA	LSE	TDSP	SO				
			<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
<u>Element</u>			<u>Short Description</u>											
<u>2</u>	<u>13</u>	<u>Service Location</u> <u>State/Province</u>	<u>State or Province two-letter code</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>
<u>2</u>	<u>14</u>	<u>Service Location</u> <u>Zip/Postal Code</u>	<u>Zip or Postal Code</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>
<u>2</u>	<u>15</u>	<u>Service Location</u> <u>Country</u>	<u>Country</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>
<u>2</u>	<u>20</u>	<u>GPS Coordinates</u>	<u>Latitude and longitude</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>2</u>	<u>21</u>	<u>Weather Station</u>	<u>Weather Station code</u> <u>associated with the</u> <u>Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>						
<u>2</u>	<u>22</u>	<u>TimeZoneName</u>	<u>Name of the Time Zone in</u> <u>which the Service Location</u> <u>is located</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the</u> <u>Zone in which the Service</u> <u>Location is located</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				



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			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>										
			From	SP		SO				SE	MA	LSE	TDSP	
			To	SO		SE	MA	LSE	TDSP	SO				
<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>			
	<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
<u>Element</u>			<u>Short Description</u>											
<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is located</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				
<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				
<u>2</u>	<u>40</u>	<u>Electrical Node ID</u>	<u>Identifier assigned to the Electrical Node at which the Service Location is connected</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>				
<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				<u>M</u>
<u>2</u>	<u>42</u>	<u>Electrical Node Type</u>	<u>Type of Electrical Node at which the Service Location is attached</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>
<u>2</u>	<u>43</u>	<u>PNode</u>	<u>Name of the Price Node associated with the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				

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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element			Short Description											
<u>2</u>	<u>44</u>	<u>PNode ID</u>	<u>Identifier assigned to the Price Node associated with the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>	
<u>2</u>	<u>50</u>	<u>Competitive Choice Area</u>	<u>Flag set if the Service Location is in an area with Competitive Choice</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>	
<u>2</u>	<u>51</u>	<u>Asset Multiplier</u>	<u>Number of identical assets within the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>2</u>	<u>60</u>	<u>NERC Control Area</u>	<u>The NERC control area of the resource</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>2</u>	<u>71</u>	<u>Connection Type</u>	<u>Additional type of connection associated with the Service Location/Resource</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>2</u>	<u>72</u>	<u>Connection Address</u>	<u>Address associated with the Connection Type</u>	<u>O</u>	<u>O</u>	<u>O</u>								



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>			
Element			Short Description											
<u>2</u>	<u>991</u>	<u>Location Comments</u>	<u>Comments associated with the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				
<u>3</u>	<u>Contact</u>													
<u>3</u>	<u>10</u>	<u>Contact Type</u>	<u>Interest code associated with a Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>11</u>	<u>Contact Priority</u>	<u>Order in which this Contact should be selected</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>12</u>	<u>DUNS Number</u>	<u>DUNS business number</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>13</u>	<u>Third Party</u>	<u>Flag set if the Contact is a third-party entity</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>3</u>	<u>20</u>	<u>Title</u>	<u>Title of the Contact</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>3</u>	<u>21</u>	<u>First Name</u>	<u>First Name of the Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>22</u>	<u>Last Name</u>	<u>Last Name of the Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>23</u>	<u>Contact Middle Name</u>	<u>Middle Name of the Contact</u>	<u>O</u>	<u>O</u>	<u>O</u>								



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
3	30	Contact Method	Method of communication with the Contact	M	M	M									
3	31	Contact Address Data	Method-dependent Address of the Contact	M	M	M									
3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	O	O	O									
3	991	Contact Comments	Comments associated with the Contact	O	O	O									
4		Grid Connection													
4	10	Loss Factor Type	Type of Loss Factor	M	M	M	M	M						O	
4	11	Loss Factor Value	Loss Factor	M	M	M	M	M						O	
4	12	Connect Voltage	Voltage level	M	M	M	O	O	O	O					
4	991	Grid Connection Comments	Comments associated with the Attributes of the	O	O	O									

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			Process	1.0 Enrollment & Qualification												
			From	SP			SO				SE	MA	LSE	TDSP		
			To	SO			SE	MA	LSE	TDSP	SO					
Interaction			1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9			
			Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description													
			Resource													
5	Business Entity Relationships															
5	11	Service Provider ID	Identifier assigned to the Service Provider		M	M	M	M	M			M				
5	12	Service Provider Name	Name of the Service Provider		M	M	M	M	M			O				
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider		M	M	M	M	M			M				
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider		M	M	M	M	M			O		M		
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource		M	M	M	M	M	O	O			O		



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			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1 a</u>	<u>1.0.1 b</u>	<u>1.0.1 c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
5	30	Load-Serving Entity ID	Identifier assigned to the Load-Serving Entity	M	M	M	M	M	O	O					
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity	M	M	M	M	M	O	O					
5	40	Retail Rate ID	Identifier assigned to the Retail Rate	M	M	M			O						
5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	O	O	O			O				O		
5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	M	M	M			O					M	
5	43	Retail Rate Description	Description of the Retail Rate	O	O	O			O					O	
5	44	Retail Rate	Retail Rate	M	M	M			O					M	
5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider	M	M	M									



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
<u>5</u>	<u>51</u>	<u>Meter Installation Provider Name</u>	<u>Name of the Meter Installation Provider</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>5</u>	<u>60</u>	<u>Meter Authority ID</u>	<u>Identifier assigned to the Metering Authority</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>				<u>M</u>
<u>5</u>	<u>61</u>	<u>Meter Authority Name</u>	<u>Name of the Metering Authority</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>O</u>				<u>O</u>
<u>5</u>	<u>70</u>	<u>Scheduling Entity ID</u>	<u>Identifier assigned to the Scheduling Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>				<u>M</u>
<u>5</u>	<u>71</u>	<u>Scheduling Entity Name</u>	<u>Name of the Scheduling Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>O</u>				<u>O</u>
<u>5</u>	<u>80</u>	<u>Designated Dispatch Entity ID</u>	<u>Idenitifier assigned to the Designated Dispatch Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>				<u>M</u>
<u>5</u>	<u>81</u>	<u>Designated Dispatch Entity Name</u>	<u>Name of the Designated Dispatch Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>O</u>				<u>O</u>
<u>5</u>	<u>991</u>	<u>External Entity Comments</u>	<u>Comments associated with the External Entity</u>	<u>O</u>	<u>O</u>	<u>O</u>									



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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
6	Device and Qualification													
6	10	Meter Configuration	Configuration of the Meter at the Service Location	M	M	M	M							
6	11	Parent Meter id	ID of a Master or Parent Meter	O	O	O	O	O						
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M			M	
6	21	Meter Type	Type of Meter installed at the Service Location	M	M	M	M							
6	22	Meter Manufacturer	Manufacturer of the Meter	M	M	M								
6	221	Meter Installation Date	Date of Installation of the Meter	M	M	M								
6	222	PT Ratio	Ratio of the Potential Transformer	O	O	O								



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			To	SO			SE	MA	LSE	TDSP	SO				
			<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>	
<u>Element</u>			<u>Short Description</u>												
<u>6</u>	<u>223</u>	<u>Meter Installer License</u>	<u>Professional License</u> <u>Number of the Installer of</u> <u>the Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>224</u>	<u>Meter Correction</u> <u>Factors</u>	<u>Device-specific Factors</u> <u>used to adjust for</u> <u>atmospheric changes at</u> <u>the point of installation of</u> <u>the Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>225</u>	<u>Meter Test Criteria</u>	<u>Test Criteria required to</u> <u>qualify the installation of</u> <u>the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>226</u>	<u>Meter Test Frequency</u>	<u>Frequency of Tests of the</u> <u>Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>227</u>	<u>Device QA Plan</u>	<u>Quality Assurance plan for</u> <u>maintenance and testing</u> <u>of the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>									



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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>											
			From	SP		SO				SE	MA	LSE	TDSP		
			To	SO		SE	MA	LSE	TDSP	SO					
			<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
<u>Element</u>			<u>Short Description</u>												
<u>6</u>	<u>228</u>	<u>Date of Last Meter Test</u>	<u>Date of Last Test of the Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>229</u>	<u>Meter Qualification Date</u>	<u>Date of Qualification of the Meter by the Metering Authority or System Operator</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>							
<u>6</u>	<u>2291</u>	<u>Meter Test Results</u>	<u>Results of Tests of the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>2292</u>	<u>VEE Compliance</u>	<u>Compliance standard for Validation, Editing, and Estimation</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>2293</u>	<u>Measurement Interval</u>	<u>Interval of time between Measurement readings</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>2294</u>	<u>ANSI Compliance</u>	<u>ANSI standard with which the Meter complies</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>2295</u>	<u>Meter Owner</u>	<u>Owner of the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>								<u>O</u>	

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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>											
			From	SP			SO				SE	MA	LSE	TDSP	
				SO			SE	MA	LSE	TDSP	SO				
			To				<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>
			<u>Interaction</u>	<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
<u>Element</u>			<u>Short Description</u>												
<u>6</u>	<u>2296</u>	<u>Meter Asset Comments</u>	<u>Comments associated with the Meter Asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>23</u>	<u>Meter Model</u>	<u>Model of the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>24</u>	<u>Meter Rating</u>	<u>Load Rating of the Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>25</u>	<u>Meter Multiplier (kH)</u>	<u>Multiplier used to convert pulses into power units</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>26</u>	<u>Meter Accuracy Class</u>	<u>Accuracy Class of the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>27</u>	<u>Meter Loss Compensation</u>	<u>Line Losses included in the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>28</u>	<u>Maximum Error</u>	<u>Error of the Meter, including end-to-end Maximum Error</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>29</u>	<u>Meter Phase</u>	<u>Specific Phase information</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>	
Element			Short Description												
6	291	CT Ratio	Ratio of the Current Transformer	M	M	M									
6	30	Distributed Generator Type	Type of Distributed Generator	M	M	M									
6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator	M	M	M									
6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator	M	M	M									
6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	M	M	M									
6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator	O	O	O									



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			From	SP		SO				SE	MA	LSE	TDSP	
			To	SO		SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
6	35	Manufactured Date of the Distributed Generator	Date of Manufacture of the Distributed Generator	O	O	O								
6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator	O	O	O								
6	37	Generator In-Service Date	Date the Distributed Generator became operational	M	M	M								
6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours	M	M	M								
6	39	Distributed Generator Name	Name of the Distributed Generator	M	M	M								



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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
<u>Element</u>				<u>Short Description</u>											
<u>6</u>	<u>41</u>	<u>Interconnection Agreement Type</u>	<u>Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>42</u>	<u>Interconnection Limits</u>	<u>Limits associated with the Interconnection of the Distributed Generator or Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>43</u>	<u>Capable of Synchronizing to Grid</u>	<u>Flag set if the Service Location is capable of Synchronizing to the Grid</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-
<u>6</u>	<u>44</u>	<u>Normal Breaker Status</u>	<u>Status of the Breaker for the Service Location under Normal operating conditions</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-



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			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
6	45	<u>Breaker Status During Event</u>	<u>Status of the Breaker for the Service Location during an Emergency Event</u>	<u>O</u>	<u>O</u>	<u>O</u>								
6	46	<u>Wholesale Delivery Point Status</u>	<u>Flag set if the Service Location is metered at the Wholesale level</u>	<u>M</u>	<u>M</u>	<u>M</u>								
6	47	<u>Private Use Network</u>	<u>Flag set if the Resource is an Electric Network connected to the transmission grid</u>	<u>O</u>	<u>O</u>	<u>O</u>								
6	51	<u>UFR Settings</u>	<u>Setting of the Under-Frequency Relay</u>	<u>O</u>	<u>O</u>	<u>O</u>								
6	52	<u>Load Resource Control Device</u>	<u>Type of Control Device at a Service Location or deployed by a Response Method</u>	<u>M</u>	<u>M</u>	<u>M</u>								



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			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>				
Element			Short Description												
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O									
7		Market/Program Enrollment													
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	M	M	M	M	M
7	11	Program Name	Name of the Program	O	O	O	O	O	O	O	O	O	O	O	O
7	12	Market	Type of wholesale market	M	M	M	M	M	M	M					
7	13	Market Product	Market Product	M	M	M	M	M	M	M	M				M
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	M	M	M	O	O	O	O	M				
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M	O	O	O	O	M				
7	23	Resource Type	Type of Resource	M	M	M	M	M	M	M	M				M



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				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
<u>7</u>	<u>24</u>	<u>Resource Qualification Test Date</u>	<u>Date the Resource demonstrated its ability to deliver a product or service</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>			<u>O</u>
<u>7</u>	<u>25</u>	<u>Enrollment End Date</u>	<u>Date of Termination of Enrollment</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>O</u>
<u>7</u>	<u>26</u>	<u>Regualification Test Date</u>	<u>Date the Resource will retest its ability to deliver a product or service</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>			<u>O</u>
<u>7</u>	<u>30</u>	<u>Lead Time</u>	<u>Time between the advanced notification and deployment</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>						
<u>7</u>	<u>31</u>	<u>Day Ahead Flag</u>	<u>Flag set if the Resource will be participating in the Day-Ahead market</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>						
<u>7</u>	<u>32</u>	<u>Real Time Flag</u>	<u>Flag set if the Resource will be participating in the Real-Time market</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>						

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			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	O	O	O								
7	40	Response Method Type	Type of Response Method	M	M	M	O	O	O	O				
7	41	Response Method ID	Identifier assigned to the Response Method	M	M	M	M	M	M	M				
7	42	Response Method Name	Name of the Response Method	O	O	O	O	O	O	O				
7	43	Response Method Value	Value of the Response Method	M	M	M	M	O	O	O	M			
7	44	Verified Capability	Audited Capability	O	O	O	M				M			
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	O	O	O								
7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	M	M	M	M	O			M			



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			Process	1.0 Enrollment & Qualification											
			From	SP		SO				SE	MA	LSE	TDSP		
			To	SO		SE	MA	LSE	TDSP	SO					
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>				
Element			Short Description												
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>							
7	991	Market Enrollment Comments	Comments associated with the Enrollment	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				
8		Offer Parameters													
8	10	Offer Limit Value	Offer Limit Value	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
8	11	Offer Limit Type	Type of Offer Limit	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
8	12	Offer Limit Interval	Offer Limit Interval	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
8	20	Physical Min Gen	Minimum Operating Level of a Resource	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>				<u>O</u>			<u>O</u>	
8	21	Min Gen MW	Minimum MW available for dispatch	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>			<u>O</u>			<u>O</u>	
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>			<u>O</u>			<u>O</u>	

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			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>														
				From	SP		SO				SE	MA	LSE	TDSP				
			To												SO		SE	MA
				<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>				
			<u>Service Location Enrollment</u>		<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>				
<u>Element</u>			<u>Short Description</u>															
<u>8</u>	<u>23</u>	<u>Ramp Rate Type</u>	<u>Type of Ramp Rate</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	<u>M</u>	-	-	-	-
<u>8</u>	<u>24</u>	<u>Ramp Rate Segment</u>	<u>Energy of Segment of the Ramp Rate</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	<u>M</u>	-	-	-	-
<u>8</u>	<u>25</u>	<u>Ramp Rate Direction</u>	<u>Direction of the selected Ramp Rate Type and Ramp Rate Segment</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	<u>M</u>	-	-	-	-
<u>8</u>	<u>26</u>	<u>Ramp Rate Value</u>	<u>Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	<u>M</u>	-	-	-	-
<u>8</u>	<u>30</u>	<u>Offer Dispatch Type</u>	<u>Type of Offer</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>31</u>	<u>Offer Segment MW</u>	<u>Energy of Segment of the Offer</u>	<u>O</u>	<u>O</u>	<u>M</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>32</u>	<u>Offer Segment Price</u>	<u>Price of Segment of the Offer</u>	<u>O</u>	<u>O</u>	<u>M</u>	-	-	-	-	-	-	-	-	-	-	-	-



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				From	SP			SO				SE	MA	LSE	TDSP	
				To	SO			SE	MA	LSE	TDSP	SO				
				Interaction	<u>1.0.1 a</u>	<u>1.0.1 b</u>	<u>1.0.1 c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element				Short Description												
8	33	Offer Segment Hour		Hour of Segment of the Offer	O	O	M									
8	34	Startup Cost		Cost of starting a response activity	O	O	M									
8	35	Strike Price		Threshold Price	O	O	M									
8	36	Offer Expiration Date		Date of Expiration of the Offer	O	O	M									
8	37	Startup Cost Type		Type of startup cost	M	M	M									
8	38	Offer Commit Status		Commitment status of offer	M	M	M									
8	39	Offer Dispatch Status		Dispatch Status of Offer	M	M	M									
8	331	Offer Price Curve Slope		Flag to smooth offer segments from step function to slope	M	M	M									
8	332	StrikePriceType		Type of strike price	O	O	O									



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			To	SO		SE	MA	LSE	TDSP	SO					
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
8	40	Market Clearing Day	Market Clearing Day of the Offer	O	O	O	O	-	-	-	-	-	-	-	-
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O	-	-	-	-	-	-	-	-
8	42	Schedule Description	Description of the Offer	O	O	O	O	-	-	-	-	-	-	-	-
8	43	Schedule Status	Status of the Offer	M	M	M	O	-	-	-	-	-	-	-	-
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	-	-	-	-	-	-	-	-
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint	M	M	M	-	-	-	-	-	-	-	-	-
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.	M	M	M	-	-	-	-	-	-	-	-	-
8	73	Operational Constraint Value	Value of the Constraint Type and Interval	M	M	M	-	-	-	-	-	-	-	-	-
9	Energy Market														

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				SP			SO				SE	MA	LSE	TDSP
				-			-				-	-	-	-
				SO			SE	MA	LSE	TDSP	SO			
				-			-	-	-	-	-	-	-	-
				<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
				-	-	-	-	-	-	-	-	-	-	-
<u>9</u>	<u>0</u>	<u>Instruction ID</u>	-	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-
<u>9</u>	<u>10</u>	<u>Energy Schedule - Start Time</u>	Start Time of the Energy Schedule	-	-	-	-	-	-	-	-	-	-	-
<u>9</u>	<u>11</u>	<u>Energy Schedule - End Time</u>	End Time of the Energy Schedule	-	-	-	-	-	-	-	-	-	-	-
<u>9</u>	<u>12</u>	<u>Energy Schedule - Interval Start Time</u>	Start Time of the Energy Interval within the Energy Schedule	-	-	-	-	-	-	-	-	-	-	-
<u>9</u>	<u>13</u>	<u>Energy Schedule - Cleared MW Interval Value</u>	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	-	-	-	-	-	-	-	-	-	-	-
<u>9</u>	<u>14</u>	<u>Energy Schedule - Cleared Price</u>	Awarded Price	-	-	-	-	-	-	-	-	-	-	-
<u>9</u>	<u>15</u>	<u>Schedule ID</u>	-	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-



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<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>				
Element			Short Description												
<u>9</u>	<u>20</u>	<u>Base Point</u>	<u>Per-interval dispatch instruction</u>												
<u>9</u>	<u>21</u>	<u>Breaker Status</u>	<u>Status of the Breaker for the Resource</u>												
<u>9</u>	<u>22</u>	<u>Output MW</u>	<u>Real Power Output of the Generation Device</u>												
<u>9</u>	<u>23</u>	<u>Output MVAR</u>	<u>Reactive Power Output of the Generation Device</u>												
<u>9</u>	<u>24</u>	<u>DR Bus Load MW</u>	<u>Instantaneous Bus Load of a Demand Resource providing Ancillary Services</u>												
<u>9</u>	<u>27</u>	<u>Set Point</u>	<u>Final dispatch target level</u>												
<u>10</u>	-	<u>Ancillary Service Market</u>	-												
<u>10</u>	<u>0</u>	<u>Ancillary Service Instruction ID</u>	-												

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			<u>Interaction</u>	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
<u>Element</u>			<u>Short Description</u>											
<u>10</u>	<u>10</u>	<u>Ancillary Service Product Type</u>	<u>Type of Ancillary Service product(s) the Resource is enrolling to provide</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>10</u>	<u>11</u>	<u>Have Engineering Diagram</u>	<u>Flag set if One-Line Diagrams have been submitted</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>10</u>	<u>12</u>	<u>Ancillary Service Award - Start Time</u>	<u>Start Time of the ancillary service Award</u>											
<u>10</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>	<u>End Time of the ancillary service Award</u>											
<u>10</u>	<u>14</u>	<u>Ancillary Service Award - Interval Start Time</u>	<u>Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval</u>											



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			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element			Short Description											
<u>10</u>	<u>15</u>	<u>Ancillary Service Award - Interval Value</u>	<u>The awarded Value for the Time Interval within the ancillary service Award</u>	-	-	-	-	-	-	-	-	-	-	-
<u>10</u>	<u>16</u>	<u>Ancillary Service Award - Cleared Price</u>	<u>Awarded Price</u>	-	-	-	-	-	-	-	-	-	-	-
<u>10</u>	<u>17</u>	<u>Ancillary Service Schedule ID</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>10</u>	<u>20</u>	<u>Ancillary Service Product Qualification Type</u>	<u>Type of Qualification</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	<u>M</u>	-	-	-
<u>10</u>	<u>21</u>	<u>Synchronization Test Date</u>	<u>Target Date of Test of Synchronization to the grid</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-
<u>10</u>	<u>22</u>	<u>Ancillary Service Product Type Qualification Date</u>	<u>Date of Qualification of the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	<u>M</u>	-	-	-



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				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
<u>10</u>	<u>23</u>	<u>Ancillary Service Product Type Qualified</u>	<u>Type of Ancillary Service Product(s) for which the Resource has Qualified</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>			
<u>10</u>	<u>24</u>	<u>Regualification Requirement</u>	<u>Flag set if Regualification is Required</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>10</u>	<u>31</u>	<u>Reserve Pickup Flag</u>	<u>Flag set if this is a Reserve Pickup schedule</u>											
<u>10</u>	<u>32</u>	<u>Regulation Base Point</u>	<u>Per-interval Regulation dispatch instruction</u>											
<u>10</u>	<u>33</u>	<u>Base Load MW</u>	<u>Level of Load at time of dispatch</u>											
<u>11</u>	<u>Capacity Market</u>													
<u>11</u>	<u>10</u>	<u>Capacity Type</u>	<u>Type of Capacity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>						



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			To	SO		SE	MA	LSE	TDSP	SO					
			<u>Interaction</u>	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>				
<u>Element</u>			<u>Short Description</u>												
<u>11</u>	<u>11</u>	<u>Capacity Type description</u>	<u>Description of the Type of Capacity</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	
<u>11</u>	<u>20</u>	<u>Peak Value</u>	<u>Measurement of Peak</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	<u>M</u>	
<u>11</u>	<u>21</u>	<u>Peak Type</u>	<u>Type of measurement of Peak</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	<u>M</u>	
<u>11</u>	<u>22</u>	<u>Peak Date/Time</u>	<u>Date and Time of measurement of Peak</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	<u>M</u>	
<u>11</u>	<u>23</u>	<u>Nominal Capacity</u>	<u>Nominated load</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	
<u>11</u>	<u>24</u>	<u>Qualified Capacity</u>	<u>Nominal ICAP derated for performance</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	
<u>11</u>	<u>30</u>	<u>Capacity Obligation Period Type</u>	<u>Type of Capacity Obligation Time Period within which the Resource is obligated</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
<u>11</u>	<u>31</u>	<u>Capacity Obligation Period</u>	<u>Period of time for which the Capacity Resource is obligated</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>							
<u>11</u>	<u>40</u>	<u>Minimum Payment Nomination</u>	<u>Strike price for the economic dispatch of the energy component of the capacity program</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>11</u>	<u>41</u>	<u>Capacity Supply Obligation</u>	<u>Capacity Obligation</u>												
<u>11</u>	<u>50</u>	<u>Capacity Reference ID</u>	<u>Identifier assigned to the External System award</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>							
<u>11</u>	<u>991</u>	<u>Capacity Comments</u>	<u>Comments associated with the Capacity market</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>							



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Table 5. Data Requirements by Interaction Number 1.0.10 through 1.0.16: Enrollment and Qualification

				Process	1.0 Enrollment & Qualification						
				From	SO	-	SO	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description	-	-	-	-	-	-	-
<u>0</u>	-	<u>Common</u>			-	-	-	-	-	-	-
<u>0</u>	<u>10</u>	<u>Submittal Date</u>		Timestamp for the sender's use	<u>0</u>	<u>0</u>	<u>0</u>	-	-	<u>0</u>	<u>0</u>
<u>0</u>	<u>11</u>	<u>Submitted By</u>		User ID of submitter	<u>0</u>	<u>0</u>	<u>0</u>	-	-	<u>0</u>	<u>0</u>
<u>0</u>	<u>12</u>	<u>Submitted Error</u>		ID of submission error detected	<u>0</u>	<u>0</u>	<u>0</u>	-	-	<u>0</u>	<u>0</u>
<u>0</u>	<u>13</u>	<u>Rejection Code Type</u>		Type of rejection message	<u>M</u>	<u>M</u>	-	-	-	-	-
<u>0</u>	<u>14</u>	<u>Rejection Code Value</u>		Code referring to the reason for a rejection message	<u>M</u>	<u>M</u>	-	-	-	-	-
<u>0</u>	<u>20</u>	<u>NERC CIP Security - Availability</u>		CIP Security Classification for Availability	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>21</u>	<u>NERC CIP Security - Confidentiality</u>		CIP Security Classification for Confidentiality	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>		CIP Security Classification for Integrity	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	-	<u>General Asset/Resource</u>			-	-	-	-	-	-	-



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			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>							
			<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-	
			<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>	
			<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>	
				<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>	
<u>Element</u>			<u>Short Description</u>								
<u>1</u>	<u>10</u>	<u>Service Location ID</u>	<u>Identifier assigned to the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	
<u>1</u>	<u>11</u>	<u>Service Location Name</u>	<u>Name of the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	
<u>1</u>	<u>12</u>	<u>Asset ID</u>	<u>The unique identifier of the asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>1</u>	<u>13</u>	<u>Asset Name</u>	<u>The name of the asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	
<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>	<u>O</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>1</u>	<u>30</u>	<u>Asset Group ID</u>	<u>The identifier of a group of assets</u>	-	-	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>1</u>	<u>31</u>	<u>Asset Group Name</u>	<u>Name of the aggregated group of assets</u>	-	-	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>1</u>	<u>40</u>	<u>GenEMSID</u>	<u>Alias or point Identifier assigned to the Resource</u>	-	-	<u>M</u>	-	-	-	-	
<u>1</u>	<u>41</u>	<u>GenBillingID</u>	<u>Billing Identifier assigned to the Resource</u>	-	-	<u>M</u>	-	-	-	-	



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification							
			From	SO	-	SO	-	-	-	-	
			To	SP	-	SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
1	50	Business Segment	NAICS code of the Service Location								
1	51	Batch Load Flag	Flag set if the Resource is a Batch Load			O			O	O	
1	991	General Resource Comments	General comments associated with the Resource	O	O	O			O	O	
2		Location									
2	10	Address1	Address line 1	M	M	O	M		O	O	
2	11	Address2	Address line 2	O	O	O	O		O	O	
2	12	City	City	M	M	O	M		O	O	
2	13	Service Location State/Province	State or Province two-letter code	M	M	O	M		O	O	
2	14	Service Location Zip/Postal Code	Zip or Postal Code	M	M	O	M		O	O	
2	15	Service Location Country	Country	M	M	O	M		O	O	
2	20	GPS Coordinates	Latitude and longitude								
2	21	Weather Station	Weather Station code associated with the Service Location			O			O	O	
2	22	TimeZoneName	Name of the Time Zone in which the Service Location is located								

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	1.0 Enrollment & Qualification							
				From	SO	-	SO	-	-	-	-	
				To	SP	-	SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M	-	-	M	M		
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O	-	-	O	O		
2	32	Zone Type	Type of Zone	O	O	O	-	-	O	O		
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M	-	M	M	-	M	M		
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	-	O	-	-	O	O		
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O	-	O	-	-	O	O		
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O	-	-	O	O		



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				Process	1.0 Enrollment & Qualification							
				From	SO	-	SO	-	-	-	-	
				To	SP	-	SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M		M	M		
2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	O	O	O	O			O		
2	51	Asset Multiplier	Number of identical assets within the Service Location									
2	60	NERC Control Area	The NERC control area of the resource									
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource									
2	72	Connection Address	Address associated with the Connection Type									
2	991	Location Comments	Comments associated with the Service Location	O	O	O						
3	Contact											



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			Process	1.0 Enrollment & Qualification							
			From	SO	-	SO	-	-	-	-	
			To	SP	-	SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
Rejection Details	Qualification Rejection	Qualification Status to SP		Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP				
Element			Short Description								
3	10	Contact Type	Interest code associated with a Contact								
3	11	Contact Priority	Order in which this Contact should be selected								
3	12	DUNS Number	DUNS business number								
3	13	Third Party	Flag set if the Contact is a third-party entity								
3	20	Title	Title of the Contact								
3	21	First Name	First Name of the Contact								
3	22	Last Name	Last Name of the Contact								
3	23	Contact Middle Name	Middle Name of the Contact								
3	30	Contact Method	Method of communication with the Contact								
3	31	Contact Address Data	Method-dependent Address of the Contact								
3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact								



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			Process	1.0 Enrollment & Qualification							
			From	SO	-	SO	-	-	-	-	
			To	SP	-	SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
3	991	Contact Comments	Comments associated with the Contact	O	O						
4		Grid Connection									
4	10	Loss Factor Type	Type of Loss Factor			O			O	O	
4	11	Loss Factor Value	Loss Factor			O			O	O	
4	12	Connect Voltage	Voltage level								
4	991	Grid Connection Comments	Comments associated with the Attributes of the Resource	O	O	O					
5		Business Entity Relationships									
5	11	Service Provider ID	Identifier assigned to the Service Provider	M	M	M	M		M	M	
5	12	Service Provider Name	Name of the Service Provider	O	O	O	O		O	O	
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	M	M	M	M		M	M	
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider	O	O	O	O		O	O	



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			Process	1.0 Enrollment & Qualification						
			From	SO	-	SO	-	-	-	-
			To	SP	-	SP	SE	MA	LSE	TDSP
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element			Short Description							
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	O	O	O	O	-	O	O
5	30	Load-Serving Entity ID	Identifier assigned to the Load-Serving Entity	O	O	M	-	-	M	M
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity	O	O	O	-	-	O	O
5	40	Retail Rate ID	Identifier assigned to the Retail Rate	-	-	O	-	-	O	O
5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	-	-	O	-	-	O	O
5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	-	-	O	-	-	O	O
5	43	Retail Rate Description	Description of the Retail Rate	-	-	O	-	-	O	O
5	44	Retail Rate	Retail Rate	-	-	O	-	-	O	O
5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider	-	-	O	-	-	O	O
5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	-	-	O	-	-	O	O
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	M	M	M	-	-	-	-



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			Process	1.0 Enrollment & Qualification								
			From	SO	-	SO	-	-	-	-		
			To	SP	-	SP	SE	MA	LSE	TDSP		
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element			Short Description									
5	61	Meter Authority Name	Name of the Metering Authority	O	O	O						
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M						
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O						
5	80	Designated Dispatch Entity ID	Idenitifier assigned to the Designated Dispatch Entity	M	M	M						
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O						
5	991	External Entity Comments	Comments associated with the External Entity	O	O	O						
6	-	Device and Qualification		-	-	-	-	-	-	-	-	
6	10	Meter Configuration	Configuration of the Meter at the Service Location	-	-	-	-	-	-	-	-	
6	11	Parent Meter id	ID of a Master or Parent Meter	-	-	-	-	-	-	-	-	
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	-	-	-	-	
6	21	Meter Type	Type of Meter installed at the Service Location	-	-	-	-	-	-	-	-	
6	22	Meter Manufacturer	Manufacturer of the Meter	-	-	-	-	-	-	-	-	

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



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				Process	1.0 Enrollment & Qualification							
				From	SO	-	SO	-	-	-	-	
				To	SP	-	SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
6	221	Meter Installation Date	Date of Installation of the Meter	-	-	-	-	-	-	-	-	
6	222	PT Ratio	Ratio of the Potential Transformer	-	-	-	-	-	-	-	-	
6	223	Meter Installer License	Professional License Number of the Installer of the Meter	-	-	-	-	-	-	-	-	
6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter	-	-	-	-	-	-	-	-	
6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter	-	-	-	-	-	-	-	-	
6	226	Meter Test Frequency	Frequency of Tests of the Meter	-	-	-	-	-	-	-	-	
6	227	Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter	-	-	-	-	-	-	-	-	
6	228	Date of Last Meter Test	Date of Last Test of the Meter	-	-	-	-	-	-	-	-	
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator	-	-	0	-	-	0	0		
6	2291	Meter Test Results	Results of Tests of the Meter	-	-	-	-	-	-	-	-	



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	1.0 Enrollment & Qualification							
				From	SO	-	SO	-	-	-	-	
				To	SP	-	SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
6	2292	VEE Compliance		Compliance standard for Validation, Editing, and Estimation	-	-	-	-	-	-	-	-
6	2293	Measurement Interval		Interval of time between Measurement readings	-	-	-	-	-	-	-	-
6	2294	ANSI Compliance		ANSI standard with which the Meter complies	-	-	-	-	-	-	-	-
6	2295	Meter Owner		Owner of the Meter	0	0	0	-	0	-	0	-
6	2296	Meter Asset Comments		Comments associated with the Meter Asset	0	-	-	-	-	-	-	-
6	23	Meter Model		Model of the Meter	-	-	-	-	-	-	-	-
6	24	Meter Rating		Load Rating of the Meter	-	-	-	-	-	-	-	-
6	25	Meter Multiplier (kH)		Multiplier used to convert pulses into power units	-	-	-	-	-	-	-	-
6	26	Meter Accuracy Class		Accuracy Class of the Meter	-	-	-	-	-	-	-	-
6	27	Meter Loss Compensation		Line Losses included in the Meter	-	-	-	-	-	-	-	-
6	28	Maximum Error		Error of the Meter, including end-to-end Maximum Error	-	-	-	-	-	-	-	-



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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>							
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-	
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>	
				<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>	
					<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>	
<u>Element</u>				<u>Short Description</u>								
<u>6</u>	<u>29</u>	<u>Meter Phase</u>	<u>Specific Phase information</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>291</u>	<u>CT Ratio</u>	<u>Ratio of the Current Transformer</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>30</u>	<u>Distributed Generator Type</u>	<u>Type of Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>31</u>	<u>Nameplate Rating</u>	<u>Manufacturer's output rating of the Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>32</u>	<u>Distributed Generator Fuel Type</u>	<u>Type of Fuel consumed by the Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>33</u>	<u>Distributed Generator Permit Type</u>	<u>Type of environmental authorization required to operate the Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>34</u>	<u>Distributed Generator Manufacturer</u>	<u>Manufacturer of the Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>35</u>	<u>Manufactured Date of the Distributed Generator</u>	<u>Date of Manufacture of the Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>36</u>	<u>Installation Date of Distributed Generator</u>	<u>Date of Installation of the Distributed Generator</u>	-	-	-	-	-	-	-	-	
<u>6</u>	<u>37</u>	<u>Generator In-Service Date</u>	<u>Date the Distributed Generator became operational</u>	-	-	-	-	-	-	-	-	

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification						
			From	SO	-	SO	-	-	-	-
			To	SP	-	SP	SE	MA	LSE	TDSP
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element			Short Description							
6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours							
6	39	Distributed Generator Name	Name of the Distributed Generator							
6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP							
6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location							
6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid							
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions							



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			To	SP	-	SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	-	-	-	-	-	-	-	
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	-	-	-	-	-	-	-	
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	-	-	-	-	-	-	-	
6	51	UFR Settings	Setting of the Under-Frequency Relay	-	-	-	-	-	-	-	
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	-	-	-	-	-	-	-	
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	Q	Q	Q	-	-	Q	Q	
7	Market/Program Enrollment			-	-	-	-	-	-	-	
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	
7	11	Program Name	Name of the Program	Q	Q	Q	M	Q	Q	Q	
7	12	Market	Type of wholesale market	M	M	Q	-	-	Q	Q	



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			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element			Short Description									
7	13	Market Product	Market Product	M	M	M	M	-	O	O		
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	-	-	M	M	-	M	M		
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M	-	-	M	M		
7	23	Resource Type	Type of Resource	O	O	O	O	-	-	O		
7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service	O	O	O	O	-	-	O		
7	25	Enrollment End Date	Date of Termination of Enrollment	O	O	O	O	-	O	O		
7	26	Regualification Test Date	Date the Resource will retest its ability to deliver a product or service	O	O	O	O	-	-	O		
7	30	Lead Time	Time between the advanced notification and deployment	-	-	O	-	-	O	O		
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	O	O	O	-	-	O	O		



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				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	O	O	O	-	-	O	O		
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	-	-	-	-	-	-	-		
7	40	Response Method Type	Type of Response Method	O	O	O	O	-	O	O		
7	41	Response Method ID	Identifier assigned to the Response Method	O	O	M	-	-	M	M		
7	42	Response Method Name	Name of the Response Method	O	O	O	-	-	O	O		
7	43	Response Method Value	Value of the Response Method	O	O	M	M	-	M	M		
7	44	Verified Capability	Audited Capability	O	O	M	M	-	-	-		
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	-	-	M	-	-	-	-		
7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	M	M	M	M	-	-	-		
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	O	O	M	-	-	-	-		



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				<u>From</u>		<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>		<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
						<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
				<u>Interaction</u>		<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>		-	-	-	-	-	-	-
<u>7</u>	<u>991</u>	<u>Market Enrollment Comments</u>	<u>Comments associated with the Enrollment</u>			<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>8</u>	-	<u>Offer Parameters</u>				-	-	-	-	-	-	-
<u>8</u>	<u>10</u>	<u>Offer Limit Value</u>	<u>Offer Limit Value</u>			<u>M</u>	<u>O</u>	<u>M</u>	<u>M</u>	-	<u>O</u>	<u>O</u>
<u>8</u>	<u>11</u>	<u>Offer Limit Type</u>	<u>Type of Offer Limit</u>			<u>M</u>	<u>O</u>	<u>M</u>	<u>M</u>	-	<u>O</u>	<u>O</u>
<u>8</u>	<u>12</u>	<u>Offer Limit Interval</u>	<u>Offer Limit Interval</u>			<u>M</u>	<u>O</u>	<u>M</u>	<u>M</u>	-	<u>O</u>	<u>O</u>
<u>8</u>	<u>20</u>	<u>Physical Min Gen</u>	<u>Minimum Operating Level of a Resource</u>			<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	<u>O</u>	<u>O</u>
<u>8</u>	<u>21</u>	<u>Min Gen MW</u>	<u>Minimum MW available for dispatch</u>			<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	<u>O</u>	<u>O</u>
<u>8</u>	<u>22</u>	<u>MinGenCost</u>	<u>The cost per hour for each Min Gen MW value.</u>			<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-
<u>8</u>	<u>23</u>	<u>Ramp Rate Type</u>	<u>Type of Ramp Rate</u>			<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-
<u>8</u>	<u>24</u>	<u>Ramp Rate Segment</u>	<u>Energy of Segment of the Ramp Rate</u>			<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-
<u>8</u>	<u>25</u>	<u>Ramp Rate Direction</u>	<u>Direction of the selected Ramp Rate Type and Ramp Rate Segment</u>			<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-



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				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	M	O	O	O				
8	30	Offer Dispatch Type	Type of Offer	-	O	-	-	-	-	-	
8	31	Offer Segment MW	Energy of Segment of the Offer	-	-	-	-	-	-	-	
8	32	Offer Segment Price	Price of Segment of the Offer	-	-	-	-	-	-	-	
8	33	Offer Segment Hour	Hour of Segment of the Offer	-	-	-	-	-	-	-	
8	34	Startup Cost	Cost of starting a response activity	-	-	-	-	-	-	-	
8	35	Strike Price	Threshold Price	-	-	-	-	-	-	-	
8	36	Offer Expiration Date	Date of Expiration of the Offer	-	-	-	-	-	-	-	
8	37	Startup Cost Type	Type of startup cost	-	-	-	-	-	-	-	
8	38	Offer Commit Status	Commitment status of offer	-	-	-	-	-	-	-	
8	39	Offer Dispatch Status	Dispatch Status of Offer	-	-	-	-	-	-	-	



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					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
8	331	Offer Price Curve Slope	Flag to smoothe offer segments from step function to slope		-	-	-	-	-	-	-	-
8	332	StrikePriceType	Type of strike price		-	-	-	-	-	-	-	-
8	40	Market Clearing Day	Market Clearing Day of the Offer		-	-	-	0	-	-	-	-
8	41	Schedule Name	Name or tag of the Offer		-	-	-	0	-	-	-	-
8	42	Schedule Description	Description of the Offer		-	-	-	0	-	-	-	-
8	43	Schedule Status	Status of the Offer		-	-	-	0	-	-	-	-
8	50	Portfolio Name	Name of an aggregation of Resources for market participation		-	-	-	0	-	-	-	-
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint		-	-	-	-	-	-	-	-
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.		-	-	-	-	-	-	-	-
8	73	Operational Constraint Value	Value of the Constraint Type and Interval		-	-	-	-	-	-	-	-
9	Energy Market											

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				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
9	0	Instruction ID	-	-	-	-	-	-	-	-	
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	-	-	-	-	-	-	-	
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	-	-	-	-	-	-	-	
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	-	-	-	-	-	-	-	
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	-	-	-	-	-	-	-	
9	14	Energy Schedule - Cleared Price	Awarded Price	-	-	-	-	-	-	-	
9	15	Schedule ID	-	-	-	-	-	-	-	-	
9	20	Base Point	Per-interval dispatch instruction	-	-	-	-	-	-	-	
9	21	Breaker Status	Status of the Breaker for the Resource	-	-	-	-	-	-	-	
9	22	Output MW	Real Power Output of the Generation Device	-	-	-	-	-	-	-	



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				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>	
				<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>	
					<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>	
<u>Element</u>				<u>Short Description</u>								
<u>9</u>	<u>23</u>	<u>Output MVAR</u>	<u>Reactive Power Output of the Generation Device</u>									
<u>9</u>	<u>24</u>	<u>DR Bus Load MW</u>	<u>Instantaneous Bus Load of a Demand Resource providing Ancillary Services</u>									
<u>9</u>	<u>27</u>	<u>Set Point</u>	<u>Final dispatch target level</u>									
<u>10</u>	-	<u>Ancillary Service Market</u>										
<u>10</u>	<u>0</u>	<u>Ancillary Service Instruction ID</u>	-									
<u>10</u>	<u>10</u>	<u>Ancillary Service Product Type</u>	<u>Type of Ancillary Service product(s) the Resource is enrolling to provide</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>		<u>O</u>	<u>O</u>	
<u>10</u>	<u>11</u>	<u>Have Engineering Diagram</u>	<u>Flag set if One-Line Diagrams have been submitted</u>			<u>O</u>						
<u>10</u>	<u>12</u>	<u>Ancillary Service Award - Start Time</u>	<u>Start Time of the ancillary service Award</u>									
<u>10</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>	<u>End Time of the ancillary service Award</u>									



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				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval								
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award								
10	16	Ancillary Service Award - Cleared Price	Awarded Price								
10	17	Ancillary Service Schedule ID	-								
10	20	Ancillary Service Product Qualification Type	Type of Qualification	O	O	M	M				
10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid								
10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource			M	M				



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification								
			From	SO	-	SO	-	-	-	-		
			To	SP	-	SP	SE	MA	LSE	TDSP		
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element			Short Description									
10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified	-	-	M	M	-	-	-	-	
10	24	Regualification Requirement	Flag set if Regualification is Required	O	O	-	-	-	-	-	-	
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	-	-	-	-	-	-	-	-	
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	-	-	-	-	-	-	-	-	
10	33	Base Load MW	Level of Load at time of dispatch	-	-	-	-	-	-	-	-	
11		Capacity Market		-	-	-	-	-	-	-	-	
11	10	Capacity Type	Type of Capacity	O	O	M	-	-	-	-	-	
11	11	Capacity Type description	Description of the Type of Capacity	O	O	O	-	-	-	-	-	
11	20	Peak Value	Measurement of Peak	-	-	O	-	-	O	O		
11	21	Peak Type	Type of measurement of Peak	-	-	O	-	-	O	O		

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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>							
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-	
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>	
				<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>	
					<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>	
<u>Element</u>				<u>Short Description</u>								
<u>11</u>	<u>22</u>	<u>Peak Date/Time</u>	<u>Date and Time of measurement of Peak</u>	-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>		
<u>11</u>	<u>23</u>	<u>Nominal Capacity</u>	<u>Nominated load</u>	-	-	<u>O</u>	-	-	-	-		
<u>11</u>	<u>24</u>	<u>Qualified Capacity</u>	<u>Nominal ICAP derated for performance</u>	-	-	<u>M</u>	-	-	-	-		
<u>11</u>	<u>30</u>	<u>Capacity Obligation Period Type</u>	<u>Type of Capacity Obligation Time Period within which the Resource is obligated</u>	<u>O</u>	<u>O</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>		
<u>11</u>	<u>31</u>	<u>Capacity Obligation Period</u>	<u>Period of time for which the Capacity Resource is obligated</u>	<u>O</u>	<u>O</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>		
<u>11</u>	<u>40</u>	<u>Minimum Payment Nomination</u>	<u>Strike price for the economic dispatch of the energy component of the capacity program</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-		
<u>11</u>	<u>41</u>	<u>Capacity Supply Obligation</u>	<u>Capacity Obligation</u>	-	-	-	-	-	-	-		
<u>11</u>	<u>50</u>	<u>Capacity Reference ID</u>	<u>Identifier assigned to the External System award</u>	-	-	<u>O</u>	-	-	-	-		



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>							
			<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-	
			<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>	
			<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>	
				<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>	
<u>Element</u>			<u>Short Description</u>								
<u>11</u>	<u>991</u>	<u>Capacity Comments</u>	<u>Comments associated with the Capacity market</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>					



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ca)(ii)
Request Title: Phase Two Requirements Specifications for
 Wholesale Standard DR Signals - for NIST PAP09

018-1.4.2 Scheduling and Award Notification – Economic

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 4 – Use Cases for Figure 3

Table 6. Use Cases for Figure 3

Use Case	Product	Deployment	Performance Evaluation
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO

- The process begins when the SE submits a supply offer to the SO.
- The SO evaluates the offer through its market clearing process.
- The resulting resource-specific dispatch information is transformed into dispatch instructions by the SO.
- The SO makes the schedule available.
- The SE collects the forward schedule.



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

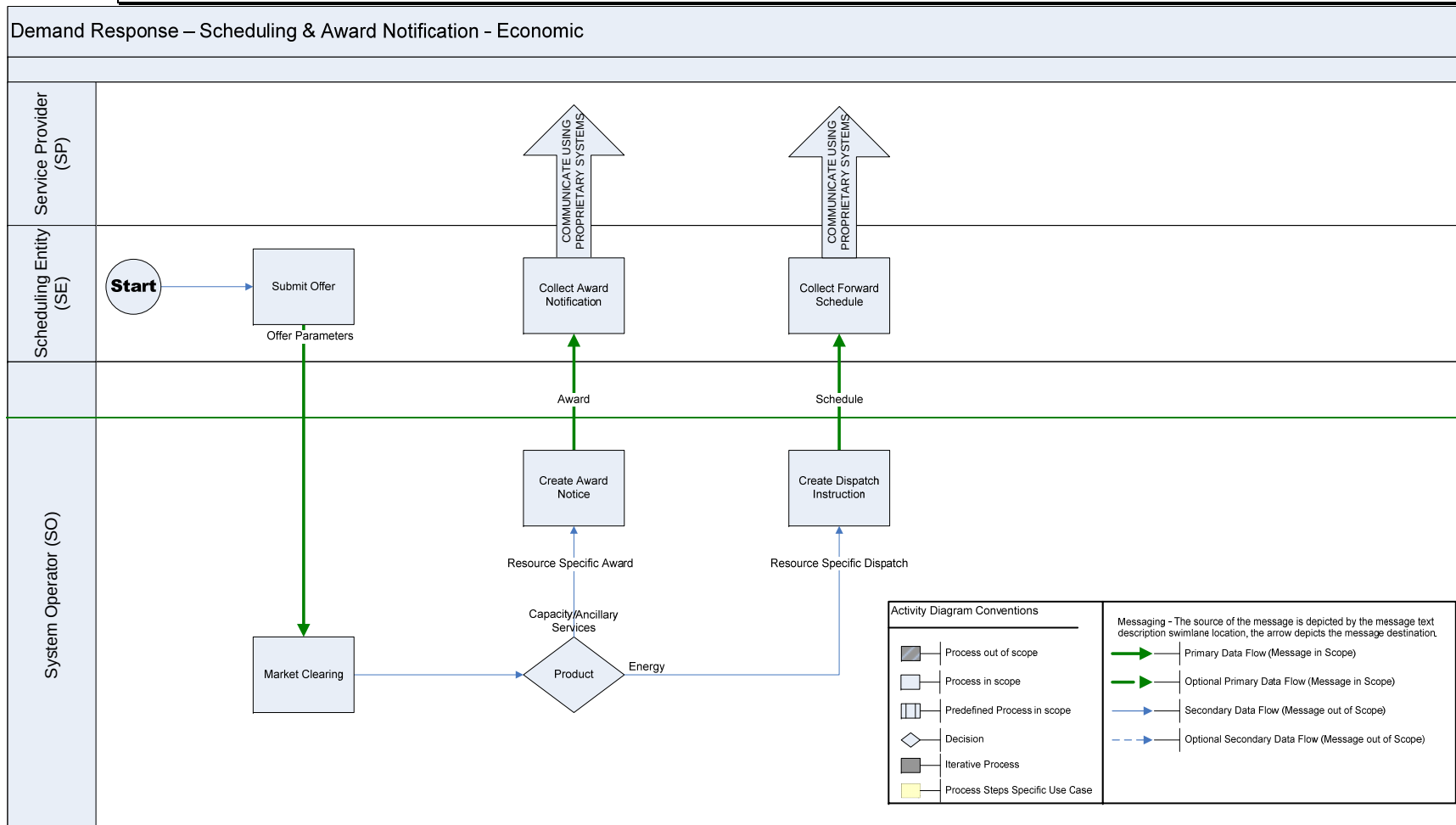
Activity Diagram and Data Flow:

Figure 3 - Scheduling and Award Notification - Economic



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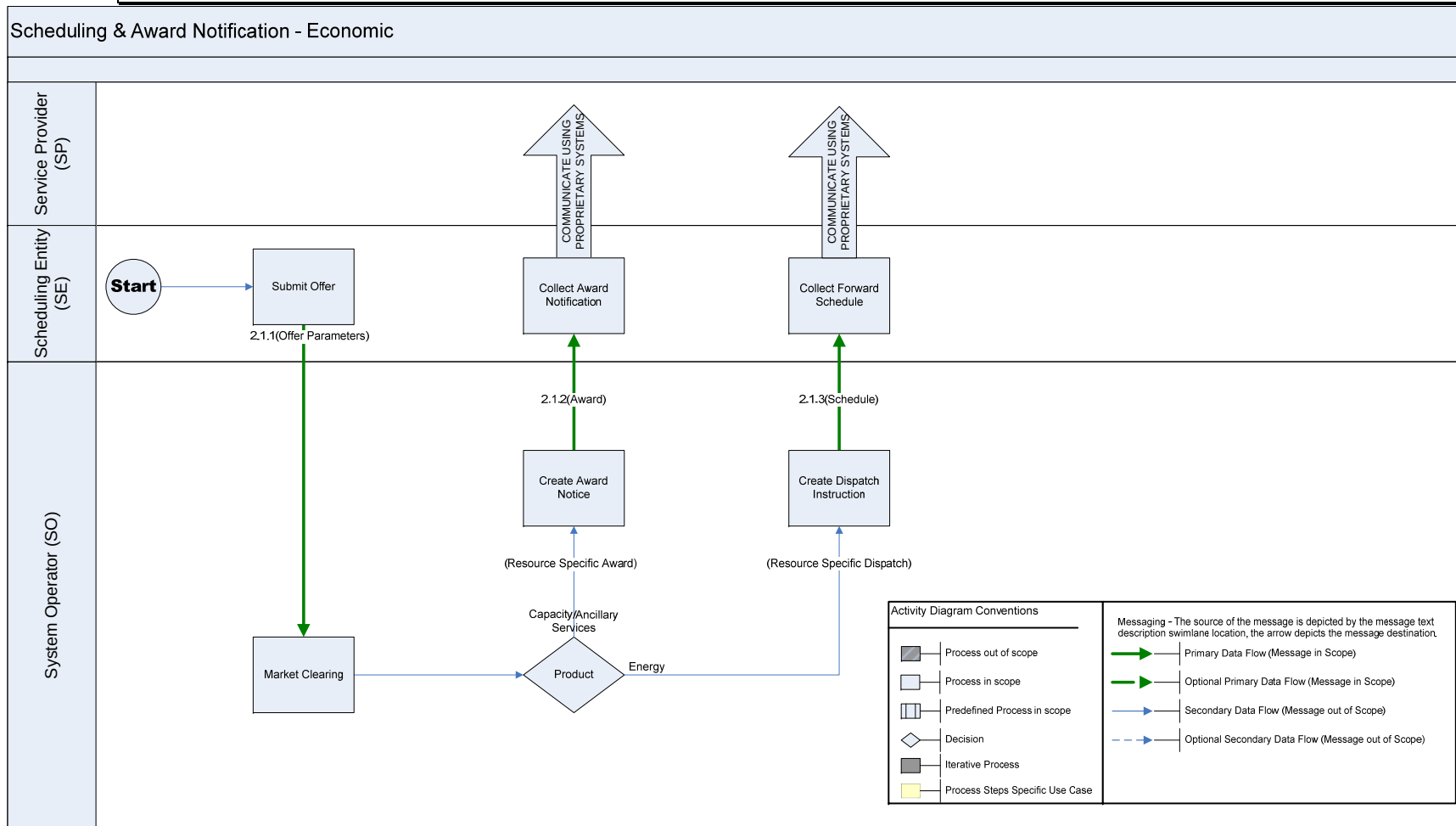
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09





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Note: Data elements for Scheduling and Award Notification-Economic are listed with Scheduling and Award Notification-Reliability in [Table 8](#).



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ac)(ii)
Request Title: Phase Two Requirements Specifications for
 Wholesale Standard DR Signals - for NIST PAP09

018-1.4.3 Scheduling and Award Notification – Reliability

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 5 – Use Cases for Figure 4

Table 7. Use Cases for Figure 4

Use Case	Product	Deployment	Performance Evaluation
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-4	Energy (Reliability)	Bulk	MGO
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
C-B-2	Capacity	Bulk	MB/MA
C-B-4	Capacity	Bulk	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-3	Reserve	Bulk	MBL
V-B-2	Reserve	Bulk	MB/MA
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-3	Reserve	Resource	MBL
V-R-2	Reserve	Resource	MB/MA
V-R-4	Reserve	Resource	MGO

- The process begins when the SE submits availability to the SO.
- The SO performs the Load Forecast and Supplemental Commitment process after the market has been settled. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - o If SO determines that the system is secure, no demand response advance notification is required and reliability is assessed by the SO at the next interval.
 - o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.



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Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ac~~)(ii)
Request Title: Phase Two Requirements Specifications for
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- If the SO determines that demand response will be provided with an advance notification, the reliability event parameters are prepared by the SO to create a reliability event notification.
 - The advance notification message is sent to the SE.
 - The SE identifies the demand resources to notify and relays the message to SPs through the proprietary ~~communication~~interaction system of the SE.



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

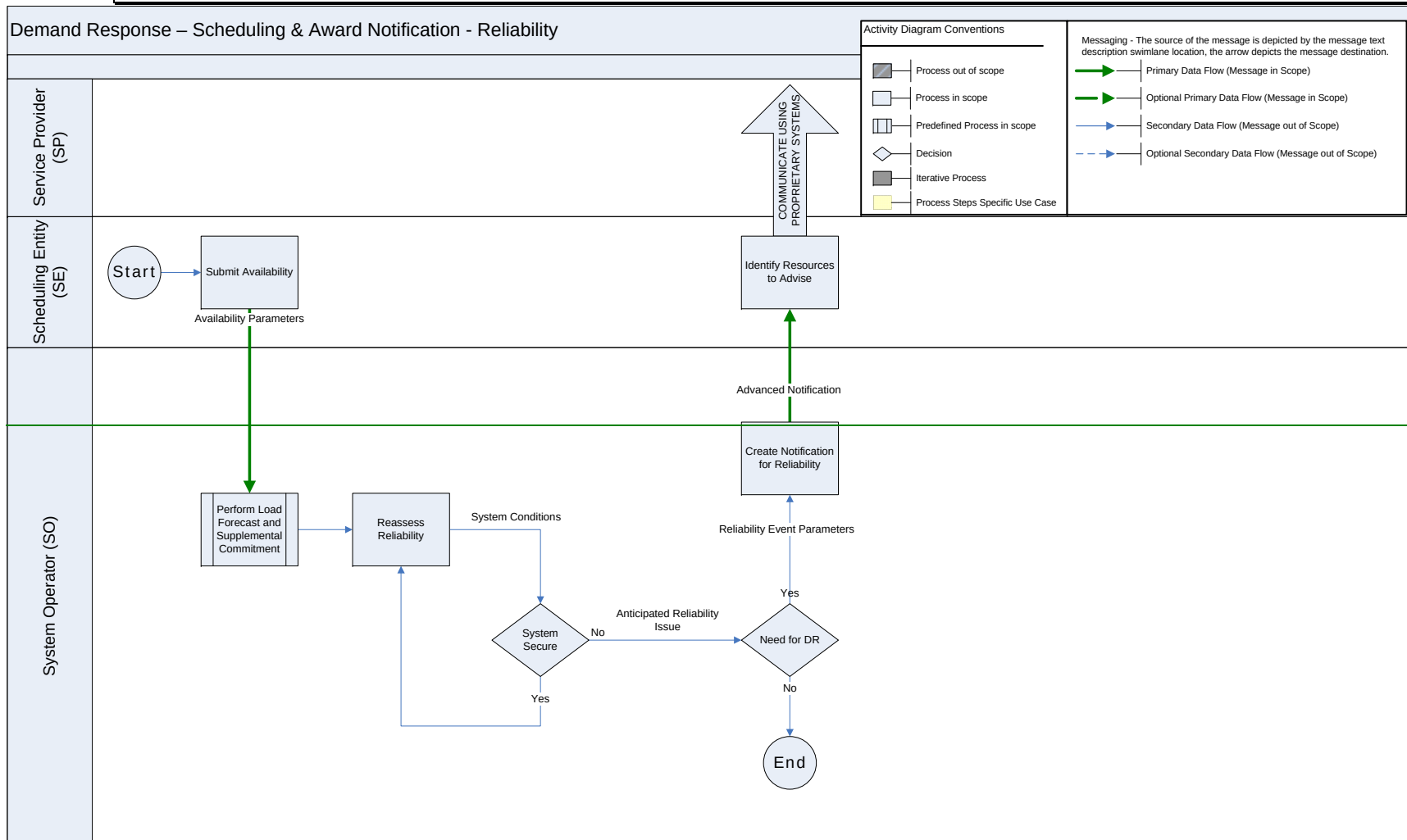
Activity Diagram and Data Flow:

Figure 4 - Scheduling and Award Notification - Reliability



**RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEES~~ REVISED BY
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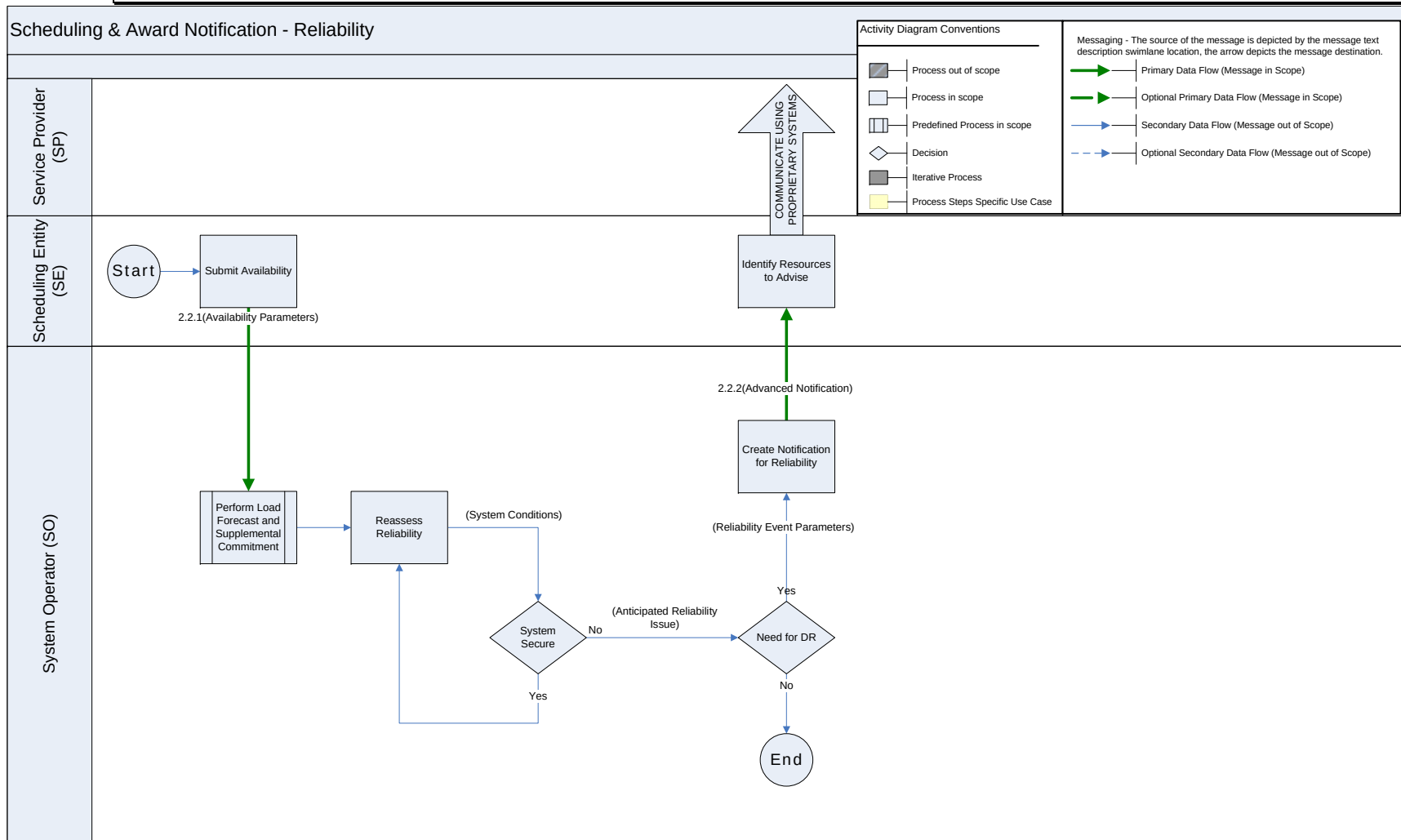
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Table 8. Data Requirements by Interaction Number: Scheduling and Award Notification

			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification				
Element			Short Description						
0 Common									
0	10	Submittal Date	Timestamp for the sender's use		0	0	0	0	0
0	11	Submitted By	User ID of submitter		0	0	0	0	0
0	12	Submitted Error	ID of submission error detected		0	0	0	0	0
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability		M	M	M	M	M



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	<u>SE</u>	<u>SO</u>	-	<u>SE</u>	<u>SO</u>
			To	<u>SO</u>	<u>SE</u>	<u>SE</u>	<u>SO</u>	<u>SE</u>
			Interaction	<u>2.1.1</u>	<u>2.1.2</u>	<u>2.1.3</u>	<u>2.2.1</u>	<u>2.2.2</u>
				<u>Offer Parameters</u>	<u>Award</u>	<u>Schedule</u>	<u>Availability Parameters</u>	<u>Advanced Notification</u>
			Element	Short Description				
<u>0</u>	<u>21</u>	<u>NERC CIP Security - Confidentiality</u>	<u>CIP Security Classification for Confidentiality</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>	<u>CIP Security Classification for Integrity</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	-	<u>General Asset/Resource</u>			-	-	-	-
<u>1</u>	<u>10</u>	<u>Service Location ID</u>	<u>Identifier assigned to the Service Location</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>11</u>	<u>Service Location Name</u>	<u>Name of the Service Location</u>		<u>O</u>	<u>O</u>	<u>M</u>	<u>O</u>
<u>1</u>	<u>12</u>	<u>Asset ID</u>	<u>The unique identifier of the asset</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO	-	SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
					-	-	-	-	-
<u>1</u>	<u>13</u>	<u>Asset Name</u>	<u>The name of the asset</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>
<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>O</u>
<u>1</u>	<u>40</u>	<u>GenEMSID</u>	<u>Alias or point Identifier assigned to the Resource</u>		<u>M</u>	<u>M</u>	<u>M</u>	-	-
<u>1</u>	<u>41</u>	<u>GenBillingID</u>	<u>Billing Identifier assigned to the Resource</u>		<u>M</u>	<u>M</u>	<u>M</u>	-	-
<u>2</u>	-	<u>Location</u>	-		-	-	-	-	-



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification			
Element			Short Description					
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M	M	M
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O	O	O
2	32	Zone Type	Type of Zone	O	O	O	O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M	M	M	O	



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	<u>SE</u>	<u>SO</u>	-	<u>SE</u>	<u>SO</u>
			To	<u>SO</u>	<u>SE</u>	<u>SE</u>	<u>SO</u>	<u>SE</u>
			Interaction	<u>2.1.1</u>	<u>2.1.2</u>	<u>2.1.3</u>	<u>2.2.1</u>	<u>2.2.2</u>
				<u>Offer Parameters</u>	<u>Award</u>	<u>Schedule</u>	<u>Availability Parameters</u>	<u>Advanced Notification</u>
				-	-	-	-	-
<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>2</u>	<u>42</u>	<u>Electrical Node Type</u>	<u>Type of Electrical Node at which the Service Location is attached</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>2</u>	<u>43</u>	<u>PNode</u>	<u>Name of the Price Node associated with the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>2</u>	<u>44</u>	<u>PNode ID</u>	<u>Identifier assigned to the Price Node associated with the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule	Availability Parameters		Advanced Notification				
Element				Short Description					
5 Business Entity Relationships									
5	11	Service Provider ID	Identifier assigned to the Service Provider			O	M	M	
5	12	Service Provider Name	Name of the Service Provider			O	M	M	
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to theTransmission/Distribution Service Provider			O	O		
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider			O	O		

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

~~Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010~~



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO	-	SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O
6	Device and Qualification							
6	20	Meter ID	Identifier assigned to the Meter	O	O	O	O	
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions				M	

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

~~Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010~~



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification			
Element			Short Description					
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				M	
7		Market/Program Enrollment						
7	10	Program ID	Program Identifier	0	0	0	0	0
7	11	Program Name	Name of the Program	0	0	0	0	0
7	12	Market	Type of wholesale market	0	0	0	0	0
7	13	Market Product	Market Product	0	0	0	0	0
7	30	Lead Time	Time between the advanced notification and deployment	0	0		0	0



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THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification			
Element			Short Description					
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	M	M	M	M	M
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	M	M	M	M	M
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	O	O	O	O	
7	40	Response Method Type	Type of Response Method		O	O		
7	41	Response Method ID	Identifier assigned to the Response Method		O	O		
7	42	Response Method Name	Name of the Response Method		O	O		



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO	-	SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule	Availability Parameters		Advanced Notification				
					-	-	-	-	-
7	43	Response Method Value	Value of the Response Method		-	O	O	-	-
7	44	Verified Capability	Audited Capability		-	-	-	O	-
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability		-	-	-	O	-
8	-	Offer Parameters	-		-	-	-	-	-
8	10	Offer Limit Value	Offer Limit Value		M	-	-	M	O
8	11	Offer Limit Type	Type of Offer Limit		M	-	-	M	O



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification			
				-	-	-	-	-
Element			Short Description					
8	12	Offer Limit Interval	Offer Limit Interval	O	-	-	M	O
8	20	Physical Min Gen	Minimum Operating Level of a Resource	O	-	-	M	-
8	21	Min Gen MW	Minimum MW available for dispatch	M	-	-	M	O
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	M	-	-	M	O
8	23	Ramp Rate Type	Type of Ramp Rate	O	-	-	M	-
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	O	-	-	M	-



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	<u>SE</u>	<u>SO</u>	-	<u>SE</u>	<u>SO</u>
				To	<u>SO</u>	<u>SE</u>	<u>SE</u>	<u>SO</u>	<u>SE</u>
				Interaction	<u>2.1.1</u>	<u>2.1.2</u>	<u>2.1.3</u>	<u>2.2.1</u>	<u>2.2.2</u>
					<u>Offer Parameters</u>	<u>Award</u>	<u>Schedule</u>	<u>Availability Parameters</u>	<u>Advanced Notification</u>
Element				Short Description					
<u>8</u>	<u>25</u>	<u>Ramp Rate Direction</u>	<u>Direction of the selected Ramp Rate Type and Ramp Rate Segment</u>		<u>O</u>	-	-	-	-
<u>8</u>	<u>26</u>	<u>Ramp Rate Value</u>	<u>Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction</u>		<u>O</u>	-	-	-	-
<u>8</u>	<u>30</u>	<u>Offer Dispatch Type</u>	<u>Type of Offer</u>		<u>M</u>	<u>M</u>	<u>M</u>	-	-
<u>8</u>	<u>31</u>	<u>Offer Segment MW</u>	<u>Energy of Segment of the Offer</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>
<u>8</u>	<u>32</u>	<u>Offer Segment Price</u>	<u>Price of Segment of the Offer</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
				-	-	-	-	-
8	33	Offer Segment Hour	Hour of Segment of the Offer	M	M	M	O	O
8	34	Startup Cost	Cost of starting a response activity	M	M	M	O	O
8	35	Strike Price	Threshold Price	O	O	O	-	-
8	36	Offer Expiration Date	Date of Expiration of the Offer	M	-	-	-	-
8	37	Startup Cost Type	Type of startup cost	M	-	-	M	-
8	38	Offer Commit Status	Commitment status of offer	M	-	-	M	-
8	39	Offer Dispatch Status	Dispatch Status of Offer	M	-	-	M	-



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification				
Element			Short Description						
8	331	Offer Price Curve Slope	Flag to smoothe offer segments from step function to slope		M			M	
8	332	StrikePriceType	Type of strike price		O			O	
8	40	Market Clearing Day	Market Clearing Day of the Offer		M	M	M	M	M
8	41	Schedule Name	Name or tag of the Offer		O	O	O	O	O
8	42	Schedule Description	Description of the Offer		O	O	O	O	O
8	43	Schedule Status	Status of the Offer		M	M	M	O	O



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			Process From To Interaction	2.0 Scheduling and Award Notification - - -				
				2.1 Economic -			2.2 Reliability -	
				<u>SE</u>	<u>SO</u>	-	<u>SE</u>	<u>SO</u>
				<u>SO</u>	<u>SE</u>	<u>SE</u>	<u>SO</u>	<u>SE</u>
				<u>2.1.1</u>	<u>2.1.2</u>	<u>2.1.3</u>	<u>2.2.1</u>	<u>2.2.2</u>
				<u>Offer Parameters</u>	<u>Award</u>	<u>Schedule</u>	<u>Availability Parameters</u>	<u>Advanced Notification</u>
				-	-	-	-	-
<u>8</u>	<u>50</u>	<u>Portfolio Name</u>	<u>Name of an aggregation of Resources for market participation</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>8</u>	<u>71</u>	<u>Operational Constraint Type</u>	<u>Type of operational, schedule or offer constraint</u>	<u>M</u>	-	-	<u>M</u>	-
<u>8</u>	<u>72</u>	<u>Operational Constraint Interval</u>	<u>The timeframe over which the constraint type applies.</u>	<u>M</u>	-	-	<u>M</u>	-
<u>8</u>	<u>73</u>	<u>Operational Constraint Value</u>	<u>Value of the Constraint Type and Interval</u>	<u>M</u>	-	-	<u>M</u>	-
<u>9</u>	-	<u>Energy Market</u>	-	-	-	-	-	-



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification			
Element			Short Description					
9	0	Instruction ID		O	O	O		
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	M	M	M		
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	M	M	M		
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	M	M	M		
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule		M	M		



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
				-	-	-	-	-
9	14	Energy Schedule - Cleared Price	Awarded Price		M	M		
9	15	Schedule ID		O		O		
9	20	Base Point	Per-interval dispatch instruction					
9	21	Breaker Status	Status of the Breaker for the Resource					
9	22	Output MW	Real Power Output of the Generation Device					
9	23	Output MVAR	Reactive Power Output of the Generation Device					



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services					
9	27	Set Point	Final dispatch target level					
10	-	Ancillary Service Market						
10	0	Ancillary Service Instruction ID			0	0		
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	M	M	



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				2.1 Economic			2.2 Reliability				
				From			SE	SO	-	SE	SO
				To			SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2			
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification			
				-	-	-	-	-			
Element			Short Description								
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award	-	M	-	-	-			
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award	-	M	-	-	-			
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval	-	M	-	-	-			



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			Process	2.0 Scheduling and Award Notification					
				-					
				-					
				-					
				-					
				-					
			From	2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
			To	2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
			Interaction	2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
Element			Short Description						
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award			M			
10	16	Ancillary Service Award - Cleared Price	Awarded Price			M			
10	17	Ancillary Service Schedule ID					Q		
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule			Q	Q		



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO	-	SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
<u>1</u> <u>0</u>	<u>32</u>	<u>Regulation Base Point</u>	<u>Per-interval Regulation dispatch instruction</u>		-	-	-	-	-
<u>1</u> <u>0</u>	<u>33</u>	<u>Base Load MW</u>	<u>Level of Load at time of dispatch</u>		-	-	-	-	-
<u>1</u> <u>1</u>	-	<u>Capacity Market</u>			-	-	-	-	-
<u>1</u> <u>1</u>	<u>10</u>	<u>Capacity Type</u>	<u>Type of Capacity</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	-
<u>1</u> <u>1</u>	<u>20</u>	<u>Peak Value</u>	<u>Measurement of Peak</u>		-	-	<u>O</u>	<u>O</u>	-
<u>1</u> <u>1</u>	<u>21</u>	<u>Peak Type</u>	<u>Type of measurement of Peak</u>		-	-	<u>O</u>	<u>O</u>	-



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					2.1 Economic			2.2 Reliability	
				From	SE	SO	-	SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule	Availability Parameters		Advanced Notification				
Element				Short Description					
11	22	Peak Date/Time	Date and Time of measurement of Peak				O	O	
11	23	Nominal Capacity	Nominated load		O	O	O		
11	24	Qualified Capacity	Nominal ICAP derated for performance		M	M	M	O	
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated		M	M	M	O	
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated		M	M	M	O	



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				From	2.1 Economic			2.2 Reliability	
				To					
				Interaction					
Element			Short Description						
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program		M	O	O	O	
11	41	Capacity Supply Obligation	Capacity Obligation		M	M	M	O	
11	50	Capacity Reference ID	Identifier assigned to the External System award		O	O	O	O	
11	991	Capacity Comments	Comments associated with the Capacity market		O	O	O	O	
1 Event and Performance									



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					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule	Availability Parameters		Advanced Notification				
Element				Short Description					
2									
1 2	10	Event ID	Identifier assigned to the Event					O	
1 2	11	Deployment Type	Type of Deployment					M	
1 2	12	Event Day	Operating Date of Start of Event					M	
1 2	13	Event Description	Description of the Event					M	



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				Process From To Interaction	2.0 Scheduling and Award Notification 2.1 Economic 2.2 Reliability SE SO SE SO SE SO SE SE SO SE 2.1.1 2.1.2 2.1.3 2.2.1 2.2.2 Offer Parameters Award Schedule Availability Parameters Advanced Notification				
Element				Short Description					
<u>1</u> <u>2</u>	<u>14</u>	<u>Event Start Time</u>		<u>Time of Start of deployment period for Event</u>	-	-	-	-	<u>M</u>
<u>1</u> <u>2</u>	<u>15</u>	<u>Operator Comment</u>		<u>Additional Event information provided by the Operator</u>	-	-	-	-	<u>O</u>
<u>1</u> <u>2</u>	<u>16</u>	<u>Deployment MW</u>		<u>Absolute or relative Deployment quantity</u>	-	-	-	-	<u>O</u>
<u>1</u> <u>2</u>	<u>17</u>	<u>Event Status</u>		<u>Status of the Event</u>	-	-	-	-	<u>O</u>
<u>1</u> <u>2</u>	<u>18</u>	<u>Event End Time</u>		<u>Time of End of deployment period</u>	-	-	-	-	<u>M</u>



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			Process From To Interaction	2.0 Scheduling and Award Notification - - -				
				2.1 Economic -			2.2 Reliability -	
				<u>SE</u>	<u>SO</u>	-	<u>SE</u>	<u>SO</u>
				<u>SO</u>	<u>SE</u>	<u>SE</u>	<u>SO</u>	<u>SE</u>
				<u>2.1.1</u>	<u>2.1.2</u>	<u>2.1.3</u>	<u>2.2.1</u>	<u>2.2.2</u>
				<u>Offer Parameters</u>	<u>Award</u>	<u>Schedule</u>	<u>Availability Parameters</u>	<u>Advanced Notification</u>
				-	-	-	-	-
<u>1</u> <u>2</u>	<u>19</u>	<u>Event Modification Number</u>	<u>A modification number for the event.</u>	-	-	-	-	<u>0</u>
<u>1</u> <u>2</u>	<u>111</u>	<u>Notification Acknowledgement</u>	<u>This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.</u>	-	-	-	-	<u>0</u>
<u>1</u> <u>2</u>	<u>112</u>	<u>Event Modification Reason Code</u>	<u>The reason the event is being cancelled or modified.</u>	-	-	-	-	<u>0</u>



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO	-	SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
<u>1</u>	<u>991</u>	<u>Event & Performance comments</u>	<u>Comments associated with Event and Performance data</u>		-	-	-	-
<u>2</u>					-	-	-	<u>O</u>



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ac)(ii)
Request Title: Phase Two Requirements Specifications for
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018-1.4.4 Deployment and Real-Time Communications - Economic

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The ~~process flow~~business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

~~Table 6 – Use Cases for Figure 5~~

Table 9. Use Cases for Figure 5

Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-4	Energy (Reliability)	Bulk	MGO
V-R-2	Reserve	Resource	MB/MA
G-R-2	Regulation	Resource	MB/MA

- The process begins when the SO evaluates real-time system conditions through its market clearing process.
- The resulting resource-specific real-time dispatch information is transformed into dispatch instructions by the SO.
 - o If the dispatch instruction is for Regulation, the SO sends the Regulation signal to the DDE.
 - o If the dispatch is not for Regulation, the SO sends the dispatch instruction to the DDE.
- The DDE communicates with the SP through the proprietary communication system of the DDE.
- The SO collects real-time response from the DDE for evaluating the next interval and uses the information to calculate the system state.
- System conditions are made available to the market clearing process for the next interval and to Deployment and Real-Time Communications – Reliability.



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Activity Diagram and Data Flow:

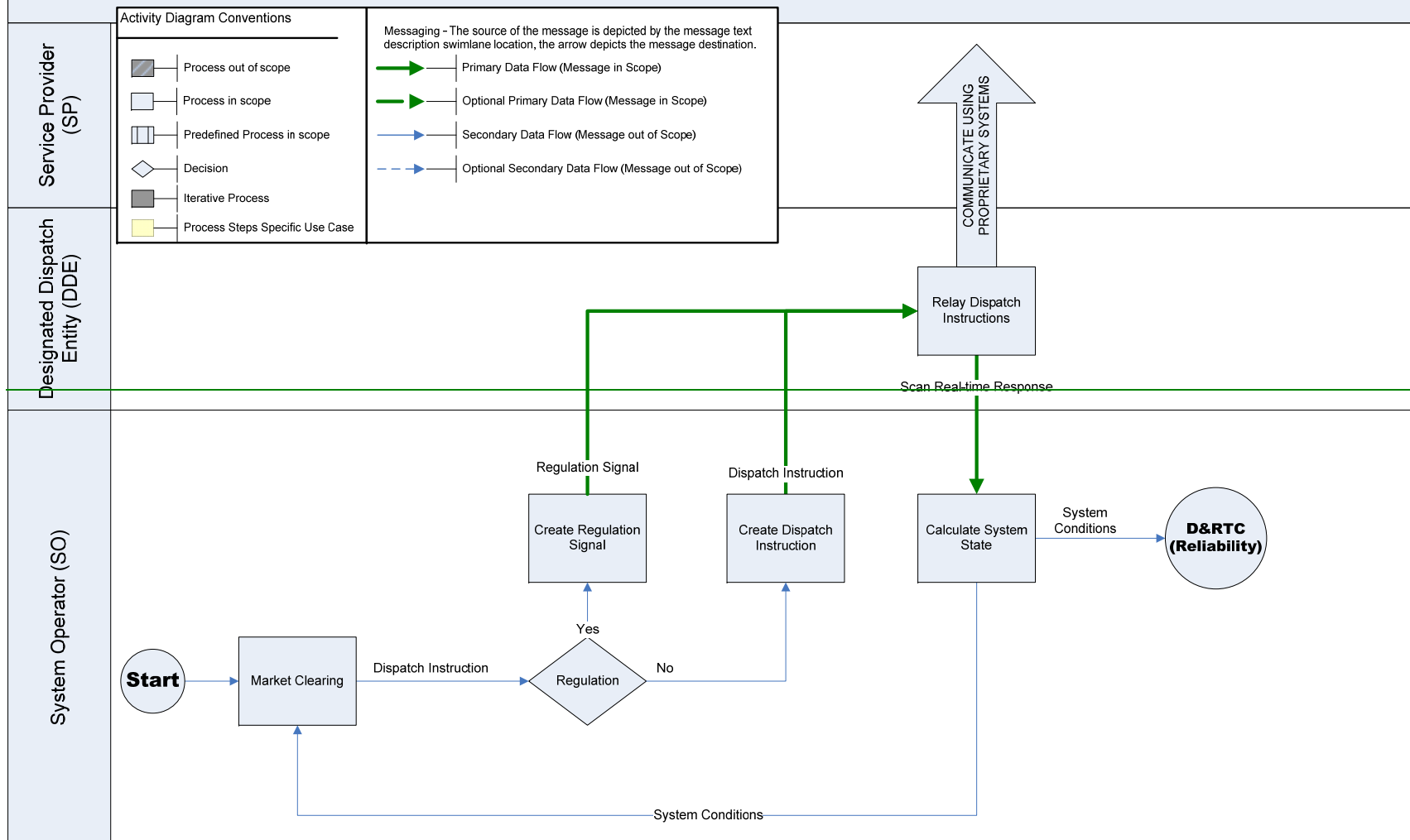
Figure 5 - Deployment and Real-Time Communications - Economic



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THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

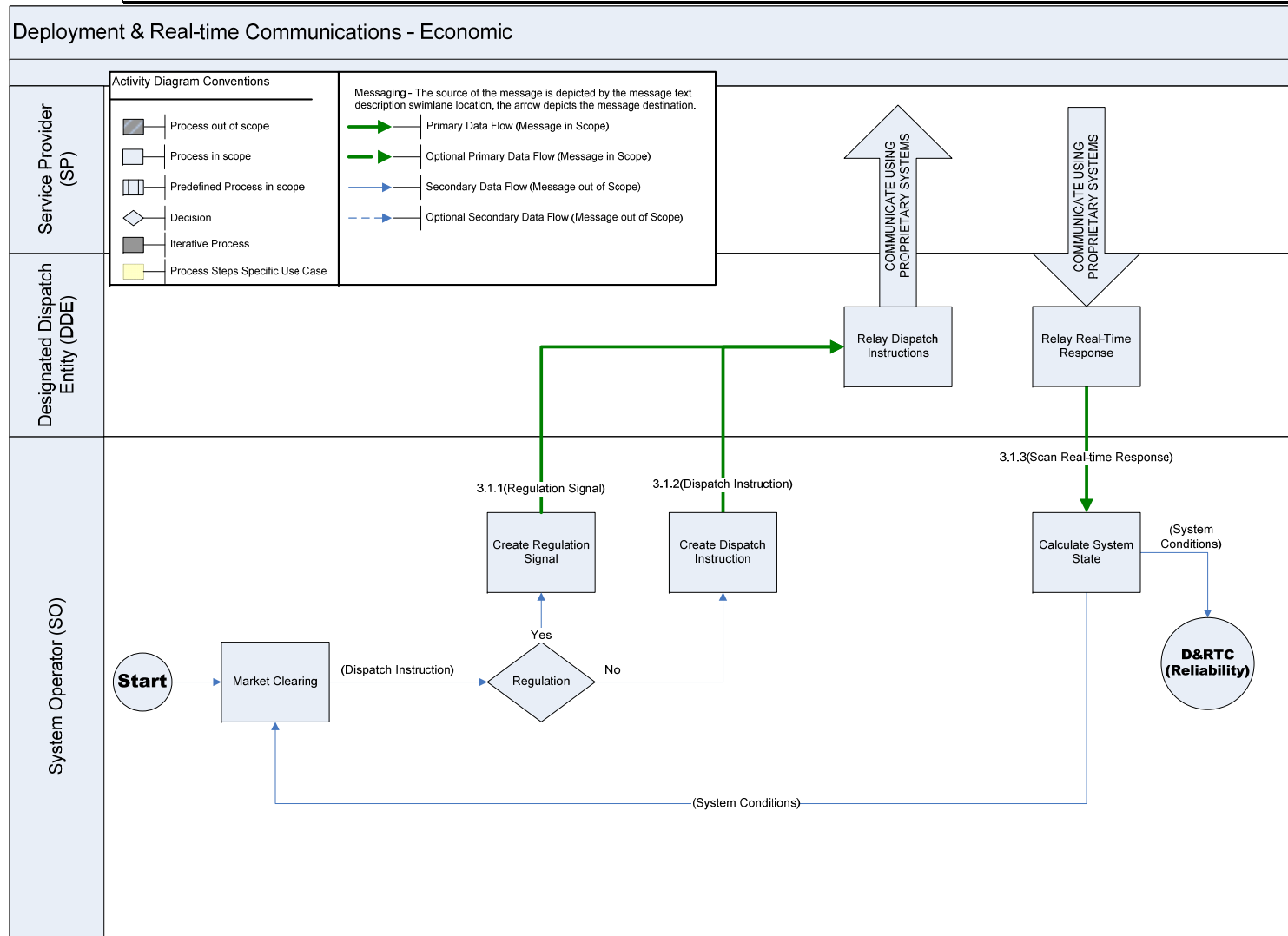
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Demand Response – Deployment & Real-time Communications - Economic



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Note: Data elements for Deployment & Real-Time Communications-Economic are listed with Deployment & Real-Time Communications-Reliability in Table 11.



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ca)(ii)
Request Title: Phase Two Requirements Specifications for
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018-1.4.5 Deployment and Real-Time Communications – Reliability

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The process flow/business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

~~Table 7 – Use Cases for Figure 6~~
Table 10. Use Cases for Figure 6

Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO

- The SO performs the Load Forecast and Supplemental Commitment process after the interval has been dispatched. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - If SO determines that the system is secure, no demand response deployment is required and reliability is assessed by the SO at the next interval.



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
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- o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.
 - If the SO determines that demand response will be deployed, the reliability event parameters are prepared by the SO to create a reliability event notification.
 - The deployment instruction is sent to the DDE.
 - The DDE identifies the demand resources to notify and relays the message to SPs through the proprietary communication system of the DDE.
 - Real-time or near real-time response data is collected by DDE using the proprietary communication system of the DDE.
 - The DDE sends the event response information to the SO.



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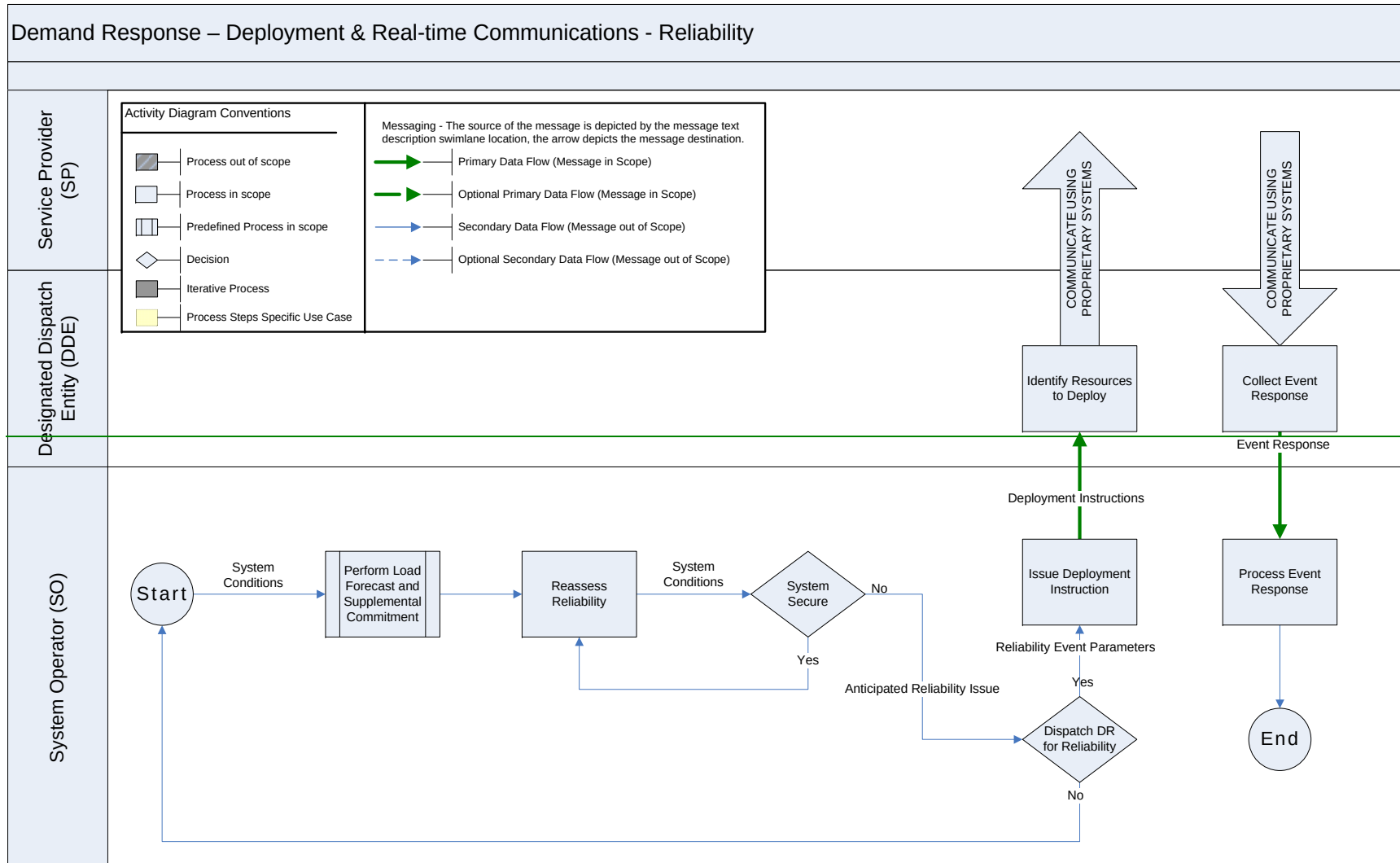
Activity Diagram and Data Flow:

Figure 6 - Deployment and Real-Time Communications - Reliability



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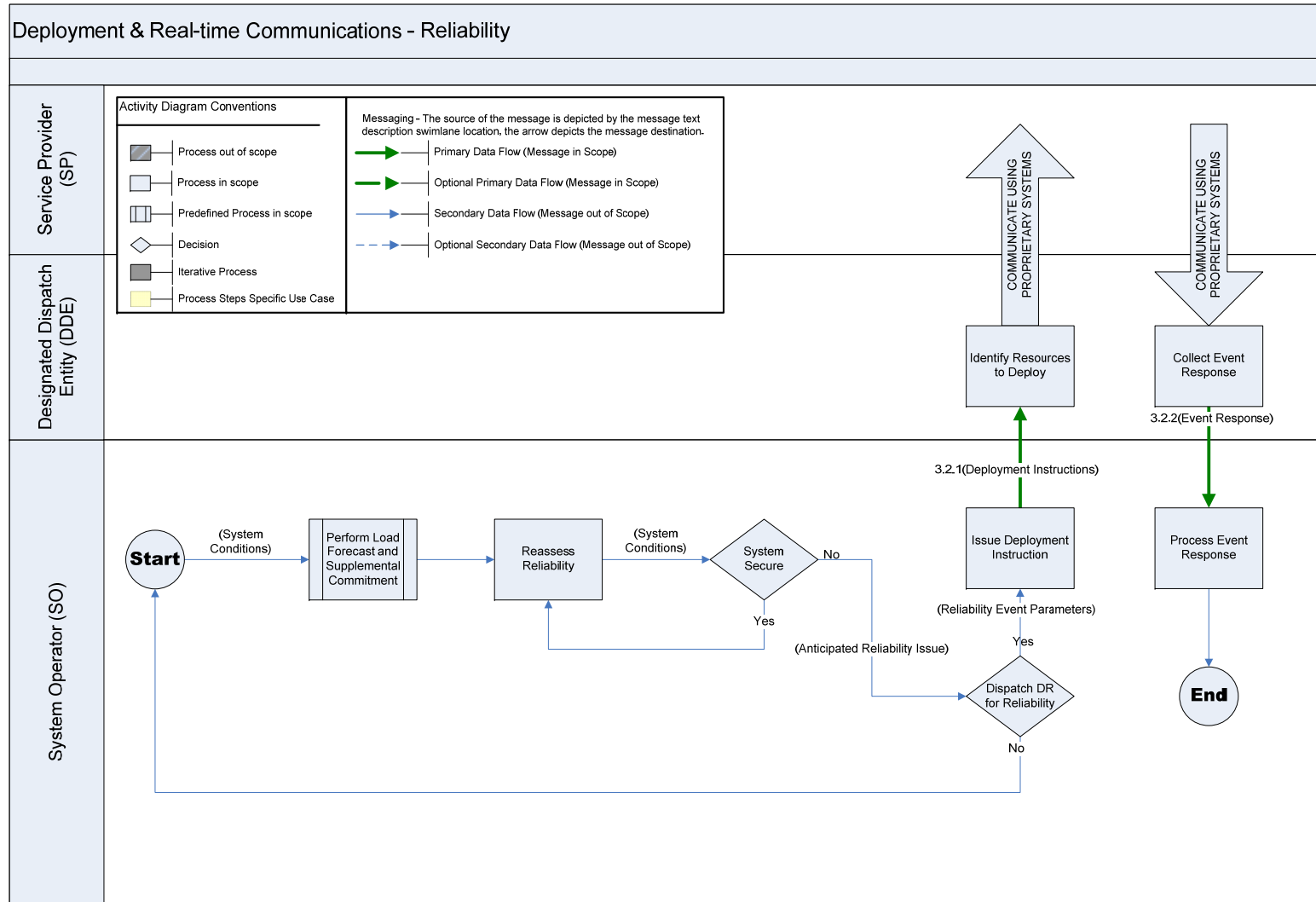


Table 11. Data Requirements by Interaction Number: Deployment & Real-Time Communications



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Interaction				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
0 Common								
0	10	Submittal Date	Timestamp for the sender's use	0			0	0
0	11	Submitted By	User ID of submitter	0			0	0
0	12	Submitted Error	ID of submission error detected	0			0	0
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				<u>SO</u>		<u>DDE</u>	<u>SO</u>	<u>DDE</u>
				<u>DDE</u>	<u>DDE</u>	<u>SO</u>	<u>DDE</u>	<u>SO</u>
				<u>3.1.1</u>	<u>3.1.2</u>	<u>3.1.3</u>	<u>3.2.1</u>	<u>3.2.2</u>
Process				<u>Regulation Signal</u>	<u>Dispatch Instruction</u>	<u>Real-Time Response</u>	<u>Deployment Instructions</u>	<u>Event Response</u>
<u>From</u>								
<u>To</u>								
<u>Interaction</u>								
<u>Element</u>				<u>Short Description</u>				
<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>		<u>CIP Security Classification for Integrity</u>				
<u>1</u>		<u>General Asset/Resource</u>						
<u>1</u>	<u>10</u>	<u>Service Location ID</u>		<u>M</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>11</u>	<u>Service Location Name</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>12</u>	<u>Asset ID</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>13</u>	<u>Asset Name</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>30</u>	<u>Asset Group ID</u>	<u>The identifier of a group of assets</u>	-	-	<u>O</u>	-	<u>O</u>
<u>1</u>	<u>31</u>	<u>Asset Group Name</u>	<u>Name of the aggregated group of assets</u>	-	-	<u>O</u>	-	<u>O</u>
<u>1</u>	<u>40</u>	<u>GenEMSID</u>	<u>Alias or point Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Interaction				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u>	<u>41</u>	<u>GenBillingID</u>	<u>Billing Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>		
<u>2</u>		<u>Location</u>						
<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the Zone in which the Service Location is located</u>				<u>M</u>	<u>M</u>
<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is located</u>				<u>O</u>	<u>O</u>
<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>				<u>O</u>	<u>O</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	O	O	O	O	O
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O	-	-
2	43	PNode	Name of the Price Node associated with the Service Location	-	O	-	-	-
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	-	M	-	-	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource	0	0	-	0	-
2	72	Connection Address	Address associated with the Connection Type	0	0	-	0	-
5	-	Business Entity Relationships		-	-	-	-	-
5	11	Service Provider ID	Identifier assigned to the Service Provider	-	-	-	M	M
5	12	Service Provider Name	Name of the Service Provider	-	-	-	0	0



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO		DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>5</u>	<u>20</u>	<u>Transmission/Distribution Service Provider ID</u>	<u>Identifier assigned to the Transmission/Distribution Service Provider</u>	<u>O</u>	<u>O</u>	<u>O</u>		
<u>5</u>	<u>21</u>	<u>Transmission/Distribution Service Provider Name</u>	<u>Name of the Transmission/Distribution Service Provider</u>	<u>O</u>	<u>O</u>	<u>O</u>		
<u>5</u>	<u>70</u>	<u>Scheduling Entity ID</u>	<u>Identifier assigned to the Scheduling Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>5</u>	<u>71</u>	<u>Scheduling Entity Name</u>	<u>Name of the Scheduling Entity</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Interaction				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>5</u>	<u>80</u>	<u>Designated Dispatch Entity ID</u>	Identifier assigned to the Designated Dispatch Entity	M	M	M	M	M
<u>5</u>	<u>81</u>	<u>Designated Dispatch Entity Name</u>	Name of the Designated Dispatch Entity	O	O	O	O	O
<u>6</u>	-	<u>Device and Qualification</u>	-	-	-	-	-	-
<u>6</u>	<u>20</u>	<u>Meter ID</u>	Identifier assigned to the Meter	O	O	O	-	-
<u>6</u>	<u>44</u>	<u>Normal Breaker Status</u>	Status of the Breaker for the Service Location under Normal operating conditions	-	-	-	M	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event			M	M	M
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level			M	M	M
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid			M	M	M
6	51	UFR Settings	Setting of the Under-Frequency Relay			M	M	M



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO		DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method			M	M	M
7		Market/Program Enrollment						
7	10	Program ID	Program Identifier	O	O	O	M	M
7	11	Program Name	Name of the Program	O	O	O	M	M
7	12	Market	Type of wholesale market	O	O	O	O	O
7	13	Market Product	Market Product	O	O	O	O	O
7	30	Lead Time	Time between the advanced notification and deployment	O	O	O		



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
From			SO		DDE	SO	DDE		
To			DDE	DDE	SO	DDE	SO		
Interaction			3.1.1	3.1.2	3.1.3	3.2.1	3.2.2		
			Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response		
Element			Short Description						
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market		O	O	O		
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market		O	O	O		
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying			O	O		
8	Offer Parameters								
8	10	Offer Limit Value	Offer Limit Value		O	O			



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
<u>8</u>	<u>11</u>	<u>Offer Limit Type</u>	Type of Offer Limit	<u>Q</u>	<u>Q</u>			
<u>8</u>	<u>12</u>	<u>Offer Limit Interval</u>	Offer Limit Interval	<u>Q</u>	<u>Q</u>			
<u>8</u>	<u>21</u>	<u>Min Gen MW</u>	Minimum MW available for dispatch	<u>Q</u>	<u>Q</u>			
<u>8</u>	<u>22</u>	<u>MinGenCost</u>	The cost per hour for each Min Gen MW value.	<u>Q</u>	<u>Q</u>			
<u>8</u>	<u>40</u>	<u>Market Clearing Day</u>	Market Clearing Day of the Offer	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>8</u>	<u>41</u>	<u>Schedule Name</u>	Name or tag of the Offer	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
8	42	Schedule Description	Description of the Offer	0	0	0	0	0
8	43	Schedule Status	Status of the Offer	0	0	0	0	0
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	0	0	0	0	0
9		Energy Market						
9	0	Instruction ID		0	0			
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	0	0			
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	0	0			



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>9</u>	<u>12</u>	<u>Energy Schedule - Interval Start Time</u>	<u>Start Time of the Energy Interval within the Energy Schedule</u>	<u>0</u>	<u>0</u>	-	-	-
<u>9</u>	<u>13</u>	<u>Energy Schedule - Cleared MW Interval Value</u>	<u>The Energy Value of cleared MW for the Time Interval within the Energy Schedule</u>	<u>0</u>	<u>0</u>	-	-	-
<u>9</u>	<u>14</u>	<u>Energy Schedule - Cleared Price</u>	<u>Awarded Price</u>	<u>0</u>	-	-	-	-
<u>9</u>	<u>15</u>	<u>Schedule ID</u>	-	<u>0</u>	<u>0</u>	-	-	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
9	20	Base Point	Per-interval dispatch instruction	M	M	O	M	
9	21	Breaker Status	Status of the Breaker for the Resource	M	M	O	M	O
9	22	Output MW	Real Power Output of the Generation Device	M	M	M	M	O
9	23	Output MVAR	Reactive Power Output of the Generation Device	M	M	O	M	O
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	O	O	O	O	O



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				-	-	-	-	-
From				<u>SO</u>	-	<u>DDE</u>	<u>SO</u>	<u>DDE</u>
To				<u>DDE</u>	<u>DDE</u>	<u>SO</u>	<u>DDE</u>	<u>SO</u>
Interaction				<u>3.1.1</u>	<u>3.1.2</u>	<u>3.1.3</u>	<u>3.2.1</u>	<u>3.2.2</u>
				<u>Regulation Signal</u>	<u>Dispatch Instruction</u>	<u>Real-Time Response</u>	<u>Deployment Instructions</u>	<u>Event Response</u>
Element				Short Description				
<u>9</u>	<u>27</u>	<u>Set Point</u>	<u>Final dispatch target level</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>	-
<u>1</u>	-	<u>Ancillary Service Market</u>	-	-	-	-	-	-
<u>1</u>	<u>0</u>	<u>Ancillary Service Instruction ID</u>	-	<u>O</u>	<u>O</u>	-	-	-
<u>1</u>	<u>10</u>	<u>Ancillary Service Product Type</u>	<u>Type of Ancillary Service product(s) the Resource is enrolling to provide</u>	<u>M</u>	<u>M</u>	<u>O</u>	-	-
<u>1</u>	<u>12</u>	<u>Ancillary Service Award - Start Time</u>	<u>Start Time of the ancillary service Award</u>	-	<u>M</u>	-	-	-



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u> <u>0</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>	<u>End Time of the ancillary service Award</u>	-	M	-	-	-
<u>1</u> <u>0</u>	<u>14</u>	<u>Ancillary Service Award - Interval Start Time</u>	<u>Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval</u>	-	M	-	-	-
<u>1</u> <u>0</u>	<u>15</u>	<u>Ancillary Service Award - Interval Value</u>	<u>The awarded Value for the Time Interval within the ancillary service Award</u>	-	M	-	-	-
<u>1</u> <u>0</u>	<u>17</u>	<u>Ancillary Service Schedule ID</u>	-	<u>0</u>	<u>0</u>	-	-	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
<u>1</u> <u>0</u>	<u>31</u>	<u>Reserve Pickup Flag</u>	<u>Flag set if this is a Reserve Pickup schedule</u>	<u>O</u>	<u>O</u>	<u>O</u>		
<u>1</u> <u>0</u>	<u>32</u>	<u>Regulation Base Point</u>	<u>Per-interval Regulation dispatch instruction</u>	<u>M</u>	<u>M</u>	<u>O</u>		
<u>1</u> <u>0</u>	<u>33</u>	<u>Base Load MW</u>	<u>Level of Load at time of dispatch</u>	<u>O</u>	<u>O</u>	<u>O</u>		<u>M</u>
<u>1</u> <u>2</u>		<u>Event and Performance</u>						
<u>1</u> <u>2</u>	<u>10</u>	<u>Event ID</u>	<u>Identifier assigned to the Event</u>				<u>O</u>	<u>M</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
<u>1</u> <u>2</u>	<u>11</u>	<u>Deployment Type</u>	<u>Type of Deployment</u>	-	-	-	M	-
<u>1</u> <u>2</u>	<u>12</u>	<u>Event Day</u>	<u>Operating Date of Start of Event</u>	-	-	-	M	M
<u>1</u> <u>2</u>	<u>13</u>	<u>Event Description</u>	<u>Description of the Event</u>	-	-	-	M	O
<u>1</u> <u>2</u>	<u>14</u>	<u>Event Start Time</u>	<u>Time of Start of deployment period for Event</u>	-	-	-	M	M
<u>1</u> <u>2</u>	<u>15</u>	<u>Operator Comment</u>	<u>Additional Event information provided by the Operator</u>	-	-	-	O	O



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
<u>1</u> <u>2</u>	<u>16</u>	<u>Deployment MW</u>	<u>Absolute or relative Deployment quantity</u>	-	-	-	M	-
<u>1</u> <u>2</u>	<u>17</u>	<u>Event Status</u>	<u>Status of the Event</u>	-	-	-	O	O
<u>1</u> <u>2</u>	<u>18</u>	<u>Event End Time</u>	<u>Time of End of deployment period</u>	-	-	-	M	M
<u>1</u> <u>2</u>	<u>19</u>	<u>Event Modification Number</u>	<u>A modification number for the event.</u>	-	-	-	O	O
<u>1</u> <u>2</u>	<u>111</u>	<u>Notification Acknowledgement</u>	<u>This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.</u>	-	-	-	O	O



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u> <u>2</u>	<u>112</u>	<u>Event Modification Reason Code</u>	<u>The reason the event is being cancelled or modified.</u>	-	-	-	<u>O</u>	<u>O</u>
<u>1</u> <u>2</u>	<u>21</u>	<u>Baseline Dates</u>	<u>Dates of days used to calculate the Energy Baseline</u>	-	-	-	-	<u>O</u>
<u>1</u> <u>2</u>	<u>22</u>	<u>Baseline Exclusion Dates</u>	<u>Dates of days Excluded from the calculation of the Energy Baseline</u>	-	-	-	-	<u>O</u>
<u>1</u> <u>2</u>	<u>23</u>	<u>Energy Baseline Value</u>	<u>Calculated Energy Baseline</u>	-	-	-	-	<u>O</u>
<u>1</u> <u>2</u>	<u>24</u>	<u>Energy Baseline Timestamp</u>	<u>Timestamp of Energy Baseline</u>	-	-	-	-	<u>O</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				SO	-	DDE	SO	DDE
From				DDE	DDE	SO	DDE	SO
To				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Interaction				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u> <u>2</u>	<u>30</u>	<u>Reporting Interval</u>	<u>Interval size required for Reporting</u>	-	-	-	-	-
<u>1</u> <u>2</u>	<u>31</u>	<u>Measurement Value Timestamp</u>	<u>The time when the value was last updated</u>	<u>O</u>	<u>O</u>	<u>M</u>	-	<u>M</u>
<u>1</u> <u>2</u>	<u>32</u>	<u>Measurement Value</u>	<u>Value of the interval reading</u>	<u>O</u>	<u>O</u>	<u>M</u>	-	<u>M</u>
<u>1</u> <u>2</u>	<u>33</u>	<u>Response Value</u>	<u>Response</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	<u>O</u>
<u>1</u> <u>2</u>	<u>991</u>	<u>Event & Performance comments</u>	<u>Comments associated with Event and Performance data</u>	-	-	-	<u>O</u>	<u>O</u>



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST PAP09

018-1.4.6 Measurement and Performance – Baseline

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

Use Cases: All use cases where Baseline applies (see Figure 7~~Figure 7~~~~Figure 7~~).

- The process begins when the SP requests event meter data from the MA.
- The MA sends the event meter data to the SP.
- If the SP is required to calculate the baseline, the SP uses the event meter data to calculate the baseline.
 - o The SP uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates the baseline, the SP sends the event meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate the baseline.
 - The SO uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

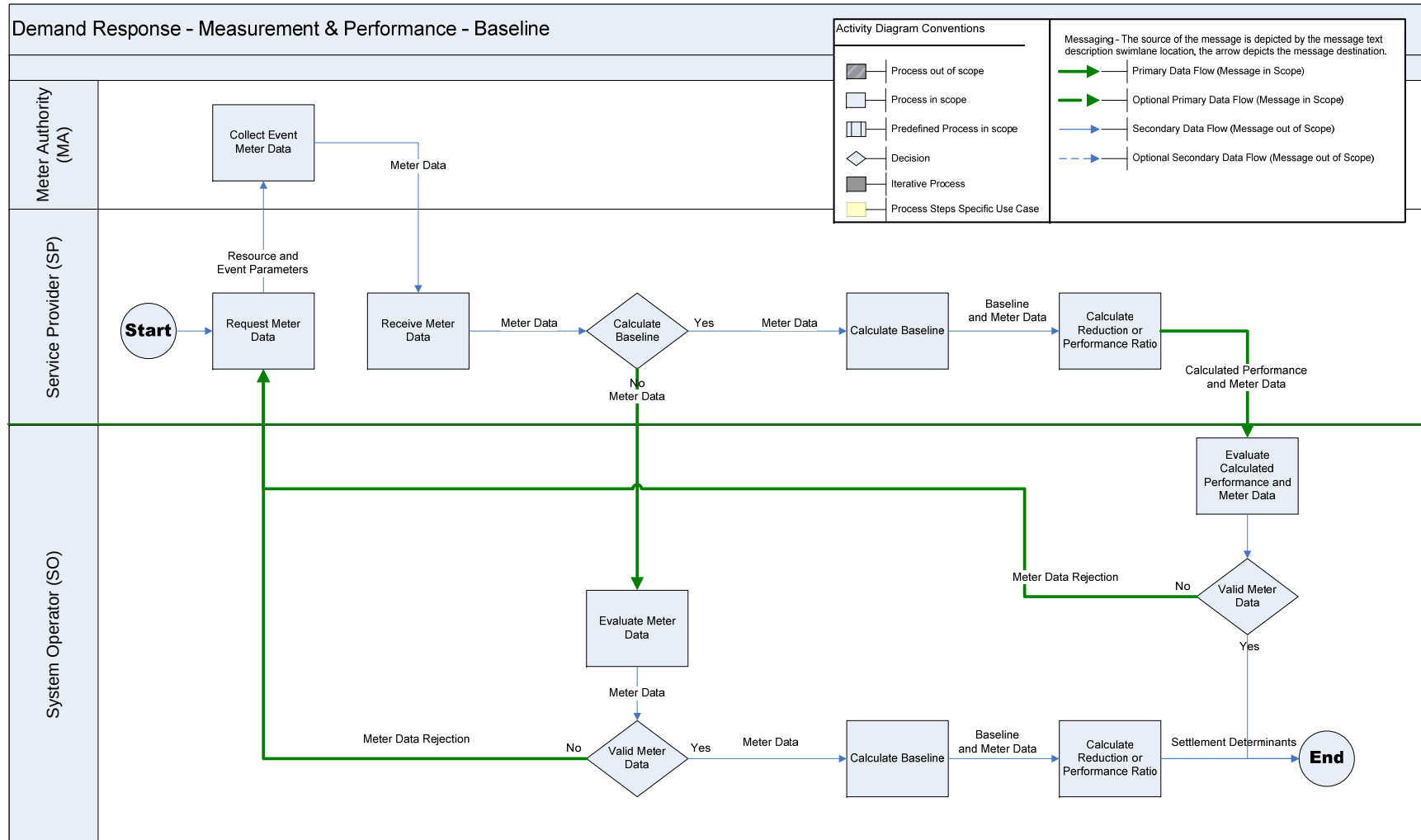
Activity Diagram and Data Flow:

Figure 7 - Measurement and Performance – Baseline



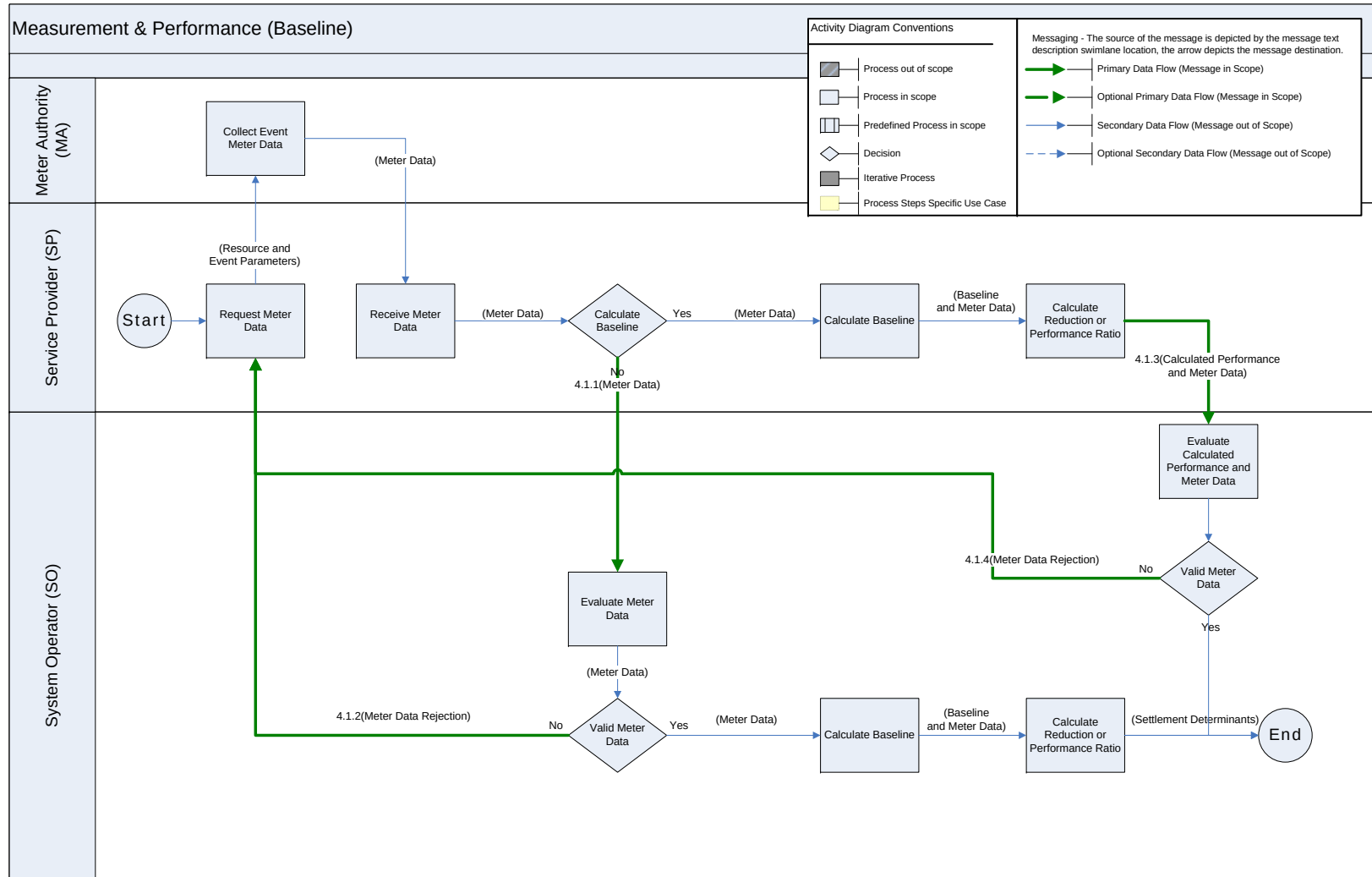
**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09





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Note: Data elements for Measurement and Performance-Baseline are listed with Measurement and Performance-All Others in Table 12.



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST PAP09

018-1.4.7 Measurement and Performance - All Others

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

Use Cases: All use cases where Meter Before/Meter After, Maximum Base Load, or Meter Generator Output applies (see Figure 8~~Figure 8~~~~Figure 8~~).

- The process begins when the SP collects event meter data from the MA for the specified performance evaluation method.
 - o If the performance evaluation method is Meter Before/Meter After or Maximum Base Load, the MA sends the event meter data to the SP.
 - o If the performance evaluation method is Meter Generator Output, the SP uses the data from the meter on the generator.
- If the SP is required to calculate performance, the SP uses the event meter data to calculate performance.
 - o The SP uses the meter data to calculate the event reduction amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates performance, the SP sends the meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate performance.
 - The SO uses the event meter data to calculate the event reduction amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.



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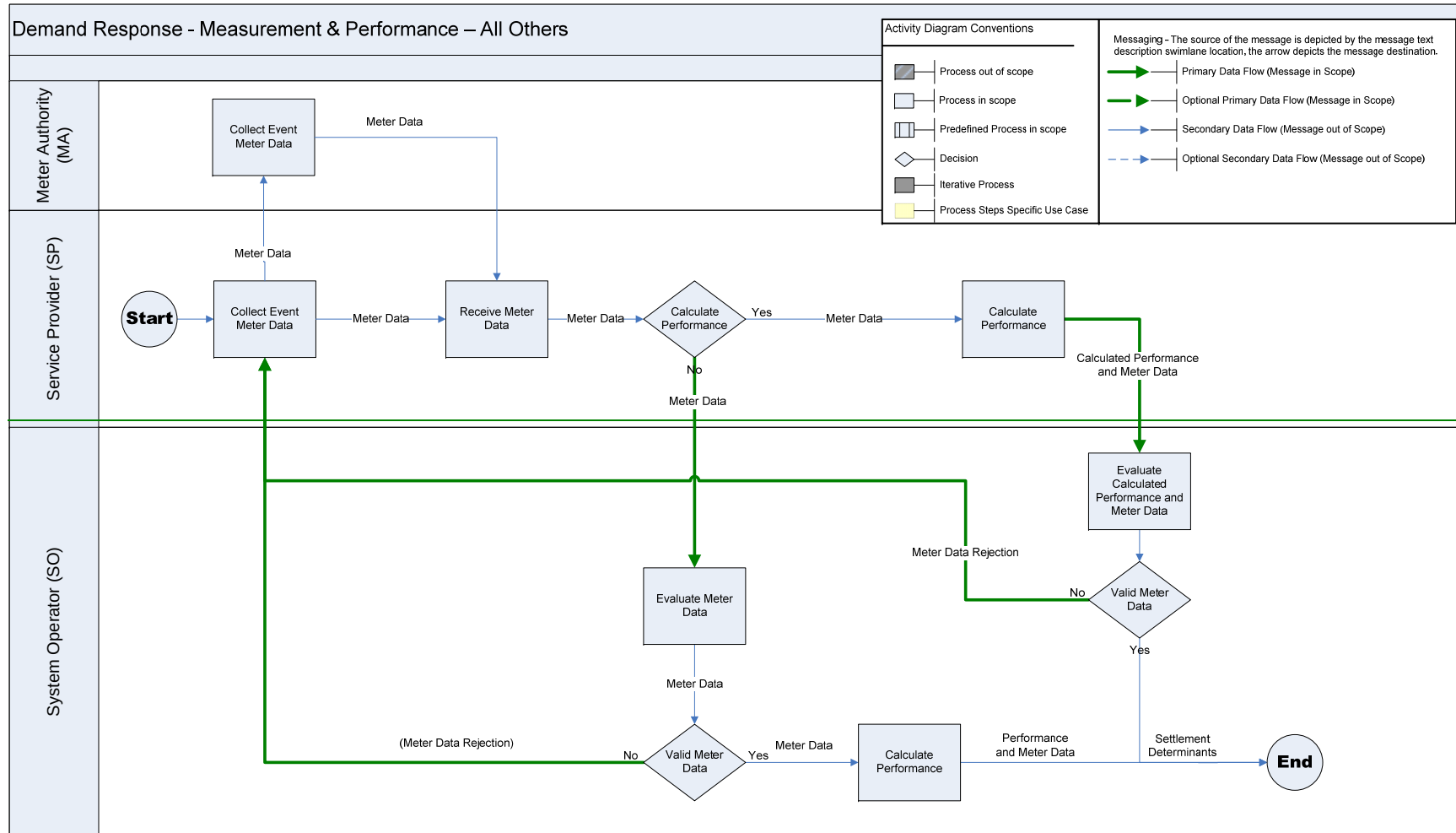
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Activity Diagram and Data Flow:

Figure 8 - Measurement and Performance – All Others

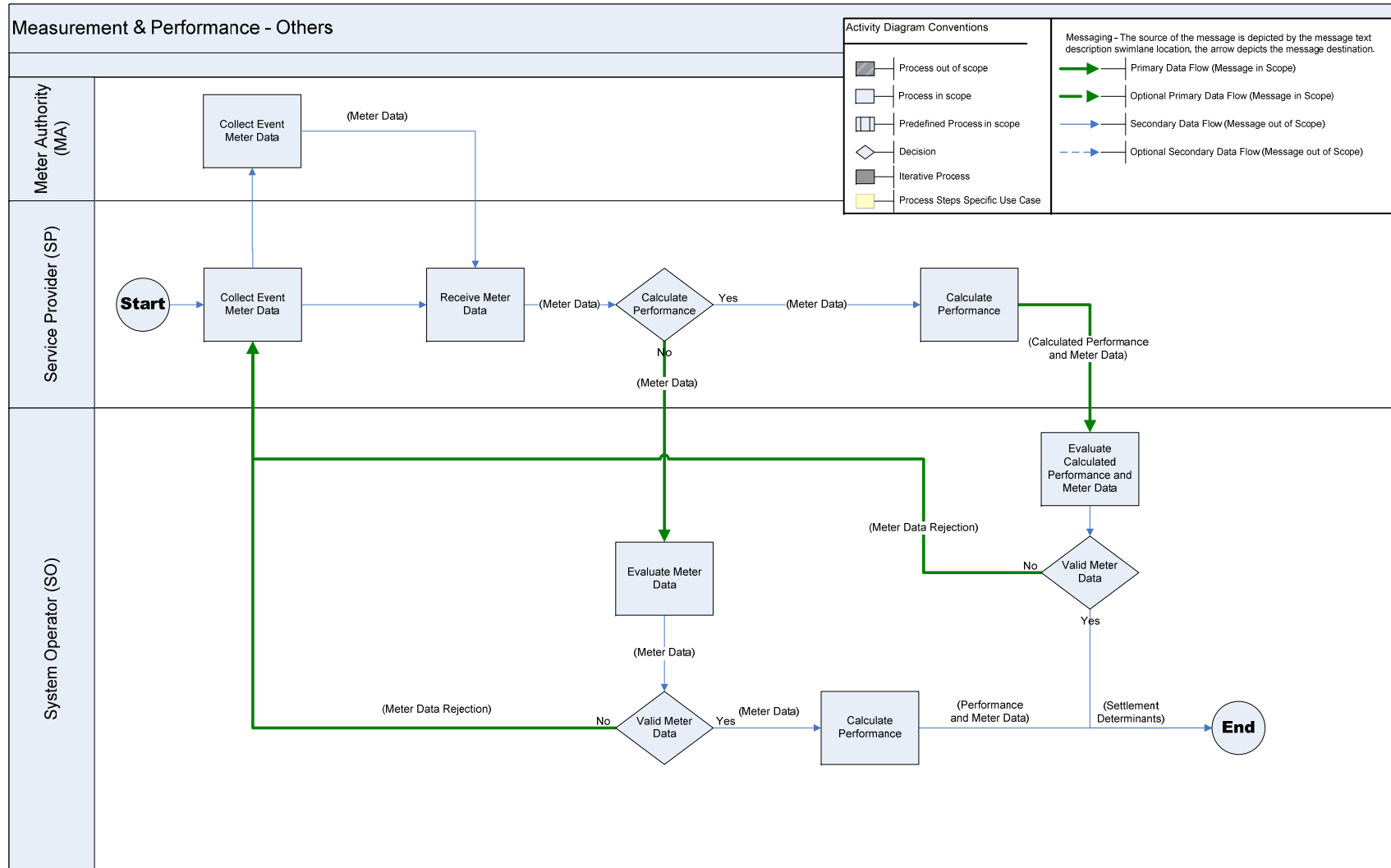
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Table 12. Data Requirements by Interaction Number: Measurement and Performance

			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
			From	SP	SO	SP	SO	SP	SO	SP	SO	
To	SO	SP	SO	SP	SO	SP	SO	SP				
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
0	Common											
0	10	Submittal Date	Timestamp for the sender's use		0	0	0	0	0	0	0	0
0	11	Submitted By	User ID of submitter		0	0	0	0	0	0	0	0



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			Process	4.0 Measurement & Performance															
			4.1 Baseline				4.2 Other												
			From				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>					
			To				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>					
			Interaction				<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>					
<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>					<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>								
Element			Short Description																
<u>0</u>	<u>12</u>	<u>Submitted Error</u>	<u>ID of submission error detected</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>								
<u>0</u>	<u>13</u>	<u>Rejection Code Type</u>	<u>Type of rejection message</u>		<u>M</u>	<u>Q</u>	<u>M</u>		<u>M</u>	<u>Q</u>	<u>M</u>								
<u>0</u>	<u>14</u>	<u>Rejection Code Value</u>	<u>Code referring to the reason for a rejection message</u>		<u>M</u>	<u>Q</u>	<u>M</u>		<u>M</u>	<u>Q</u>	<u>M</u>								



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
<u>From</u>				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
<u>To</u>				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
<u>Interaction</u>				<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
<u>Element</u>				<u>Short Description</u>							
<u>0</u>	<u>20</u>	<u>NERC CIP Security - Availability</u>		<u>CIP Security Classification for Availability</u>							
<u>0</u>	<u>21</u>	<u>NERC CIP Security - Confidentiality</u>		<u>CIP Security Classification for Confidentiality</u>							
<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>		<u>CIP Security Classification for Integrity</u>							
<u>1</u>		<u>General Asset/Resource</u>									



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				4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
Process				-	-	-	-	-	-	-	-
From				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
To				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
Interaction				<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
Element				Short Description							
<u>1</u>	<u>10</u>	<u>Service Location ID</u>	<u>Identifier assigned to the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>11</u>	<u>Service Location Name</u>	<u>Name of the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>12</u>	<u>Asset ID</u>	<u>The unique identifier of the asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE ~~AS REVISED BY~~
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>			
Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>			
	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>			
Element			Short Description								
<u>1</u>	<u>13</u>	<u>Asset Name</u>	<u>The name of the asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEE~~ AS REVISED BY
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	
To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>				
Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>				
	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>				
Element			Short Description									
<u>1</u>	<u>30</u>	<u>Asset Group ID</u>	<u>The identifier of a group of assets</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>31</u>	<u>Asset Group Name</u>	<u>Name of the aggregated group of assets</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>2</u>	Location											



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE ~~AS REVISED BY~~
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M	M	M	M	M	M
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O	O	O	O	O	O
2	32	Zone Type	Type of Zone	O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>			
	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>			

Element			Short Description								
<u>2</u>	<u>40</u>	<u>Electrical Node ID</u>	<u>Identifier assigned to the Electrical Node at which the Service Location is connected</u>	<u>O</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
From	SP	SO	SP	SO	SP	SO	SP	SO				
To	SO	SP	SO	SP	SO	SP	SO	SP				
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O					O			
2	43	PNode	Name of the Price Node associated with the Service Location	O					O			



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				4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
				SP	SO	SP	SO	SP	SO	SP	SO
				SO	SP	SO	SP	SO	SP	SO	SP
				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
				-	-	-	-	-	-	-	-
				0	-	-	-	0	-	-	-
				-	-	M	-	-	-	M	-
				-	-	M	-	-	-	M	-

Element			Short Description								
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	0	-	-	-	0	-	-	-
4	-	Grid Connection	-	-	-	-	-	-	-	-	-
4	10	Loss Factor Type	Type of Loss Factor	-	-	M	-	-	-	M	-
4	11	Loss Factor Value	Loss Factor	-	-	M	-	-	-	M	-



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
			Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
<u>Element</u>			<u>Short Description</u>								
<u>5</u>	<u>Business Entity Relationships</u>										
<u>5</u>	<u>11</u>	<u>Service Provider ID</u>	<u>Identifier assigned to the Service Provider</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>
<u>5</u>	<u>12</u>	<u>Service Provider Name</u>	<u>Name of the Service Provider</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE ~~AS REVISED BY~~
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

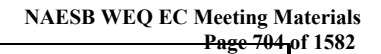
				Process	4.0 Measurement & Performance									
					4.1 Baseline				4.2 Other					
				From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>		
				To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>		
				Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>		
					<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>		
Element				Short Description										
5	20	Transmission/Distribution Service Provider ID		Identifier assigned to the Transmission/Distribution Service Provider				<u>Q</u>	<u>Q</u>		<u>Q</u>	<u>Q</u>		
5	21	Transmission/Distribution Service Provider Name		Name of the Transmission/Distribution Service Provider				<u>Q</u>	<u>Q</u>		<u>Q</u>	<u>Q</u>		



RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEE~~ AS REVISED BY
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	Q	Q	-	-	Q	Q	-	-
5	44	Retail Rate	Retail Rate	-	-	Q	-	-	-	Q	-
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	Q	Q	Q	Q	Q	Q	Q	Q



Request Title: [Phase Two](#) Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

~~Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010~~



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	O	O	O	O	O	O	O
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O	O	O	O
6	Device and Qualification										
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M	M



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
6	2293	Measurement Interval	Interval of time between Measurement readings	O				O			
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	O	O	O	O	O	O	O	O



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Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
6	46	<u>Wholesale Delivery Point Status</u>		Flag set if the Service Location is metered at the Wholesale level							
				0	0	0	0	0	0	0	0
6	47	<u>Private Use Network</u>		Flag set if the Resource is an Electric Network connected to the transmission grid							
				0	0	0	0	0	0	0	0



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			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data Rejection	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
6	51	UFR Settings	Setting of the Under-Frequency Relay	0	0	0	0	0	0	0	0
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	0	0	0	0	0	0	0	0
7	Market/Program Enrollment										
7	10	Program ID	Program Identifier	0	0	0	0	0	0	0	0



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
To				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
Interaction				<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
Element				Short Description							
<u>7</u>	<u>11</u>	<u>Program Name</u>	<u>Name of the Program</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>
<u>7</u>	<u>12</u>	<u>Market</u>	<u>Type of wholesale market</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>
<u>7</u>	<u>13</u>	<u>Market Product</u>	<u>Market Product</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>
<u>7</u>	<u>40</u>	<u>Response Method Type</u>	<u>Type of Response Method</u>	<u>-</u>	<u>-</u>	<u>Q</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>Q</u>	<u>-</u>



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				Process										
					4.1 Baseline				4.2 Other					
				From	SP	SO	SP	SO	SP	SO	SP	SO		
				To	SO	SP	SO	SP	SO	SP	SO	SP		
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4		
					Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		
Element				Short Description										
7	41	Response Method ID	Identifier assigned to the Response Method		-	-	-	-	-	-	-	-		
7	42	Response Method Name	Name of the Response Method		-	-	0	-	-	-	0	-		
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource		-	-	0	-	-	-	0	-		



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							4.1 Baseline				4.2 Other			
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>			
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>			
			Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>			
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>			
Element			Short Description											
<u>7</u>	<u>991</u>	<u>Market Enrollment Comments</u>	<u>Comments associated with the Enrollment</u>		<u>O</u>		<u>O</u>		<u>O</u>		<u>O</u>			
<u>11</u>		<u>Capacity Market</u>												
<u>11</u>	<u>30</u>	<u>Capacity Obligation Period Type</u>	<u>Type of Capacity Obligation Time Period within which the Resource is obligated</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>			



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE ~~AS REVISED BY~~
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element			Short Description								
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated	0	0	0	0	0	0	0	0
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	-	-	0	-	-	-	0	-



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				4.0 Measurement & Performance							
				Process							
				4.1 Baseline				4.2 Other			



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
12	10	Event ID	Identifier assigned to the Event	M	M	O	M	M	M	O	M
12	11	Deployment Type	Type of Deployment	-	-	O	-	-	-	O	-
12	12	Event Day	Operating Date of Start of Event	-	-	M	-	-	-	M	-
12	14	Event Start Time	Time of Start of deployment period for Event	O	O	M	O	O	O	M	O



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>			
To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>			
Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>			
	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>			
Element			Short Description								
<u>12</u>	<u>16</u>	<u>Deployment MW</u>	<u>Absolute or relative Deployment quantity</u>			<u>O</u>				<u>O</u>	
<u>12</u>	<u>17</u>	<u>Event Status</u>	<u>Status of the Event</u>			<u>O</u>				<u>O</u>	
<u>12</u>	<u>18</u>	<u>Event End Time</u>	<u>Time of End of deployment period</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>O</u>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
				SP	SO	SP	SO	SP	SO	SP	SO
				SO	SP	SO	SP	SO	SP	SO	SP
				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
			Interaction	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element			Short Description								
<u>12</u>	<u>21</u>	<u>Baseline Dates</u>	<u>Dates of days used to calculate the Energy Baseline</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>
<u>12</u>	<u>22</u>	<u>Baseline Exclusion Dates</u>	<u>Dates of days Excluded from the calculation of the Energy Baseline</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
From			<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>		
To			<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>		
Interaction			<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>		
			<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>		
Element			Short Description									
<u>12</u>	<u>23</u>	<u>Energy Baseline Value</u>	<u>Calculated Energy Baseline</u>		<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	
<u>12</u>	<u>24</u>	<u>Energy Baseline Timestamp</u>	<u>Timestamp of Energy Baseline</u>		<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	
<u>12</u>	<u>30</u>	<u>Reporting Interval</u>	<u>Interval size required for Reporting</u>		<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
<u>From</u>			<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>		
<u>To</u>			<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>		
<u>Interaction</u>			<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>		
			<u>Meter Data</u>	<u>Meter Data</u> <u>Rejection</u>	<u>Calc. Perf. and</u> <u>Meter Data</u>	<u>Meter Data</u> <u>Rejection</u>	<u>Meter Data</u>	<u>Meter Data</u> <u>Rejection</u>	<u>Calc. Perf. and</u> <u>Meter Data</u>	<u>Meter Data</u> <u>Rejection</u>		
<u>Element</u>			<u>Short Description</u>									
<u>12</u>	<u>31</u>	<u>Measurement Value</u> <u>Timestamp</u>	<u>The time when the value was last</u> <u>updated</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>	<u>O</u>	<u>M</u>	<u>O</u>
<u>12</u>	<u>32</u>	<u>Measurement Value</u>	<u>Value of the interval reading</u>		<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>	<u>O</u>	<u>M</u>	<u>O</u>
<u>12</u>	<u>33</u>	<u>Response Value</u>	<u>Response</u>		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>



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				Process	4.0 Measurement & Performance															
				4.1 Baseline				4.2 Other												
				From	SP	SO	SP	SO	SP	SO	SP	SO								
				To	SO	SP	SO	SP	SO	SP	SO	SP								
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4												
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection												
Element				Short Description																
12	991	Event & Performance comments		Comments associated with Event and Performance data					O	O	O		O	O	O					



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6([ca](#))([ii](#))
Request Title: [Phase Two](#) Requirements Specifications for
Wholesale Standard DR Signals - for NIST
PAP09

018-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model. Abbreviations/Acronyms correspond to the IDs shown in the figure.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a [Premise-Service Location](#) contains one or more [End-DevicesService Delivery Points](#). The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a [Premise-Service Location](#) is related to one-or-more [End-DevicesService Delivery Points](#) (reading top to bottom) and every [End-DeviceService Delivery Point](#) is related to exactly-one [Premise-Service Location](#) (reading bottom to top).

Optional Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and [PremisesService Locations](#), but does not require [Response-Method-AggregationsAsset Groups](#) and [Response-MethodsAssets](#). ~~In this example, the relationship between Resource and Premise is transitive: a Resource is comprised of one-or-more Premises and each Premise is associated with zero-or-more Resources.~~

Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the applicable business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in



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Requesters:	NAESB Smart Grid Task Force (SGTF)
Request No.:	2010 WEQ Annual Plan Item 6(ca)(ii)
Request Title:	<u>Phase Two</u> Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

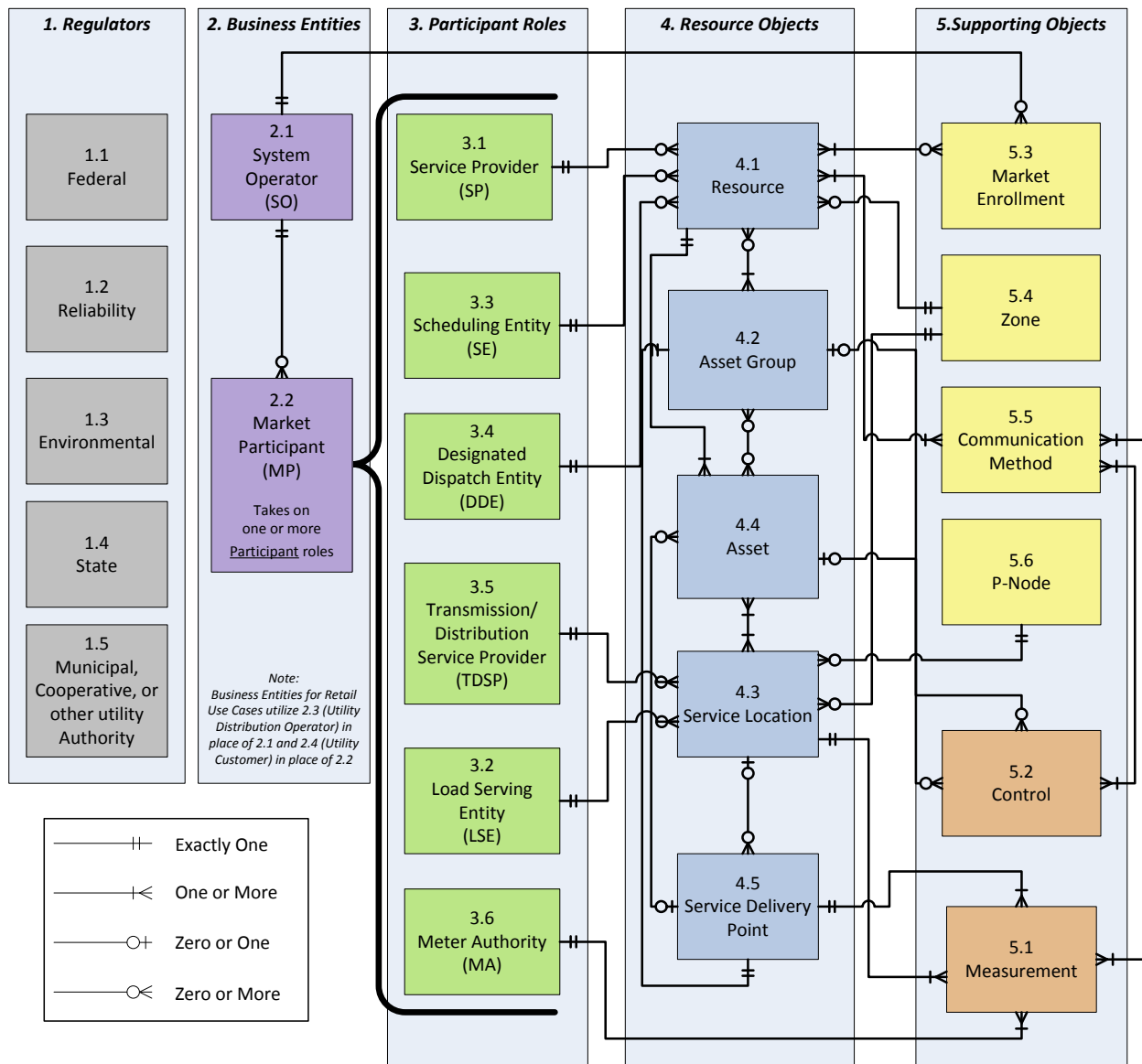
retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



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Wholesale Standard DR Signals - for NIST
PAP09

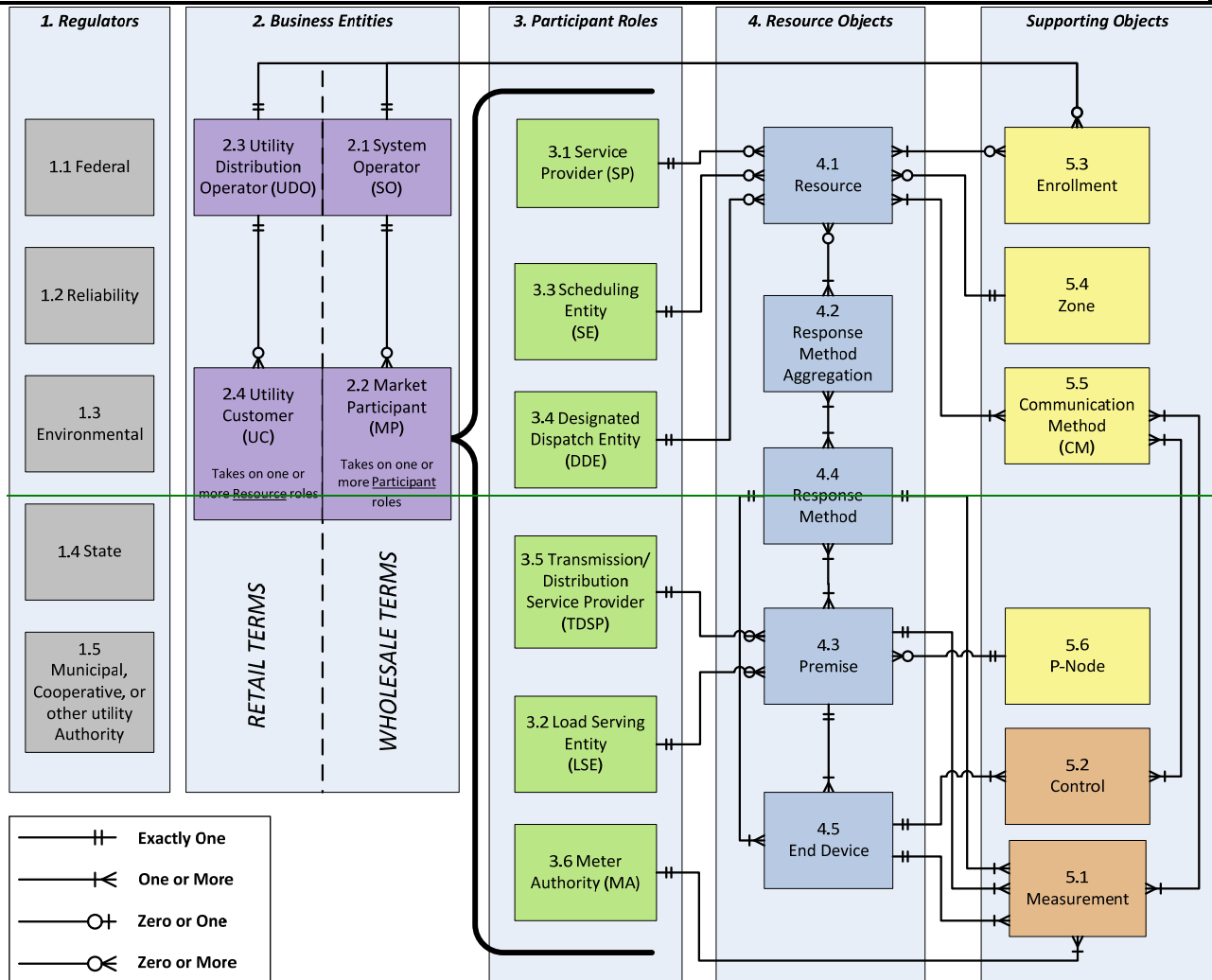
Figure 1A. Entity-Relationship Model for Smart Grid Use Cases





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018-B

Appendix B – Use Case Combinations

The following table is a complete list of use case combinations included in these Business Practice Standards.

Use Case	Product	Deployment	Performance Evaluation
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-2	Energy (Economic)	Bulk	MB/MA
E-B-3	Energy (Economic)	Bulk	MBL
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-4	Energy (Reliability)	Bulk	MGO
R-R-1	Energy (Reliability)	Resource	Baseline
R-R-2	Energy (Reliability)	Resource	MB/MA
R-R-3	Energy (Reliability)	Resource	MBL
R-R-4	Energy (Reliability)	Resource	MGO
R-S-1	Energy (Reliability)	Self	Baseline
R-S-2	Energy (Reliability)	Self	MB/MA
R-S-3	Energy (Reliability)	Self	MBL
R-S-4	Energy (Reliability)	Self	MGO



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Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-2	Capacity	Bulk	MB/MA
C-B-3	Capacity	Bulk	MBL
C-B-4	Capacity	Bulk	MGO
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
C-S-1	Capacity	Self	Baseline
C-S-2	Capacity	Self	MB/MA
C-S-3	Capacity	Self	MBL
C-S-4	Capacity	Self	MGO
G-B-1	Regulation	Bulk	Baseline
G-B-2	Regulation	Bulk	MB/MA
G-B-3	Regulation	Bulk	MBL
G-B-4	Regulation	Bulk	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
G-S-1	Regulation	Self	Baseline
G-S-2	Regulation	Self	MB/MA
G-S-3	Regulation	Self	MBL
G-S-4	Regulation	Self	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO



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Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST
PAP09

4. Supporting Documentation

a. Description of Request:

WEQ Annual Plan Item 6(c) (ii) – “Develop Requirements and Use Cases for PAP 09 – Demand Response/Distributed Energy Resources” – Phase Two.

b. Description of Recommendation:

This recommendation ~~provides associates~~ the data ~~requirements elements related to~~ the use cases developed ~~as part of the~~ during the phase Phase one One effort.

c. Business Purpose:

This recommendation has been developed in response to a request ~~from NIST to provide to~~ include a Phase two effort for PAP-09 to associate data elements with the use cases and requirements germane to the development of developed in Phase 1 for standard DR and DER signals. Additionally, the recommendation addresses the directive from the WEQ Executive Committee for “the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- ~~March 11, 2010 Meeting Notes – To be posted~~
- ~~March 18, 2010 Meeting Notes – To be posted~~
- ~~March 25, 2010 Meeting Notes – To be posted~~
- ~~April 1, 2010 Meeting Notes – To be posted~~
- ~~April 8, 2010 Meeting Notes – To be posted~~
- ~~April 29, 2010 Meeting Notes – To be posted~~
- ~~May 13, 2010 Meeting Notes – To be posted~~
- ~~May 20, 2010 Meeting Notes – To be posted~~
- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES AS REVISED BY
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For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	NAESB Smart Grid Task Force (SGTF)
Request No.:	2010 WEQ Annual Plan Item 6(<u>ca</u>)(<u>ii</u>)
Request Title:	<u>Phase Two</u> Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted
- [October 7, 2010 Meeting Notes – To be posted](#)



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09

1. RECOMMENDED ACTION:

☒ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The business activity diagrams and use cases presented in these Business Practice Standards illustrate the standard interactions between a System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets.

RECOMMENDED STANDARDS:

In response to NIST's Priority Action Plan 9, this recommendation contains draft requirements specifications, in the form of business activity diagrams, use cases and data requirements for each interaction, to support the standardization of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. Common terminology from the NAESB Measurement and Verification Standards for Demand Response has been incorporated into the development of the business activity diagrams and use cases. As a result of the development of these Business Practice Standards, a standard set of actors



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and additional terminology will expand the existing NAESB documentation of associated terms and definitions for demand response.

WEQ-018

RECOMMENDED STANDARDS:

Executive Summary

Specifications for Wholesale Standard Demand Response Signals

The following addresses the business objectives and context for standardizing signals for DR and DER as part of the Smart Grid implementation, which is called for by NIST PAP 09. This Business Practice Standard and data elements included herein are not intended to replace applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

The business activity diagrams and use cases contained in this Business Practice Standard address the requirements for standardizing the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. To maintain consistency a master list of data elements and a common set of actors, terms and definitions have been adopted.

The following describes the end-to-end business activity diagrams relating to the wholesale market interactions between the System Operator (SO) and various Market Participants common to all ISOs/RTOs that offer opportunities for demand resources to participate in organized wholesale electric markets.



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Introduction

Specifications for Wholesale Standard Demand Response Signals

Purpose:

The purpose of the following is to provide standards developers with a context for understanding the range of interactions between wholesale electricity market System Operators and Market Participants across the various electricity systems and jurisdictions in the United States of America with some overlaps to Canada. A major objective in producing these Business Practice Standards is to emphasize the importance of interoperability at all levels of the GWAC interoperability framework.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification purposes.



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Scope: There are certain principles and boundaries that have been established. These include:

1. Demand Response practices must be consistent with NERC and applicable regional reliability authority requirements.
2. All involved entities are registered through the applicable ISO/RTO market participant registration process, which may include credit checks. However, the specifics related to the business processes associated with Market Participant registration are not documented in these requirements.
3. Settlement input parameters are defined as an output to the measurement and performance business process. However, specific business processes associated with settlements are not documented in these requirements.
4. Intra-system operator information exchanges and specific market rules, calculations, algorithms, and Performance Evaluation models are excluded.
5. Planning functions are not documented in these requirements. This includes, but is not limited to, long-term load forecasting and transmission planning.
6. Capacity auctions, awards processes, and resource certification are not documented in these requirements.
7. References in these Recommendations to "Dispatch", "Markets", and "Reliability", are made relative to Demand Response and apply to Demand Response resources only, not to Generation resources.
8. Compliance standards for Demand Response resources are determined by the market rules or other Governing Documents of the respective System Operator and are specific to the product or service and the reliability need being addressed.

Business Practice Standards

018-1 Specifications for Wholesale Standard Demand Response Signals

The following describes the wholesale market business activity diagram and provides the necessary business context and reference architecture for use cases between the System Operator and Market Participant.

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to replace applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

018-1.1 Conventions



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- Glossary terms are capitalized.
- Implementation does not require every interaction shown in the business activity diagrams.



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018-2 ACTORS

The actors listed in the table below are specific to this recommendation and are a subset of the actors and related objects defined in WEQ-000. Details on the relationships between the actors and related objects are further defined in Appendix A.

Table 1 - Actor Roles

Term	Actor ID ¹
Designated Dispatch Entity	3.4
Load Serving Entity	3.2
Meter Authority	3.6
Scheduling Entity	3.3
Service Provider	3.1
System Operator	2.1
Transmission/Distribution Service Provider	3.5

¹ The Actor ID shown in the table refers to the item number of the corresponding actor or related object in the Entity-Relationship Diagram provided in Appendix A. Definitions of the actors and related objects are included in WEQ-000.



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018-1.3

USE CASE OVERVIEW

The use cases presented in these Business Practice Standards represent a combination of three dimensions of demand response participation in wholesale markets: product, deployment, and performance evaluation method. As shown in the table below, product and deployment dimensions are identified by a single alphabetic character and performance evaluation methods are indicated by a numeric identifier; each character is separated by a dash (-). For example, use case E-R-1 refers to the use case for the energy (economic) product with a resource-specific deployment and performance evaluated using a Baseline.

The use cases included in this Business Practice Standard are not to be required or exhaustive and are provided for clarification purposes.

Table 2 - Use Case Dimensions

Product	
Energy (Economic)	E
Energy (Reliability)	R
Capacity	C
Reserve	V
Regulation	G
Deployment	
Bulk	B
Resource	R
Self	S
Performance Evaluation	
Baseline	1
MB/MA	2
MBL	3
MGO	4



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A sample of the use case list is shown in the table below. Appendix B contains the complete list of valid use case combinations.

Table 3 - Sample Use Case List

Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO

The Figure 1 illustrates the business activity diagrams for use cases combinations that are considered to be representative of the types of demand response in wholesale electricity markets today. Each business activity diagram description includes a table of the use cases to which the business activity diagram applies, followed by the specific data elements that are exchanged in each numbered interaction shown in the business activity diagram.

The wholesale Demand Response end-to-end business activity diagram for the interactions between the SO and the Service Provider SP is comprised of four major functions:

- 1.0 Enrollment & Qualification,
- 2.0 Scheduling & Award Notification,
- 3.0 Deployment & Real-Time Communications,
- 4.0 Measurement & Performance.

Two additional activities are shown in the high-level business process flow, but are considered outside the scope of what is required for the interactions flow for demand response:

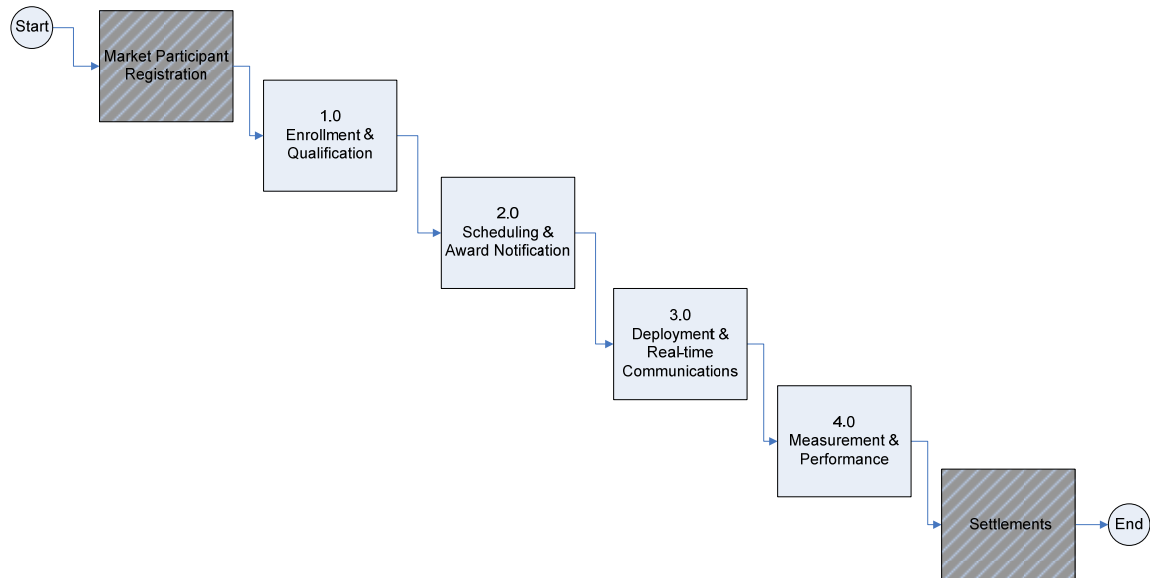
- Market Participant Registration
- Settlements



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Figure 1 - Demand Response



Business activity diagrams are numbered using the sequence shown in Figure 1. If a business process is further specified, the second position in the number sequence indicates this specification, as in 2.1 – Scheduling and Award Notification – Economic and 2.2 – Scheduling and Award Notification – Reliability.

Interactions between the System Operator and the Market Participant are numbered for each business activity diagram. To continue with the example above, 2.1.1 – Offer Parameters, is the first interaction between the System Operator and Market Participant in the business activity diagram 2.1 – Scheduling and Award Notification – Economic.

A table containing the data elements used in the interactions of the business activity diagram is shown. The numbers of the interactions in the table correspond to the numbered interactions in the business activity diagram. Cells showing an “M” (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an “O” (optional) are data elements that may be left blank if not used in a given interaction.



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018-1.4 SPECIFIC USE CASES

018-1.4.1 Enrollment and Qualification

Overview: The Enrollment and Qualification process documents the steps required to enroll a Resource in a wholesale demand response program.

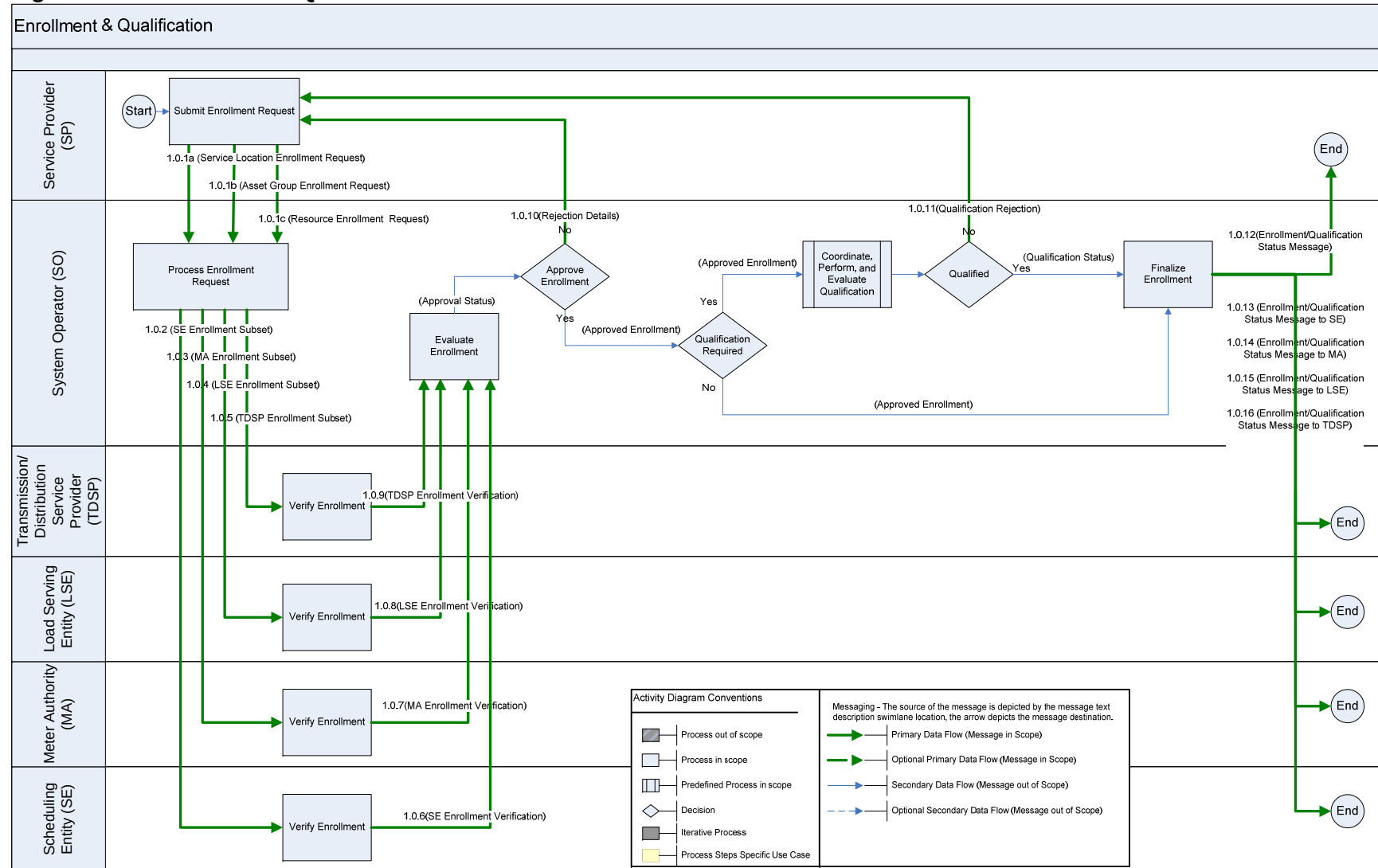
Use Cases: All valid use cases defined in these Business Practice Standards (see Figure 2)

- The process begins when the SP submits an enrollment request to the SO.
- The SO processes the enrollment request, which may include interactions with the TDSP, LSE, MA and/or SE.
- The SO evaluates the enrollment request, which may include verification information from the TDSP, LSE, MA and/or SE.
- The result of the evaluation is the approval or rejection of the enrollment request.
 - o If the enrollment request has been rejected, the SO sends information to the SP, indicating the rejection details.
 - o If the enrollment request has been approved, a determination is made by the SO as to whether qualification of the Resource's capability is required prior to final approval.
 - If no qualification is required, the SO sends information to the SP, indicating the approval of the enrollment.
 - If qualification is required, the SO coordinates the qualification procedure with the SP.
 - If the Resource has failed to qualify, the SO sends information to the SP, indicating the qualification rejection details.
 - If the Resource achieves qualification, the SO sends information to the SP and enrollment is finalized.
- At the end of the Enrollment and Qualification process, the SO finalizes enrollment, notifies the SP and may also notify the TDSP, LSE, MA and/or SE.

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Activity Diagram and Data Flow:

Figure 2 - Enrollment and Qualification





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Table 4. Data Requirements by Interaction Number 1.0.1a through 1.0.9: Enrollment and Qualification

				Process	1.0 Enrollment & Qualification												
				From	SP			SO				SE	MA	LSE	TDSP		
				To	SO			SE	MA	LSE	TDSP	SO					
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9		
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version		MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification						
Element				Short Description													
0	Common																
0	10	Submittal Date	Timestamp for the sender's use	O	O	M	O	O	O	O							
0	11	Submitted By	User ID of submitter	O	O	M	O	O	O	O							
0	12	Submitted Error	ID of submission error detected	O	O	M	O	O	O	O							
0	13	Rejection Code Type	Type of rejection message														
0	14	Rejection Code Value	Code referring to the reason for a rejection message														
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	M	M	M	M			
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	M	M	M	M			
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M	M	M	M			
1	General Asset/Resource																



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	M	M	M	M	
1	11	Service Location Name	Name of the Service Location	O	O	M	M	O	O	O	M	O	O	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	O	M	M	O	O	O	M	O	O	O	
1	30	Asset Group ID	The identifier of a group of assets	M	M	M	M	M	M	M					
1	31	Asset Group Name	Name of the aggregated group of assets	M	M	M	M	M	M	M					
1	40	GenEMSID	Alias or point Identifier assigned to the Resource			M									
1	41	GenBillingID	Billing Identifier assigned to the Resource			M									



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
1	50	Business Segment	NAICS code of the Service Location	O	O	O								
1	51	Batch Load Flag	Flag set if the Resource is a Batch Load	O	O	O								
1	991	General Resource Comments	General comments associated with the Resource	O	O	O	O	O	O	O				
2	Location													
2	10	Address1	Address line 1	M	M	M	M	M	M	M	M			M
2	11	Address2	Address line 2	O	O	O	O	O	O	O	O			O
2	12	City	City	M	M	M	M	M	M	M	M			M
2	13	Service Location State/Province	State or Province two-letter code	M	M	M	M	M	M	M	M			M
2	14	Service Location Zip/Postal Code	Zip or Postal Code	M	M	M	M	M	M	M	M			M
2	15	Service Location Country	Country	M	M	M	M	M	M	M	M			M
2	20	GPS Coordinates	Latitide and longitude	O	O	O								



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
2	21	Weather Station	Weather Station code associated with the Service Location	M	M	M	O	O						
2	22	TimeZoneName	Name of the Time Zone in which the Service Location is located	O	O	O								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M	M	M	M	M				
2	31	Zone	Name of the Zone in which the Service Location is located	M	M	M	O	O	O	O				
2	32	Zone Type	Type of Zone	M	M	M	O	O	O	O				
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M	M	M	M	M	O	M				
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	M	M	M	O	O	O	O				M



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	M	M	M	M	M	M	M				M
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O	O	O	O	O				
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M	M	M	M	M			M
2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	O	O	O	O	O	O	O	O			O
2	51	Asset Multiplier	Number of identical assets within the Service Location	O	O	O								
2	60	NERC Control Area	The NERC control area of the resource	O	O	O								
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource	O	O	O								



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
2	72	Connection Address	Address associated with the Connection Type	O	O	O								
2	991	Location Comments	Comments associated with the Service Location	O	O	O	O	O	O	O				
3	Contact													
3	10	Contact Type	Interest code associated with a Contact	M	M	M								
3	11	Contact Priority	Order in which this Contact should be selected	M	M	M								
3	12	DUNS Number	DUNS business number	M	M	M								
3	13	Third Party	Flag set if the Contact is a third-party entity	O	O	O								
3	20	Title	Title of the Contact	O	O	O								
3	21	First Name	First Name of the Contact	M	M	M								
3	22	Last Name	Last Name of the Contact	M	M	M								
3	23	Contact Middle Name	Middle Name of the Contact	O	O	O								
3	30	Contact Method	Method of communication with the Contact	M	M	M								



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
3	31	Contact Address Data	Method-dependent Address of the Contact	M	M	M									
3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact	O	O	O									
3	991	Contact Comments	Comments associated with the Contact	O	O	O									
4	Grid Connection														
4	10	Loss Factor Type	Type of Loss Factor	M	M	M	M	M						O	
4	11	Loss Factor Value	Loss Factor	M	M	M	M	M						O	
4	12	Connect Voltage	Voltage level	M	M	M	O	O	O	O					
4	991	Grid Connection Comments	Comments associated with the Attributes of the Resource	O	O	O									
5	Business Entity Relationships														
5	11	Service Provider ID	Identifier assigned to the Service Provider	M	M	M	M	M			M				



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
5	12	Service Provider Name	Name of the Service Provider	M	M	M	M	M			O				
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	M	M	M	M	M			M				
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider	M	M	M	M	M			O			M	
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	M	M	M	M	M	O	O				O	
5	30	Load-Serving Entity ID	Identifier assigned to the Load-Serving Entity	M	M	M	M	M	O	O					
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity	M	M	M	M	M	O	O					
5	40	Retail Rate ID	Identifier assigned to the Retail Rate	M	M	M			O						
5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	O	O	O			O				O		
5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	M	M	M			O				M		



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
5	43	Retail Rate Description	Description of the Retail Rate	O	O	O			O				O	
5	44	Retail Rate	Retail Rate	M	M	M			O				M	
5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider	M	M	M								
5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	M	M	M								
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	M	M	M	M	M			M			M
5	61	Meter Authority Name	Name of the Metering Authority	M	M	M	M	M			O			O
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M	M				M			M
5	71	Scheduling Entity Name	Name of the Scheduling Entity	M	M	M	M				O			O
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	M	M	M				M			M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	M	M	M	M				O			O



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
5	991	External Entity Comments	Comments associated with the External Entity	O	O	O									
6	Device and Qualification														
6	10	Meter Configuration	Configuration of the Meter at the Service Location	M	M	M	M								
6	11	Parent Meter id	ID of a Master or Parent Meter	O	O	O	O	O							
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M				M	
6	21	Meter Type	Type of Meter installed at the Service Location	M	M	M	M								
6	22	Meter Manufacturer	Manufacturer of the Meter	M	M	M									
6	221	Meter Installation Date	Date of Installation of the Meter	M	M	M									
6	222	PT Ratio	Ratio of the Potential Transformer	O	O	O									
6	223	Meter Installer License	Professional License Number of the Installer of the Meter	O	O	O									



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter	O	O	O								
6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter	M	M	M								
6	226	Meter Test Frequency	Frequency of Tests of the Meter	O	O	O								
6	227	Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter	M	M	M								
6	228	Date of Last Meter Test	Date of Last Test of the Meter	O	O	O								
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator	M	M	M	O	M						
6	2291	Meter Test Results	Results of Tests of the Meter	M	M	M								



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	M	M	M									
6	2293	Measurement Interval	Interval of time between Measurement readings	M	M	M									
6	2294	ANSI Compliance	ANSI standard with which the Meter complies	O	O	O									
6	2295	Meter Owner	Owner of the Meter	M	M	M									O
6	2296	Meter Asset Comments	Comments associated with the Meter Asset	O	O	O									
6	23	Meter Model	Model of the Meter	M	M	M									
6	24	Meter Rating	Load Rating of the Meter	O	O	O									
6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units	M	M	M									
6	26	Meter Accuracy Class	Accuracy Class of the Meter	M	M	M									
6	27	Meter Loss Compensation	Line Losses included in the Meter	M	M	M									



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error	O	O	O									
6	29	Meter Phase	Specific Phase information	O	O	O									
6	291	CT Ratio	Ratio of the Current Transformer	M	M	M									
6	30	Distributed Generator Type	Type of Distributed Generator	M	M	M									
6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator	M	M	M									
6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator	M	M	M									
6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	M	M	M									
6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator	O	O	O									



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
6	35	Manufactured Date of the Distributed Generator	Date of Manufacture of the Distributed Generator	O	O	O								
6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator	O	O	O								
6	37	Generator In-Service Date	Date the Distributed Generator became operational	M	M	M								
6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours	M	M	M								
6	39	Distributed Generator Name	Name of the Distributed Generator	M	M	M								
6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP	M	M	M								



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location	M	M	M								
6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid	M	M	M								
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	M	M	M								
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	O	O	O								
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	M	M	M								
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	O	O	O								



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			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
6	51	UFR Settings	Setting of the Under-Frequency Relay	O	O	O								
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	M	M	M								
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O								
7	Market/Program Enrollment													
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	M	M	M	M
7	11	Program Name	Name of the Program	O	O	O	O	O	O	O	O	O	O	O
7	12	Market	Type of wholesale market	M	M	M	M	M	M	M				
7	13	Market Product	Market Product	M	M	M	M	M	M	M				M
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	M	M	M	O	O	O	O	M			
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M	O	O	O	O	M			



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
7	23	Resource Type	Type of Resource	M	M	M	M	M	M	M	M			M
7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service	M	M	M	M				M			O
7	25	Enrollment End Date	Date of Termination of Enrollment	M	M	M	M	M	M	M	M			O
7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service	M	M	M	M				M			O
7	30	Lead Time	Time between the advanced notification and deployment	O	O	O	O	O						
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	M	M	M	M	M						
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	M	M	M	M	M						
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	O	O	O								



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version		MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
7	40	Response Method Type	Type of Response Method	M	M	M	O	O	O	O	O				
7	41	Response Method ID	Identifier assigned to the Response Method	M	M	M	M	M	M	M					
7	42	Response Method Name	Name of the Response Method	O	O	O	O	O	O	O					
7	43	Response Method Value	Value of the Response Method	M	M	M	M	O	O	O	M				
7	44	Verified Capability	Audited Capability	O	O	O	M				M				
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	O	O	O									
7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	M	M	M	M	O			M				
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	O	O	O	O	O							
7	991	Market Enrollment Comments	Comments associated with the Enrollment	M	M	M	O	O	O	O	O				
8	Offer Parameters														



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			Process	1.0 Enrollment & Qualification										
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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
8	10	Offer Limit Value	Offer Limit Value	M	M	M	M	O			M			
8	11	Offer Limit Type	Type of Offer Limit	M	M	M	M	O			M			
8	12	Offer Limit Interval	Offer Limit Interval	M	M	M	M	O			M			
8	20	Physical Min Gen	Minimum Operating Level of a Resource	M	M	M	O				O			O
8	21	Min Gen MW	Minimum MW available for dispatch	M	M	M	O	O			O			O
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	M	M	M	O	O			O			O
8	23	Ramp Rate Type	Type of Ramp Rate	M	M	M	M				M			
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	M	M	M	M				M			
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	M	M	M	M				M			



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	M	M	M	M					M			
8	30	Offer Dispatch Type	Type of Offer	M	M	M									
8	31	Offer Segment MW	Energy of Segment of the Offer	O	O	M									
8	32	Offer Segment Price	Price of Segment of the Offer	O	O	M									
8	33	Offer Segment Hour	Hour of Segment of the Offer	O	O	M									
8	34	Startup Cost	Cost of starting a response activity	O	O	M									
8	35	Strike Price	Threshold Price	O	O	M									
8	36	Offer Expiration Date	Date of Expiration of the Offer	O	O	M									
8	37	Startup Cost Type	Type of startup cost	M	M	M									
8	38	Offer Commit Status	Commitment status of offer	M	M	M									



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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
8	39	Offer Dispatch Status	Dispatch Status of Offer	M	M	M								
8	331	Offer Price Curve Slope	Flag to smooth offer segments from step function to slope	M	M	M								
8	332	StrikePriceType	Type of strike price	O	O	O								
8	40	Market Clearing Day	Market Clearing Day of the Offer	O	O	O	O							
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O							
8	42	Schedule Description	Description of the Offer	O	O	O	O							
8	43	Schedule Status	Status of the Offer	M	M	M	O							
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O							
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint	M	M	M								
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.	M	M	M								



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
8	73	Operational Constraint Value	Value of the Constraint Type and Interval	M	M	M									
9	Energy Market														
9	0	Instruction ID		M	M	M									
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule												
9	11	Energy Schedule - End Time	End Time of the Energy Schedule												
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule												
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule												
9	14	Energy Schedule - Cleared Price	Awarded Price												
9	15	Schedule ID		M	M	M									



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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
9	20	Base Point	Per-interval dispatch instruction											
9	21	Breaker Status	Status of the Breaker for the Resource											
9	22	Output MW	Real Power Output of the Generation Device											
9	23	Output MVAR	Reactive Power Output of the Generation Device											
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services											
9	27	Set Point	Final dispatch target level											
10	Ancillary Service Market													
10	0	Ancillary Service Instruction ID												
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	M								



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			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted	O	O	O								
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award											
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award											
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval											
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award											
10	16	Ancillary Service Award - Cleared Price	Awarded Price											
10	17	Ancillary Service Schedule ID												



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			Process	1.0 Enrollment & Qualification										
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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
10	20	Ancillary Service Product Qualification Type	Type of Qualification	M	M	M	M				M			
10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid	O	O	O								
10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource	M	M	M	M				M			
10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified	M	M	M	M				M			
10	24	Requalification Requirement	Flag set if Requalification is Required	O	O	O								
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule											
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction											
10	33	Base Load MW	Level of Load at time of dispatch											



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification															
			From	SP			SO				SE	MA	LSE	TDSP					
			To	SO			SE	MA	LSE	TDSP	SO								
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9					
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification					
Element			Short Description																
11	Capacity Market																		
11	10	Capacity Type	Type of Capacity	M	M	M	O	O											
11	11	Capacity Type description	Description of the Type of Capacity	O	O	O	O	O											
11	20	Peak Value	Measurement of Peak	M	M	M	O	O							M				
11	21	Peak Type	Type of measurement of Peak	M	M	M	O	O							M				
11	22	Peak Date/Time	Date and Time of measurement of Peak	M	M	M	O	O							M				
11	23	Nominal Capacity	Nominated load	M	M	M	O	O											
11	24	Qualified Capacity	Nominal ICAP derated for performance	O	O	O													
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	M	M	M	O	O											



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated	M	M	M	O	O							
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	O	O	O									
11	41	Capacity Supply Obligation	Capacity Obligation												
11	50	Capacity Reference ID	Identifier assigned to the External System award	O	O	O	O	O							
11	991	Capacity Comments	Comments associated with the Capacity market	O	O	O	O	O							



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
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Table 5. Data Requirements by Interaction Number 1.0.10 through 1.0.16: Enrollment and Qualification

			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
0 Common											
0	10	Submittal Date	Timestamp for the sender's use	O	O	O			O	O	
0	11	Submitted By	User ID of submitter	O	O	O			O	O	
0	12	Submitted Error	ID of submission error detected	O	O	O			O	O	
0	13	Rejection Code Type	Type of rejection message	M	M						
0	14	Rejection Code Value	Code referring to the reason for a rejection message	M	M						
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	
1 General Asset/Resource											
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
1	11	Service Location Name	Name of the Service Location	M	M	M	M	M	M	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	M	M	M	O	O	O	
1	30	Asset Group ID	The identifier of a group of assets			O	O	O	O	O	
1	31	Asset Group Name	Name of the aggregated group of assets			O	O	O	O	O	
1	40	GenEMSID	Alias or point Identifier assigned to the Resource			M					
1	41	GenBillingID	Billing Identifier assigned to the Resource			M					
1	50	Business Segment	NAICS code of the Service Location								
1	51	Batch Load Flag	Flag set if the Resource is a Batch Load			O			O	O	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
1	991	General Resource Comments	General comments associated with the Resource	O	O	O			O	O	
2	Location										
2	10	Address1	Address line 1	M	M	O	M		O	O	
2	11	Address2	Address line 2	O	O	O	O		O	O	
2	12	City	City	M	M	O	M		O	O	
2	13	Service Location State/Province	State or Province two-letter code	M	M	O	M		O	O	
2	14	Service Location Zip/Postal Code	Zip or Postal Code	M	M	O	M		O	O	
2	15	Service Location Country	Country	M	M	O	M		O	O	
2	20	GPS Coordinates	Latitide and longitude								
2	21	Weather Station	Weather Station code associated with the Service Location			O			O	O	
2	22	TimeZoneName	Name of the Time Zone in which the Service Location is located								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M			M	M	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O			O	O	
2	32	Zone Type	Type of Zone	O	O	O			O	O	
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M		M	M		M	M	
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O		O			O	O	
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O		O			O	O	
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O			O	O	
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M		M	M	



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				Process	1.0 Enrollment & Qualification							
				From	SO		SO					
				To	SP		SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	O	O	O	O			O		
2	51	Asset Multiplier	Number of identical assets within the Service Location									
2	60	NERC Control Area	The NERC control area of the resource									
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource									
2	72	Connection Address	Address associated with the Connection Type									
2	991	Location Comments	Comments associated with the Service Location	O	O	O						
3	Contact											
3	10	Contact Type	Interest code associated with a Contact									
3	11	Contact Priority	Order in which this Contact should be selected									



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				Process	1.0 Enrollment & Qualification						
				From	SO		SO				
				To	SP		SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description							
3	12	DUNS Number	DUNS business number								
3	13	Third Party	Flag set if the Contact is a third-party entity								
3	20	Title	Title of the Contact								
3	21	First Name	First Name of the Contact								
3	22	Last Name	Last Name of the Contact								
3	23	Contact Middle Name	Middle Name of the Contact								
3	30	Contact Method	Method of communication with the Contact								
3	31	Contact Address Data	Method-dependent Address of the Contact								
3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact								
3	991	Contact Comments	Comments associated with the Contact		O	O					
4	Grid Connection										
4	10	Loss Factor Type	Type of Loss Factor				O			O	O
4	11	Loss Factor Value	Loss Factor				O			O	O
4	12	Connect Voltage	Voltage level								



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
4	991	Grid Connection Comments	Comments associated with the Attributes of the Resource	O	O	O					
5 Business Entity Relationships											
5	11	Service Provider ID	Identifier assigned to the Service Provider	M	M	M	M		M	M	
5	12	Service Provider Name	Name of the Service Provider	O	O	O	O		O	O	
5	20	Transmission/Distributi on Service Provider ID	Identifier assigned to theTransmission/Distribution Service Provider	M	M	M	M		M	M	
5	21	Transmission/Distributi on Service Provider Name	Name of the Transmission/Distribution Service Provider	O	O	O	O		O	O	
5	22	Transmission/Distributi on Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	O	O	O	O		O	O	
5	30	Load-Serving Entity ID	Identifier assigned to the Load- Serving Entity	O	O	M			M	M	
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity	O	O	O			O	O	
5	40	Retail Rate ID	Identifier assigned to the Retail Rate			O			O	O	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location			O			O	O	
5	42	Retail Rate Name	Name of the Retail Rate for the Service Location			O			O	O	
5	43	Retail Rate Description	Description of the Retail Rate			O			O	O	
5	44	Retail Rate	Retail Rate			O			O	O	
5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider			O			O	O	
5	51	Meter Installation Provider Name	Name of the Meter Installation Provider			O			O	O	
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	M	M	M					
5	61	Meter Authority Name	Name of the Metering Authority	O	O	O					
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M					
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O					
5	80	Designated Dispatch Entity ID	Identififier assigned to the Designated Dispatch Entity	M	M	M					
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O					



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
5	991	External Entity Comments	Comments associated with the External Entity	O	O	O					
6	Device and Qualification										
6	10	Meter Configuration	Configuration of the Meter at the Service Location								
6	11	Parent Meter id	ID of a Master or Parent Meter								
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M				
6	21	Meter Type	Type of Meter installed at the Service Location								
6	22	Meter Manufacturer	Manufacturer of the Meter								
6	221	Meter Installation Date	Date of Installation of the Meter								
6	222	PT Ratio	Ratio of the Potential Transformer								
6	223	Meter Installer License	Professional License Number of the Installer of the Meter								
6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter								
6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter								



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			Process	1.0 Enrollment & Qualification						
			From	SO		SO				
			To	SP		SP	SE	MA	LSE	TDSP
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element			Short Description							
6	226	Meter Test Frequency	Frequency of Tests of the Meter							
6	227	Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter							
6	228	Date of Last Meter Test	Date of Last Test of the Meter							
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator			O			O	O
6	2291	Meter Test Results	Results of Tests of the Meter							
6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation							
6	2293	Measurement Interval	Interval of time between Measurement readings							
6	2294	ANSI Compliance	ANSI standard with which the Meter complies							
6	2295	Meter Owner	Owner of the Meter	O	O	O		O		O
6	2296	Meter Asset Comments	Comments associated with the Meter Asset	O						
6	23	Meter Model	Model of the Meter							



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				From	SO		SO				
				To	SP		SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description							
6	24	Meter Rating	Load Rating of the Meter								
6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units								
6	26	Meter Accuracy Class	Accuracy Class of the Meter								
6	27	Meter Loss Compensation	Line Losses included in the Meter								
6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error								
6	29	Meter Phase	Specific Phase information								
6	291	CT Ratio	Ratio of the Current Transformer								
6	30	Distributed Generator Type	Type of Distributed Generator								
6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator								
6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator								
6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator								
6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator								



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			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
6	35	Manufactured Date of the Distributed Generator	Date of Manufacture of the Distributed Generator								
6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator								
6	37	Generator In-Service Date	Date the Distributed Generator became operational								
6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours								
6	39	Distributed Generator Name	Name of the Distributed Generator								
6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP								
6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location								



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			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid								
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions								
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event								
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level								
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid								
6	51	UFR Settings	Setting of the Under-Frequency Relay								
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method								
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O			O	O	



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			Process	1.0 Enrollment & Qualification								
			From	SO		SO						
			To	SP		SP	SE	MA	LSE	TDSP		
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element			Short Description									
7			Market/Program Enrollment									
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	M	
7	11	Program Name	Name of the Program	O	O	O	M	O	O	O	O	
7	12	Market	Type of wholesale market	M	M	O			O	O		
7	13	Market Product	Market Product	M	M	M	M		O	O		
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment			M	M		M	M		
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M			M	M		
7	23	Resource Type	Type of Resource	O	O	O	O				O	
7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service	O	O	O	O				O	
7	25	Enrollment End Date	Date of Termination of Enrollment	O	O	O	O		O	O		
7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service	O	O	O	O				O	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
7	30	Lead Time	Time between the advanced notification and deployment			O			O	O	
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	O	O	O			O	O	
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	O	O	O			O	O	
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying								
7	40	Response Method Type	Type of Response Method	O	O	O	O		O	O	
7	41	Response Method ID	Identifier assigned to the Response Method	O	O	M			M	M	
7	42	Response Method Name	Name of the Response Method	O	O	O			O	O	
7	43	Response Method Value	Value of the Response Method	O	O	M	M		M	M	
7	44	Verified Capability	Audited Capability	O	O	M	M				
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability			M					



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				Process	1.0 Enrollment & Qualification						
				From	SO		SO				
				To	SP		SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description							
7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	M	M	M	M				
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	O	O	M					
7	991	Market Enrollment Comments	Comments associated with the Enrollment	O	O	O	O	O	O	O	
8	Offer Parameters										
8	10	Offer Limit Value	Offer Limit Value	M	O	M	M		O	O	
8	11	Offer Limit Type	Type of Offer Limit	M	O	M	M		O	O	
8	12	Offer Limit Interval	Offer Limit Interval	M	O	M	M		O	O	
8	20	Physical Min Gen	Minimum Operating Level of a Resource	O	O	O	O		O	O	
8	21	Min Gen MW	Minimum MW available for dispatch	O	O	O	O		O	O	
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	O	O	O	O				
8	23	Ramp Rate Type	Type of Ramp Rate	M	O	O	O				
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	M	O	O	O				



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	M	O	O	O				
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	M	O	O	O				
8	30	Offer Dispatch Type	Type of Offer		O						
8	31	Offer Segment MW	Energy of Segment of the Offer								
8	32	Offer Segment Price	Price of Segment of the Offer								
8	33	Offer Segment Hour	Hour of Segment of the Offer								
8	34	Startup Cost	Cost of starting a response activity								
8	35	Strike Price	Threshold Price								
8	36	Offer Expiration Date	Date of Expiration of the Offer								
8	37	Startup Cost Type	Type of startup cost								
8	38	Offer Commit Status	Commitment status of offer								



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification								
			From	SO		SO						
			To	SP		SP	SE	MA	LSE	TDSP		
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element			Short Description									
8	39	Offer Dispatch Status	Dispatch Status of Offer									
8	331	Offer Price Curve Slope	Flag to smoothe offer segments from step function to slope									
8	332	StrikePriceType	Type of strike price									
8	40	Market Clearing Day	Market Clearing Day of the Offer				O					
8	41	Schedule Name	Name or tag of the Offer				O					
8	42	Schedule Description	Description of the Offer				O					
8	43	Schedule Status	Status of the Offer				O					
8	50	Portfolio Name	Name of an aggregation of Resources for market participation				O					
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint									
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.									
8	73	Operational Constraint Value	Value of the Constraint Type and Interval									



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
9 Energy Market											
9	0	Instruction ID									
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule								
9	11	Energy Schedule - End Time	End Time of the Energy Schedule								
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule								
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule								
9	14	Energy Schedule - Cleared Price	Awarded Price								
9	15	Schedule ID									
9	20	Base Point	Per-interval dispatch instruction								
9	21	Breaker Status	Status of the Breaker for the Resource								
9	22	Output MW	Real Power Output of the Generation Device								



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
9	23	Output MVAR	Reactive Power Output of the Generation Device								
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services								
9	27	Set Point	Final dispatch target level								
10	Ancillary Service Market										
10	0	Ancillary Service Instruction ID									
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	O	O	O	M		O	O	
10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted		O						
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award								
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award								



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval								
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award								
10	16	Ancillary Service Award - Cleared Price	Awarded Price								
10	17	Ancillary Service Schedule ID									
10	20	Ancillary Service Product Qualification Type	Type of Qualification	O	O	M	M				
10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid								
10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource			M	M				



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified			M	M				
10	24	Requalification Requirement	Flag set if Requalification is Required	O	O						
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule								
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction								
10	33	Base Load MW	Level of Load at time of dispatch								
11	Capacity Market										
11	10	Capacity Type	Type of Capacity	O	O	M					
11	11	Capacity Type description	Description of the Type of Capacity	O	O	O					
11	20	Peak Value	Measurement of Peak			O			O	O	
11	21	Peak Type	Type of measurement of Peak			O			O	O	



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	1.0 Enrollment & Qualification								
				From	SO		SO						
				To	SP		SP	SE	MA	LSE	TDSP		
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element				Short Description									
11	22	Peak Date/Time	Date and Time of measurement of Peak				O			O	O		
11	23	Nominal Capacity	Nominated load				O						
11	24	Qualified Capacity	Nominal ICAP derated for performance				M						
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated		O	O	M			M	M		
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated		O	O	M			M	M		
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program		O	O	O						
11	41	Capacity Supply Obligation	Capacity Obligation										
11	50	Capacity Reference ID	Identifier assigned to the External System award				O						



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
11	991	Capacity Comments	Comments associated with the Capacity market	O	O	O					



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.2 Scheduling and Award Notification – Economic

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 6. Use Cases for Figure 3

Use Case	Product	Deployment	Performance Evaluation
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO

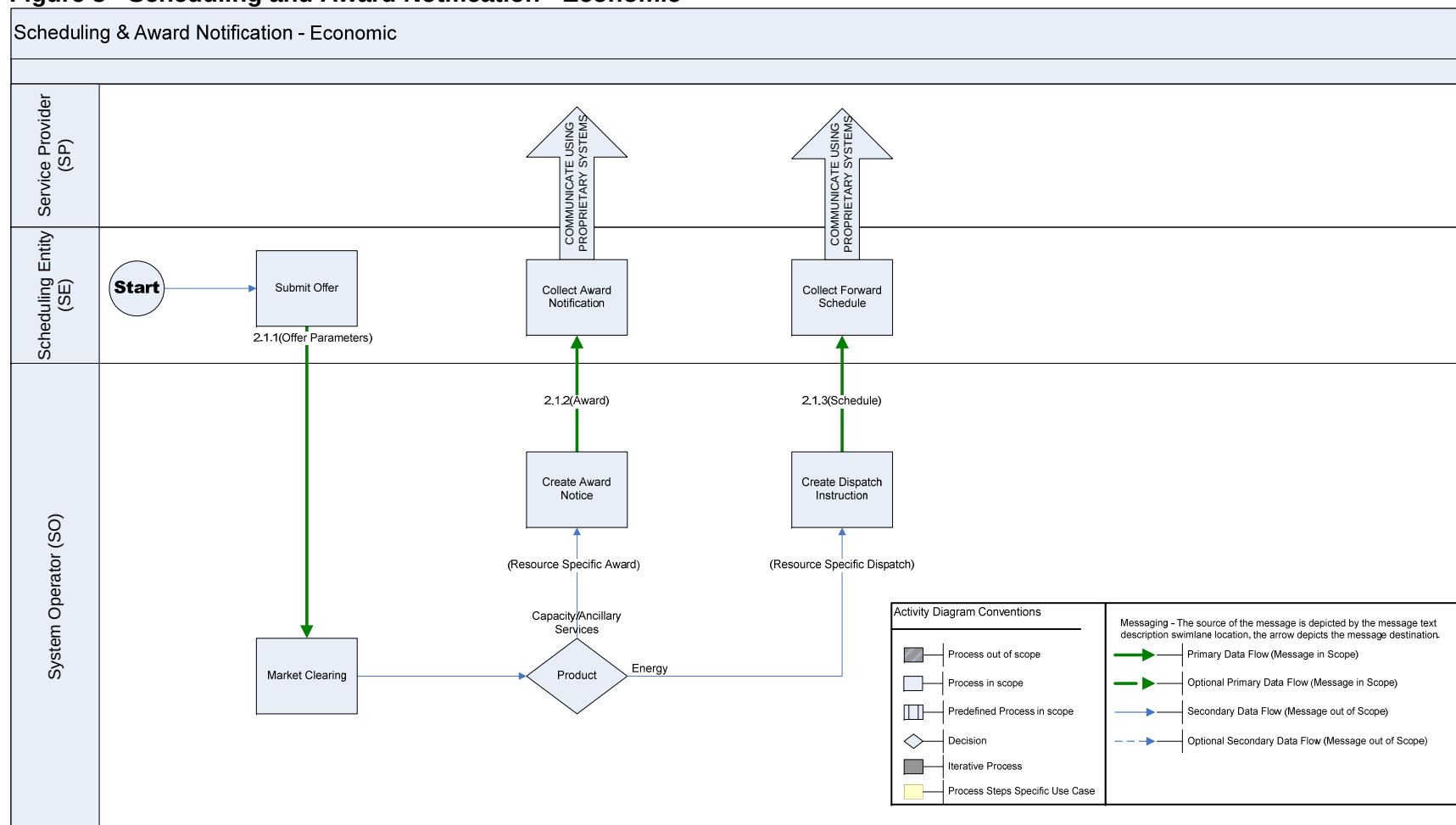
- The process begins when the SE submits a supply offer to the SO.
- The SO evaluates the offer through its market clearing process.
- The resulting resource-specific dispatch information is transformed into dispatch instructions by the SO.
- The SO makes the schedule available.
- The SE collects the forward schedule.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Activity Diagram and Data Flow:

Figure 3 - Scheduling and Award Notification - Economic



Note: Data elements for Scheduling and Award Notification-Economic are listed with Scheduling and Award Notification-Reliability in Table 8.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.3 Scheduling and Award Notification – Reliability

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 7. Use Cases for Figure 4

Use Case	Product	Deployment	Performance Evaluation
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-4	Energy (Reliability)	Bulk	MGO
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
C-B-2	Capacity	Bulk	MB/MA
C-B-4	Capacity	Bulk	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-3	Reserve	Bulk	MBL
V-B-2	Reserve	Bulk	MB/MA
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-3	Reserve	Resource	MBL
V-R-2	Reserve	Resource	MB/MA
V-R-4	Reserve	Resource	MGO

- The process begins when the SE submits availability to the SO.
- The SO performs the Load Forecast and Supplemental Commitment process after the market has been settled. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - o If SO determines that the system is secure, no demand response advance notification is required and reliability is assessed by the SO at the next interval.
 - o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.
 - If the SO determines that demand response will be provided with an advance notification, the reliability event parameters are prepared by the SO to create a reliability event notification.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST PAP09

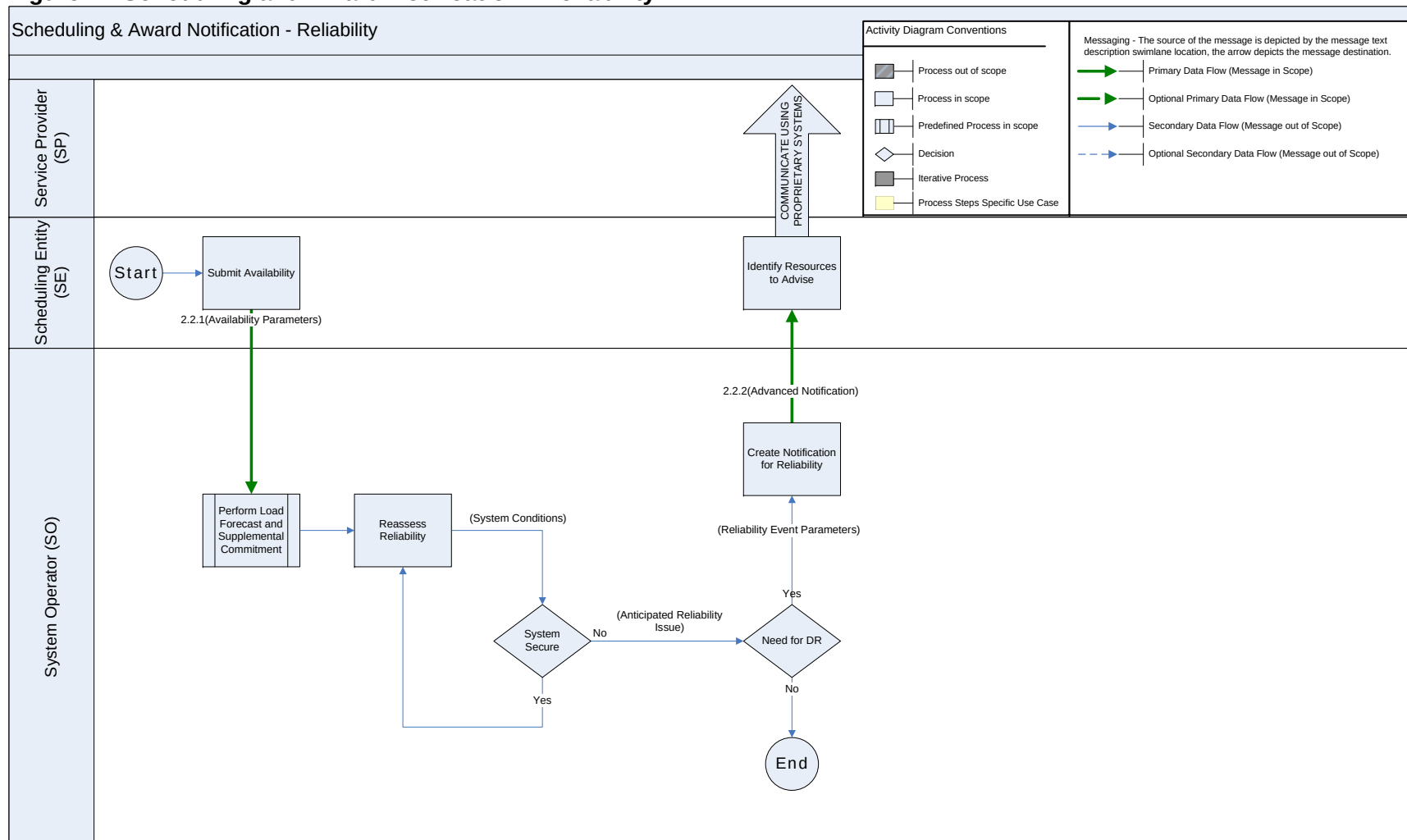
- The advance notification message is sent to the SE.
- The SE identifies the demand resources to notify and relays the message to SPs through the proprietary interaction system of the SE.



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Activity Diagram and Data Flow:

Figure 4 - Scheduling and Award Notification - Reliability





RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
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Table 8. Data Requirements by Interaction Number: Scheduling and Award Notification

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
0 Common									
0	10	Submittal Date	Timestamp for the sender's use	O	O	O	O	O	
0	11	Submitted By	User ID of submitter	O	O	O	O	O	
0	12	Submitted Error	ID of submission error detected	O	O	O	O	O	
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	
1 General Asset/Resource									
1	10	Service Location ID	Identifier assigned to the Service Location	O	O	O	O	O	



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
1	11	Service Location Name	Name of the Service Location		O	O	O	M	O
1	12	Asset ID	The unique identifier of the asset		O	O	O	O	O
1	13	Asset Name	The name of the asset		O	O	O	O	O
1	20	Resource ID	Identifier assigned to the Resource		M	M	M	M	O
1	21	Resource Name	Name of the Resource		O	O	O	M	O
1	40	GenEMSID	Alias or point Identifier assigned to the Resource		M	M	M		
1	41	GenBillingID	Billing Identifier assigned to the Resource		M	M	M		
2	Location								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located		M	M	M	M	M



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O	O	O
2	32	Zone Type	Type of Zone	O	O	O	O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M	M	M	O	
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O	O	
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O	O	O	O	
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location		M	M	M	M	M
5 Business Entity Relationships									
5	11	Service Provider ID	Identifier assigned to the Service Provider				O	M	M
5	12	Service Provider Name	Name of the Service Provider				O	M	M
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider				O	O	
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider				O	O	
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource				O	O	



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
5	30	Load-Serving Entity ID	Identifier assigned to the Load-Serving Entity				O	O	
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity				O	O	
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity		M	M	M	M	M
5	71	Scheduling Entity Name	Name of the Scheduling Entity		O	O	O	O	O
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity		M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity		O	O	O	O	O
6	Device and Qualification								
6	20	Meter ID	Identifier assigned to the Meter		O	O	O	O	
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions					M	



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
			Element			Short Description			
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event					M	
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level					M	
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid					M	
6	51	UFR Settings	Setting of the Under-Frequency Relay					M	
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method					M	
7	Market/Program Enrollment								
7	10	Program ID	Program Identifier		O	O	O	O	O
7	11	Program Name	Name of the Program		O	O	O	O	O



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
7	12	Market		Type of wholesale market	O	O	O	O	O
7	13	Market Product		Market Product	O	O	O	O	O
7	30	Lead Time		Time between the advanced notification and deployment	O	O		O	O
7	31	Day Ahead Flag		Flag set if the Resource will be participating in the Day-Ahead market	M	M	M	M	M
7	32	Real Time Flag		Flag set if the Resource will be participating in the Real-Time market	M	M	M	M	M
7	33	Self-Schedule Flag		Flag set if the Resource is Self-Deploying	O	O	O	O	
7	40	Response Method Type		Type of Response Method		O	O		
7	41	Response Method ID		Identifier assigned to the Response Method		O	O		
7	42	Response Method Name		Name of the Response Method		O	O		



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
				SE	SO		SE	SO
				SO	SE	SE	SO	SE
				2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description				
7	43	Response Method Value	Value of the Response Method		O	O		
7	44	Verified Capability	Audited Capability				O	
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability				O	
8	Offer Parameters							
8	10	Offer Limit Value	Offer Limit Value	M			M	O
8	11	Offer Limit Type	Type of Offer Limit	M			M	O
8	12	Offer Limit Interval	Offer Limit Interval	O			M	O
8	20	Physical Min Gen	Minimum Operating Level of a Resource	O			M	
8	21	Min Gen MW	Minimum MW available for dispatch	M			M	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	M				M	O
8	23	Ramp Rate Type	Type of Ramp Rate	O				M	
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	O				M	
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	O					
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	O					
8	30	Offer Dispatch Type	Type of Offer	M	M	M			
8	31	Offer Segment MW	Energy of Segment of the Offer	M	M	M		O	O
8	32	Offer Segment Price	Price of Segment of the Offer	M	M	M		O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
8	33	Offer Segment Hour	Hour of Segment of the Offer	M	M	M	O	O
8	34	Startup Cost	Cost of starting a response activity	M	M	M	O	O
8	35	Strike Price	Threshold Price	O	O	O		
8	36	Offer Expiration Date	Date of Expiration of the Offer	M				
8	37	Startup Cost Type	Type of startup cost	M			M	
8	38	Offer Commit Status	Commitment status of offer	M			M	
8	39	Offer Dispatch Status	Dispatch Status of Offer	M			M	
8	331	Offer Price Curve Slope	Flag to smoothe offer segments from step function to slope	M			M	
8	332	StrikePriceType	Type of strike price	O			O	
8	40	Market Clearing Day	Market Clearing Day of the Offer	M	M	M	M	M



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O	O
8	42	Schedule Description	Description of the Offer	O	O	O	O	O
8	43	Schedule Status	Status of the Offer	M	M	M	O	O
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	O
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint	M			M	
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.	M			M	
8	73	Operational Constraint Value	Value of the Constraint Type and Interval	M			M	
9	Energy Market							
9	0	Instruction ID		O	O	O		
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	M	M	M		



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
				SE	SO		SE	SO
				SO	SE	SE	SO	SE
				2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Process								
From								
To								
Interaction								
Element				Short Description				
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	M	M	M		
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	M	M	M		
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule		M	M		
9	14	Energy Schedule - Cleared Price	Awarded Price		M	M		
9	15	Schedule ID		O		O		
9	20	Base Point	Per-interval dispatch instruction					
9	21	Breaker Status	Status of the Breaker for the Resource					
9	22	Output MW	Real Power Output of the Generation Device					



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
9	23	Output MVAR	Reactive Power Output of the Generation Device						
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services						
9	27	Set Point	Final dispatch target level						
10	Ancillary Service Market								
10	0	Ancillary Service Instruction ID				O	O		
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide		M	M	M	M	
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award			M			



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award			M			
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval			M			
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award			M			
10	16	Ancillary Service Award - Cleared Price	Awarded Price			M			
10	17	Ancillary Service Schedule ID					O		
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule			O	O		



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction					
10	33	Base Load MW	Level of Load at time of dispatch					
11	Capacity Market							
11	10	Capacity Type	Type of Capacity	M	M	M	O	
11	20	Peak Value	Measurement of Peak			O	O	
11	21	Peak Type	Type of measurement of Peak			O	O	
11	22	Peak Date/Time	Date and Time of measurement of Peak			O	O	
11	23	Nominal Capacity	Nominated load	O	O	O		
11	24	Qualified Capacity	Nominal ICAP derated for performance	M	M	M	O	



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
1 1	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated		M	M	M	O	
1 1	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated		M	M	M	O	
1 1	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program		M	O	O	O	
1 1	41	Capacity Supply Obligation	Capacity Obligation		M	M	M	O	
1 1	50	Capacity Reference ID	Identifier assigned to the External System award		O	O	O	O	
1 1	991	Capacity Comments	Comments associated with the Capacity market		O	O	O	O	
1 2	Event and Performance								



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
1 2	10	Event ID	Identifier assigned to the Event						O
1 2	11	Deployment Type	Type of Deployment						M
1 2	12	Event Day	Operating Date of Start of Event						M
1 2	13	Event Description	Description of the Event						M
1 2	14	Event Start Time	Time of Start of deployment period for Event						M
1 2	15	Operator Comment	Additional Event information provided by the Operator						O
1 2	16	Deployment MW	Absolute or relative Deployment quantity						O
1 2	17	Event Status	Status of the Event						O



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
1 2	18	Event End Time	Time of End of deployment period					M
1 2	19	Event Modification Number	A modification number for the event.					O
1 2	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.					O
1 2	112	Event Modification Reason Code	The reason the event is being cancelled or modified.					O
1 2	991	Event & Performance comments	Comments associated with Event and Performance data					O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.4 Deployment and Real-Time Communications - Economic

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

Table 9. Use Cases for Figure 5

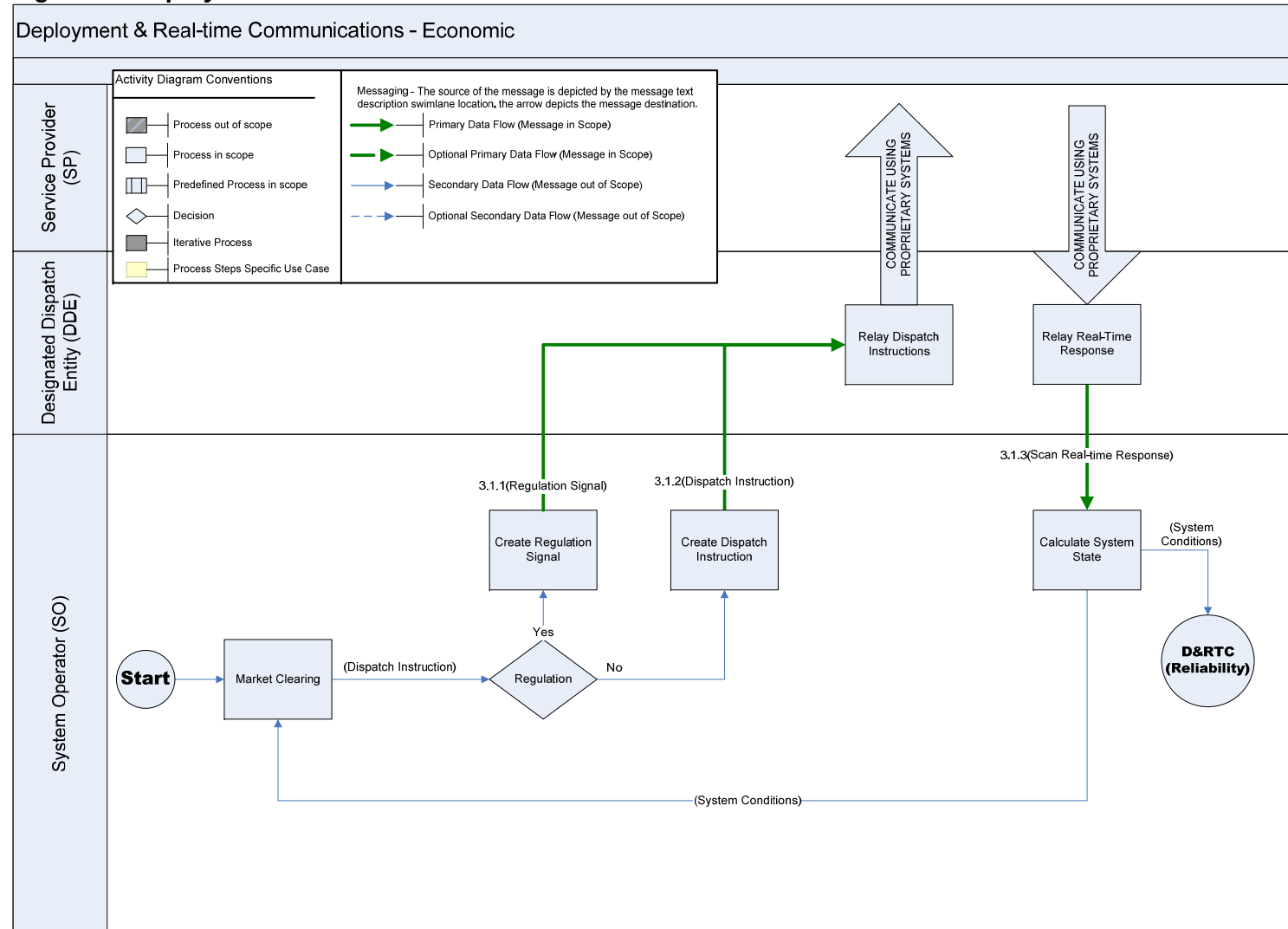
Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-4	Energy (Reliability)	Bulk	MGO
V-R-2	Reserve	Resource	MB/MA
G-R-2	Regulation	Resource	MB/MA

- The process begins when the SO evaluates real-time system conditions through its market clearing process.
- The resulting resource-specific real-time dispatch information is transformed into dispatch instructions by the SO.
 - o If the dispatch instruction is for Regulation, the SO sends the Regulation signal to the DDE.
 - o If the dispatch is not for Regulation, the SO sends the dispatch instruction to the DDE.
- The DDE communicates with the SP through the proprietary communication system of the DDE.
- The SO collects real-time response from the DDE for evaluating the next interval and uses the information to calculate the system state.
- System conditions are made available to the market clearing process for the next interval and to Deployment and Real-Time Communications – Reliability.

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Activity Diagram and Data Flow:

Figure 5 - Deployment and Real-Time Communications - Economic



Note: Data elements for Deployment & Real-Time Communications-Economic are listed with Deployment & Real-Time Communications-Reliability in Table 11.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.5 Deployment and Real-Time Communications – Reliability

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

Table 10. Use Cases for Figure 6

Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO

- The SO performs the Load Forecast and Supplemental Commitment process after the interval has been dispatched. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - If SO determines that the system is secure, no demand response deployment is required and reliability is assessed by the SO at the next interval.
 - If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for
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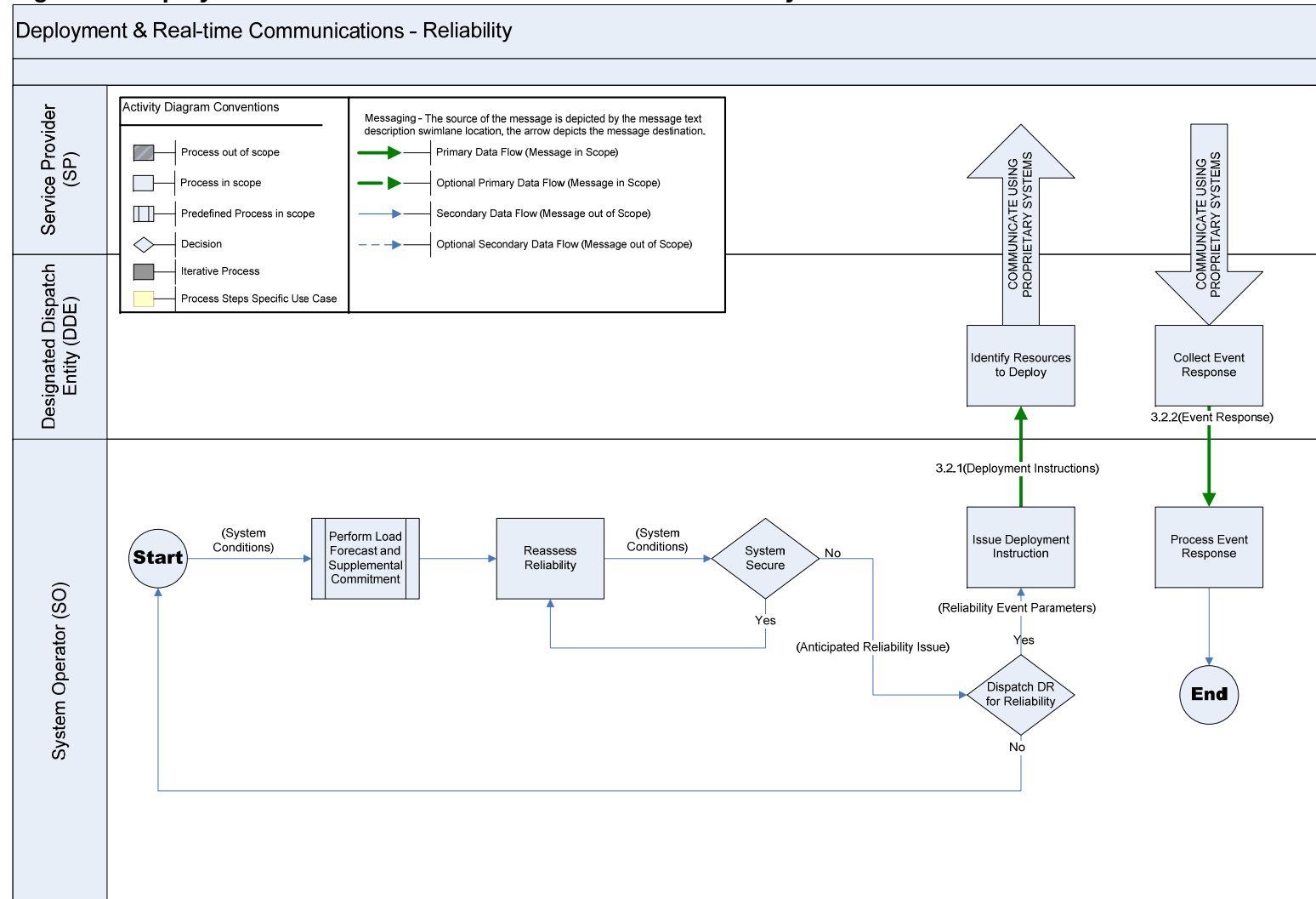
- If the SO determines that demand response will be deployed, the reliability event parameters are prepared by the SO to create a reliability event notification.
 - The deployment instruction is sent to the DDE.
 - The DDE identifies the demand resources to notify and relays the message to SPs through the proprietary communication system of the DDE.
- Real-time or near real-time response data is collected by DDE using the proprietary communication system of the DDE.
- The DDE sends the event response information to the SO.

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Activity Diagram and Data Flow:

Figure 6 - Deployment and Real-Time Communications - Reliability





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Table 11. Data Requirements by Interaction Number: Deployment & Real-Time Communications

			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
0 Common									
0	10	Submittal Date	Timestamp for the sender's use		O			O	O
0	11	Submitted By	User ID of submitter		O			O	O
0	12	Submitted Error	ID of submission error detected		O			O	O
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability		M	M	M	M	M
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality		M	M	M	M	M
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity		M	M	M	M	M
1 General Asset/Resource									
1	10	Service Location ID	Identifier assigned to the Service Location		M	O	O	M	M
1	11	Service Location Name	Name of the Service Location		O	O	O	M	M



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	O	O	M	M	
1	30	Asset Group ID	The identifier of a group of assets			O		O	
1	31	Asset Group Name	Name of the aggregated group of assets			O		O	
1	40	GenEMSID	Alias or point Identifier assigned to the Resource	M	M	M			
1	41	GenBillingID	Billing Identifier assigned to the Resource	M	M	M			
2		Location							



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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				M	M
2	31	Zone	Name of the Zone in which the Service Location is located				O	O
2	32	Zone Type	Type of Zone				O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	O	O	O	O	O
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O		
2	43	PNode	Name of the Price Node associated with the Service Location		O			
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location		M			



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource		O	O		O	
2	72	Connection Address	Address associated with the Connection Type		O	O		O	
5 Business Entity Relationships									
5	11	Service Provider ID	Identifier assigned to the Service Provider					M	M
5	12	Service Provider Name	Name of the Service Provider					O	O
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider		O	O	O		
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider		O	O	O		
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity		M	M	M	M	M
5	71	Scheduling Entity Name	Name of the Scheduling Entity		O	O	O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity		M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity		O	O	O	O	O
6	Device and Qualification								
6	20	Meter ID	Identifier assigned to the Meter		O	O	O		
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions					M	
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				M	M	M
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				M	M	M
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid				M	M	M



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
6	51	UFR Settings	Setting of the Under-Frequency Relay				M	M	M
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				M	M	M
7	Market/Program Enrollment								
7	10	Program ID	Program Identifier		O	O	O	M	M
7	11	Program Name	Name of the Program		O	O	O	M	M
7	12	Market	Type of wholesale market		O	O	O	O	O
7	13	Market Product	Market Product		O	O	O	O	O
7	30	Lead Time	Time between the advanced notification and deployment		O	O	O		
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market		O	O	O		
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market		O	O	O		



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying			O	O		
8	Offer Parameters								
8	10	Offer Limit Value	Offer Limit Value		O	O			
8	11	Offer Limit Type	Type of Offer Limit		O	O			
8	12	Offer Limit Interval	Offer Limit Interval		O	O			
8	21	Min Gen MW	Minimum MW available for dispatch		O	O			
8	22	MinGenCost	The cost per hour for each Min Gen MW value.		O	O			
8	40	Market Clearing Day	Market Clearing Day of the Offer		M	M	M	M	M
8	41	Schedule Name	Name or tag of the Offer		O	O	O	O	O
8	42	Schedule Description	Description of the Offer		O	O	O	O	O
8	43	Schedule Status	Status of the Offer		O	O	O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	O
9 Energy Market								
9	0	Instruction ID		O	O			
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	O	O			
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	O	O			
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	O	O			
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	O	O			
9	14	Energy Schedule - Cleared Price	Awarded Price	O				
9	15	Schedule ID		O	O			



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
9	20	Base Point	Per-interval dispatch instruction	M	M	O	M	
9	21	Breaker Status	Status of the Breaker for the Resource	M	M	O	M	O
9	22	Output MW	Real Power Output of the Generation Device	M	M	M	M	O
9	23	Output MVAR	Reactive Power Output of the Generation Device	M	M	O	M	O
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	O	O	O	O	O
9	27	Set Point	Final dispatch target level	M	M	O	M	
10	Ancillary Service Market							
10	0	Ancillary Service Instruction ID		O	O			



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	O		
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award		M			
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award		M			
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval		M			
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award		M			
10	17	Ancillary Service Schedule ID		O	O			
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	O	O	O		



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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
1 0	32	Regulation Base Point	Per-interval Regulation dispatch instruction	M	M	O		
1 0	33	Base Load MW	Level of Load at time of dispatch	O	O	O		M
1 2	Event and Performance							
1 2	10	Event ID	Identifier assigned to the Event				O	M
1 2	11	Deployment Type	Type of Deployment				M	
1 2	12	Event Day	Operating Date of Start of Event				M	M
1 2	13	Event Description	Description of the Event				M	O
1 2	14	Event Start Time	Time of Start of deployment period for Event				M	M
1 2	15	Operator Comment	Additional Event information provided by the Operator				O	O



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
				SO		DDE	SO	DDE	
				To	DDE	DDE	SO	DDE	SO
						Interaction	3.1.1	3.1.2	3.1.3
Regulation Signal	Dispatch Instruction	Real-Time Response					Deployment Instructions	Event Response	
Element			Short Description						
1 2	16	Deployment MW	Absolute or relative Deployment quantity					M	
1 2	17	Event Status	Status of the Event					O	O
1 2	18	Event End Time	Time of End of deployment period					M	M
1 2	19	Event Modification Number	A modification number for the event.					O	O
1 2	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.					O	O
1 2	112	Event Modification Reason Code	The reason the event is being cancelled or modified.					O	O
1 2	21	Baseline Dates	Dates of days used to calculate the Energy Baseline						O
1 2	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline						O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
1 2	23	Energy Baseline Value	Calculated Energy Baseline					O
1 2	24	Energy Baseline Timestamp	Timestamp of Energy Baseline					O
1 2	30	Reporting Interval	Interval size required for Reporting					O
1 2	31	Measurement Value Timestamp	The time when the value was last updated	O	O	M		M
1 2	32	Measurement Value	Value of the interval reading	O	O	M		M
1 2	33	Response Value	Response	O	O	O		O
1 2	991	Event & Performance comments	Comments associated with Event and Performance data				O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.6 Measurement and Performance – Baseline

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

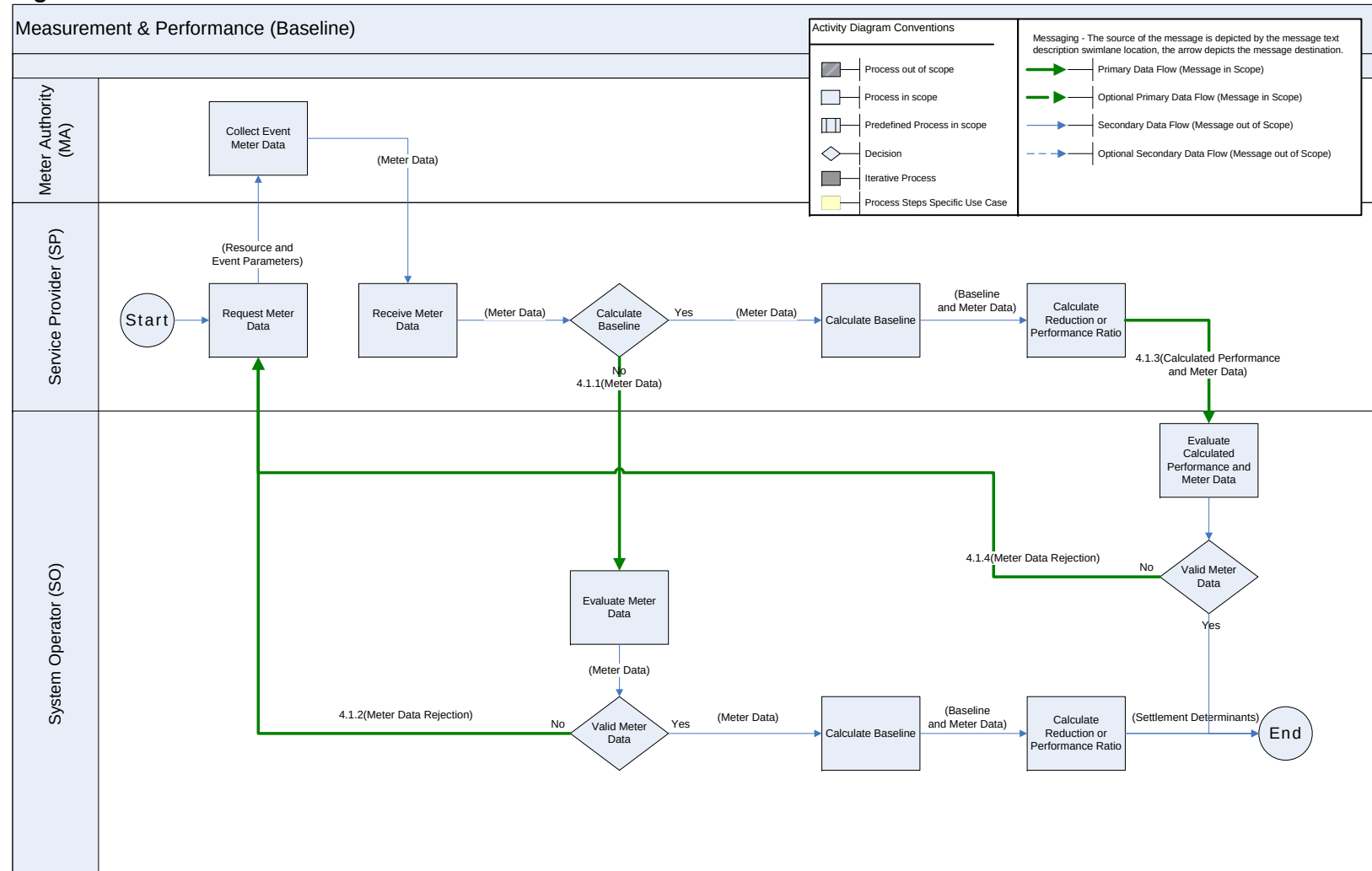
Use Cases: All use cases where Baseline applies (see Figure 7).

- The process begins when the SP requests event meter data from the MA.
- The MA sends the event meter data to the SP.
- If the SP is required to calculate the baseline, the SP uses the event meter data to calculate the baseline.
 - o The SP uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates the baseline, the SP sends the event meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate the baseline.
 - The SO uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.

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Activity Diagram and Data Flow:

Figure 7 - Measurement and Performance – Baseline



Note: Data elements for Measurement and Performance-Baseline are listed with Measurement and Performance-All Others in Table 12.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.7 Measurement and Performance - All Others

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

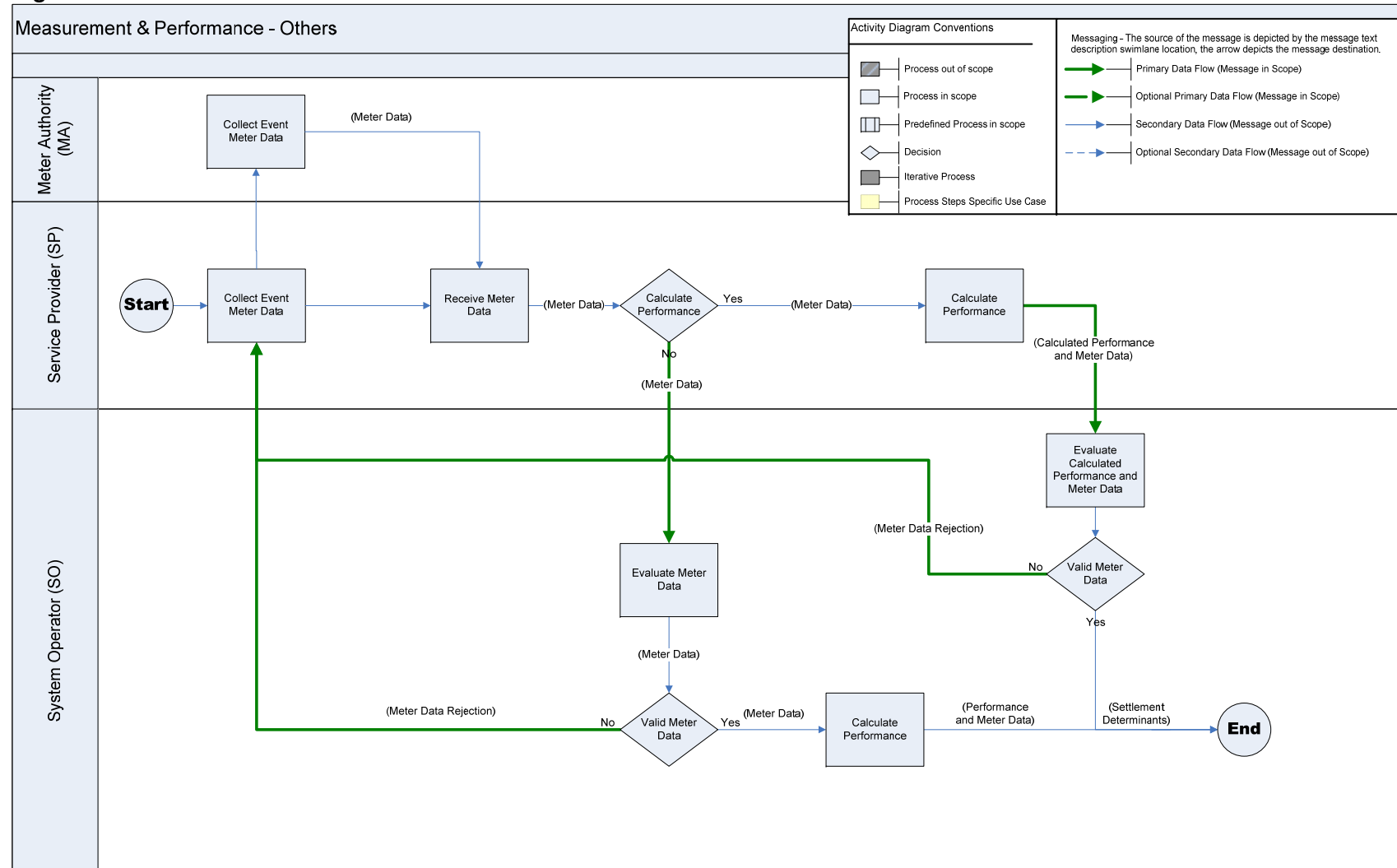
Use Cases: All use cases where Meter Before/Meter After, Maximum Base Load, or Meter Generator Output applies (see Figure 8).

- The process begins when the SP collects event meter data from the MA for the specified performance evaluation method.
 - o If the performance evaluation method is Meter Before/Meter After or Maximum Base Load, the MA sends the event meter data to the SP.
 - o If the performance evaluation method is Meter Generator Output, the SP uses the data from the meter on the generator.
- If the SP is required to calculate performance, the SP uses the event meter data to calculate performance.
 - o The SP uses the meter data to calculate the event reduction amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates performance, the SP sends the meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate performance.
 - The SO uses the event meter data to calculate the event reduction amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.

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Activity Diagram and Data Flow:

Figure 8 - Measurement and Performance – All Others





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Table 12. Data Requirements by Interaction Number: Measurement and Performance

				Process	4.0 Measurement & Performance							
					4.1 Baseline				4.2 Other			
				From	SP	SO	SP	SO	SP	SO	SP	SO
				To	SO	SP	SO	SP	SO	SP	SO	SP
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element				Short Description								
0	Common											
0	10	Submittal Date	Timestamp for the sender's use	O	O	O	O	O	O	O	O	
0	11	Submitted By	User ID of submitter	O	O	O	O	O	O	O	O	
0	12	Submitted Error	ID of submission error detected	O	O	O	O	O	O	O	O	
0	13	Rejection Code Type	Type of rejection message		M	O	M		M	O	M	
0	14	Rejection Code Value	Code referring to the reason for a rejection message		M	O	M		M	O	M	
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	M	
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M	



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				Process	4.0 Measurement & Performance							
					4.1 Baseline				4.2 Other			
				From	SP	SO	SP	SO	SP	SO	SP	SO
				To	SO	SP	SO	SP	SO	SP	SO	SP
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element				Short Description								
1	General Asset/Resource											
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	M	
1	11	Service Location Name	Name of the Service Location	M	M	M	M	M	M	M	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	M	O	O	O	O	O	O	O	
1	30	Asset Group ID	The identifier of a group of assets	M	M	M	M	M	M	M	M	
1	31	Asset Group Name	Name of the aggregated group of assets	O	O	O	O	O	O	O	O	
2	Location											



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				Process	4.0 Measurement & Performance							
					4.1 Baseline				4.2 Other			
				From	SP	SO	SP	SO	SP	SO	SP	SO
				To	SO	SP	SO	SP	SO	SP	SO	SP
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element				Short Description								
2	30	Zone ID		Identifier assigned to the Zone in which the Service Location is located	M	M	M	M	M	M	M	M
2	31	Zone		Name of the Zone in which the Service Location is located	O	O	O	O	O	O	O	O
2	32	Zone Type		Type of Zone	O	O	O	O	O	O	O	O
2	40	Electrical Node ID		Identifier assigned to the Electrical Node at which the Service Location is connected	O	M	M	M	O	M	M	M
2	41	Electrical Node Name		Name of the Electrical Node at which the Service Location is connected	O	O	O	O	O	O	O	O
2	42	Electrical Node Type		Type of Electrical Node at which the Service Location is attached	O				O			



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
2	43	PNode	Name of the Price Node associated with the Service Location	O				O			
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	O				O			
4	Grid Connection										
4	10	Loss Factor Type	Type of Loss Factor			M				M	
4	11	Loss Factor Value	Loss Factor			M				M	
5	Business Entity Relationships										
5	11	Service Provider ID	Identifier assigned to the Service Provider	O	O	O	O	O	O	O	O
5	12	Service Provider Name	Name of the Service Provider	O	O	O	O	O	O	O	O
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	O	O			O	O		



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider	O	O			O	O		
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	O	O			O	O		
5	44	Retail Rate	Retail Rate			O				O	
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	O	O	O	O	O	O	O	O
5	61	Meter Authority Name	Name of the Metering Authority	O	O	O	O	O	O	O	O
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	O	O	O	O	O	O	O
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O	O	O	O	O	O
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
Element			Short Description									
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O	O	O	O	
6	Device and Qualification											
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M	M	
6	2293	Measurement Interval	Interval of time between Measurement readings	O				O				
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	O	O	O	O	O	O	O	O	
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	O	O	O	O	O	O	O	O	
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	O	O	O	O	O	O	O	O	
6	51	UFR Settings	Setting of the Under-Frequency Relay	O	O	O	O	O	O	O	O	



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			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	0	0	0	0	0	0	0	0	
7	Market/Program Enrollment											
7	10	Program ID	Program Identifier	0	0	0	0	0	0	0	0	
7	11	Program Name	Name of the Program	0	0	0	0	0	0	0	0	
7	12	Market	Type of wholesale market	0	0	0	0	0	0	0	0	
7	13	Market Product	Market Product	0	0	0	0	0	0	0	0	
7	40	Response Method Type	Type of Response Method			0				0		
7	41	Response Method ID	Identifier assigned to the Response Method			0				0		
7	42	Response Method Name	Name of the Response Method			0				0		
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource			0				0		



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			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
7	991	Market Enrollment Comments	Comments associated with the Enrollment		O		O		O		O	
11	Capacity Market											
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	O	O	O	O	O	O	O	O	
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated	O	O	O	O	O	O	O	O	
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program			O				O		
11	41	Capacity Supply Obligation	Capacity Obligation			O				O		
11	50	Capacity Reference ID	Identifier assigned to the External System award			O				O		
11	991	Capacity Comments	Comments associated with the Capacity market			O				O		



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				Process	4.0 Measurement & Performance								
					4.1 Baseline				4.2 Other				
				From	SP	SO	SP	SO	SP	SO	SP	SO	
				To	SO	SP	SO	SP	SO	SP	SO	SP	
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
					Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
Element				Short Description									
12	Event and Performance												
12	10	Event ID	Identifier assigned to the Event	M	M	O	M	M	M	O	M		
12	11	Deployment Type	Type of Deployment			O				O			
12	12	Event Day	Operating Date of Start of Event			M				M			
12	14	Event Start Time	Time of Start of deployment period for Event	O	O	M	O	O	O	M	O		
12	16	Deployment MW	Absolute or relative Deployment quantity			O				O			
12	17	Event Status	Status of the Event			O				O			
12	18	Event End Time	Time of End of deployment period	O	O	M	O	O	O	M	O		
12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	O	O	O	O	O	O	O	O		



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline	O	O	O	O	O	O	O	O
12	23	Energy Baseline Value	Calculated Energy Baseline	O	O	O	O	O	O	O	O
12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline	O	O	O	O	O	O	O	O
12	30	Reporting Interval	Interval size required for Reporting	O	O	O	O	O	O	O	O
12	31	Measurement Value Timestamp	The time when the value was last updated	M	M	M	O	M	O	M	O
12	32	Measurement Value	Value of the interval reading	M	M	M	O	M	O	M	O
12	33	Response Value	Response	O	O	O	O	O	O	O	O
12	991	Event & Performance comments	Comments associated with Event and Performance data		O	O	O		O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model. Abbreviations/Acronyms correspond to the IDs shown in the figure.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a Service Location contains one or more Service Delivery Points. The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a Service Location is related to one-or-more Service Delivery Points (reading top to bottom) and every Service Delivery Point is related to exactly-one Service Location (reading bottom to top).

Optional Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all objects to function. Therefore, all objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

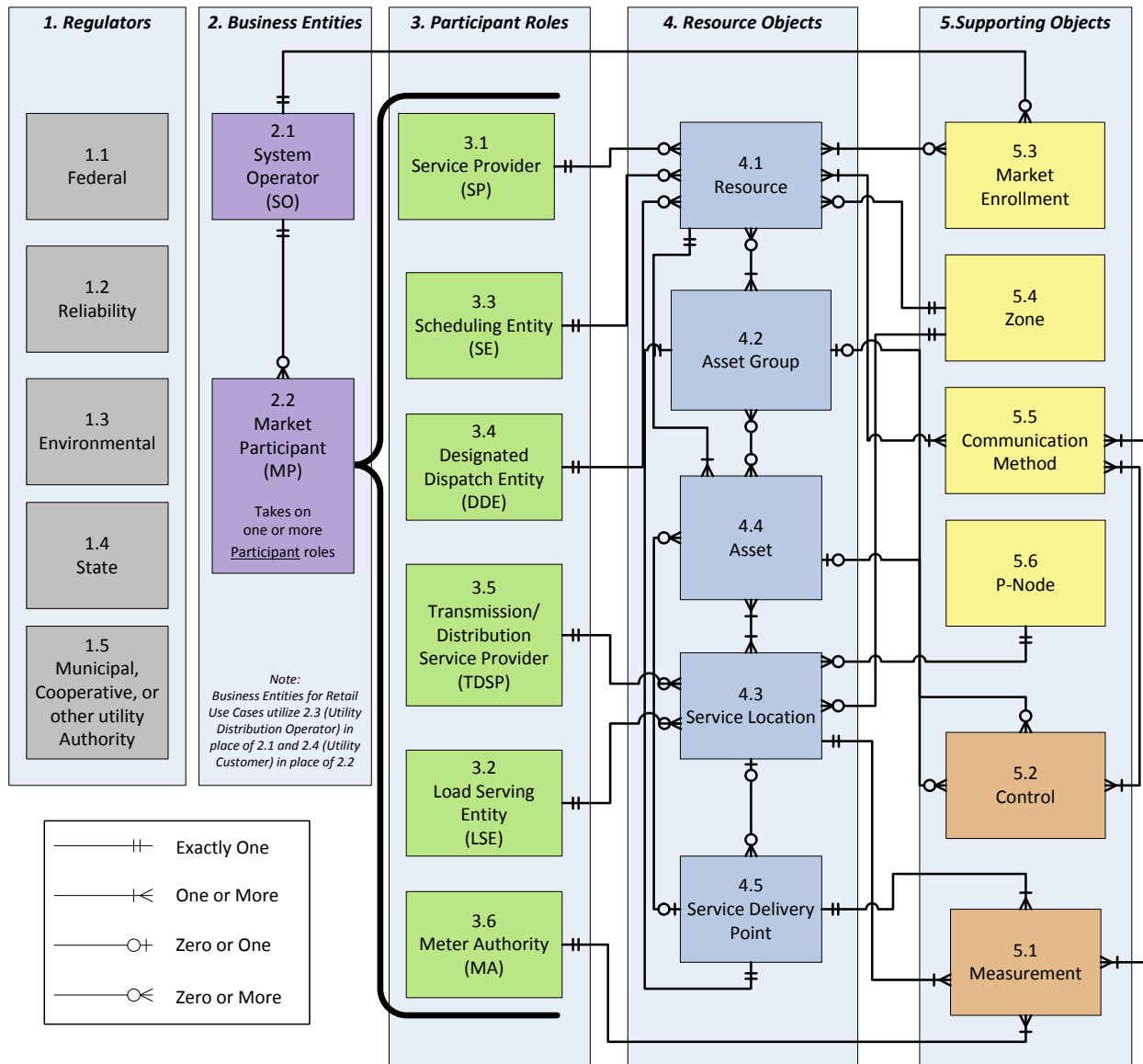
Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the applicable business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



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Figure 1A. Entity-Relationship Model for Smart Grid Use Cases





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018-B

Appendix B – Use Case Combinations

The following table is a complete list of use case combinations included in these Business Practice Standards.

Use Case	Product	Deployment	Performance Evaluation
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-2	Energy (Economic)	Bulk	MB/MA
E-B-3	Energy (Economic)	Bulk	MBL
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-4	Energy (Reliability)	Bulk	MGO
R-R-1	Energy (Reliability)	Resource	Baseline
R-R-2	Energy (Reliability)	Resource	MB/MA
R-R-3	Energy (Reliability)	Resource	MBL
R-R-4	Energy (Reliability)	Resource	MGO
R-S-1	Energy (Reliability)	Self	Baseline
R-S-2	Energy (Reliability)	Self	MB/MA
R-S-3	Energy (Reliability)	Self	MBL
R-S-4	Energy (Reliability)	Self	MGO



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Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-2	Capacity	Bulk	MB/MA
C-B-3	Capacity	Bulk	MBL
C-B-4	Capacity	Bulk	MGO
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
C-S-1	Capacity	Self	Baseline
C-S-2	Capacity	Self	MB/MA
C-S-3	Capacity	Self	MBL
C-S-4	Capacity	Self	MGO
G-B-1	Regulation	Bulk	Baseline
G-B-2	Regulation	Bulk	MB/MA
G-B-3	Regulation	Bulk	MBL
G-B-4	Regulation	Bulk	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
G-S-1	Regulation	Self	Baseline
G-S-2	Regulation	Self	MB/MA
G-S-3	Regulation	Self	MBL
G-S-4	Regulation	Self	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO



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4. Supporting Documentation

a. Description of Request:

WEQ Annual Plan Item 6(c) (ii) – “Develop Requirements and Use Cases for PAP 09 – Demand Response/Distributed Energy Resources” – Phase Two.

b. Description of Recommendation:

This recommendation associates the data elements to the use cases developed during the Phase One effort.

c. Business Purpose:

This recommendation has been developed in response to a request to include a Phase two effort for PAP-09 to associate data elements with the use cases developed in Phase 1 for standard DR and DER signals. Additionally, the recommendation addresses the directive from the WEQ Executive Committee for “the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted
- October 7, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:	Wholesale Electric Quadrant (WEQ)
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Request Title:	Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals – for NIST PAP09

1. RECOMMENDED ACTION:

☒ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The business activity diagrams and use cases presented in these Business Practice Standards illustrate the standard interactions between a System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets.

RECOMMENDED STANDARDS:

In response to NIST's Priority Action Plan 9, this recommendation contains draft ~~requirements~~ specifications, in the form of business activity diagrams, —use cases and data ~~requirements~~ elements for each interaction, to support the standardization of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. Common terminology from the NAESB Measurement and Verification Standards for Demand Response has been incorporated into the development of the business activity diagrams and use cases. As a result of the development of these Business Practice



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Standards, a standard set of actors and additional terminology will expand the existing NAESB documentation of associated terms and definitions for demand response.

WEQ-018

RECOMMENDED STANDARDS:

Executive Summary

Specifications for Wholesale Standard Demand Response Signals

The following addresses the business objectives and context for standardizing signals for DR and DER as part of the Smart Grid implementation, which is called for by NIST PAP 09. –This Business Practice Standard and data elements included herein are not intended to (i) require the use of any of these data elements, (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede ~~replace~~ applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

The business activity diagrams and use cases contained in this Business Practice Standard address the ~~requirements for~~ standardizing of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. To maintain consistency a master list of data elements and a common set of actors, terms and definitions have been adopted.

The following describes the end-to-end business activity diagrams relating to the wholesale market interactions between the System Operator (SO) and various Market Participants common to all ISOs/RTOs that offer opportunities for demand resources to participate in organized wholesale electric markets.



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Introduction

Specifications for Wholesale Standard Demand Response Signals

Purpose:

The purpose of the following is to provide standards developers with a context for understanding the range of interactions between wholesale electricity market System Operators and Market Participants across ~~the~~ various electricity systems and jurisdictions in the United States of America with some overlaps to Canada. A major objective in producing these Business Practice Standards is to emphasize the importance of interoperability at all levels of the GWAC interoperability framework.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for ~~clarification~~ informational purposes.



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Scope: There are certain principles and boundaries that have been established. These include:

1. Demand Response practices ~~must~~should be consistent with NERC and applicable regional reliability authority requirements.
2. All involved entities are registered through the applicable ISO/RTO market participant registration process, which may include credit checks. However, the specifics related to the business processes associated with Market Participant registration are not documented in these ~~requirements~~specifications.
3. Settlement input parameters are defined as an output to the measurement and performance business process. However, specific business processes associated with settlements are not documented in these ~~requirements~~specifications.
4. Intra-system operator information exchanges and specific market rules, calculations, algorithms, and Performance Evaluation models are excluded.
5. Planning functions are not documented in these ~~requirements~~specifications. This includes, but is not limited to, long-term load forecasting and transmission planning.
6. Capacity auctions, awards processes, and resource certification are not documented in these ~~requirements~~specifications.
7. References in these Recommendations to "Dispatch", "Markets", and "Reliability", are made relative to Demand Response and apply to Demand Response resources only, not to Generation resources.
8. Compliance standards for Demand Response resources are determined by the market rules or other Governing Documents ~~of the respective System Operator~~ and are specific to the product or service and the reliability need being addressed.

Business Practice Standards

018-1 Specifications for Wholesale Standard Demand Response Signals

The following describes the wholesale market business activity diagram and provides the necessary business context and reference architecture for use cases between the System Operator and Market Participant.

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to (i) require the use of any these data elements; (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede~~replace~~ applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.



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018-1.1 Conventions

- Glossary terms are capitalized.
- ~~Implementation does not require every i~~ Interactions shown in the business activity diagrams are not required.



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018-2 ACTORS

The actors listed in the table below are specific to this recommendation and are a subset of the actors and related objects defined in WEQ-000. Details on the relationships between the actors and related objects are further defined in Appendix A.

Table 1 - Actor Roles

Term	Actor ID ¹
Designated Dispatch Entity	3.4
Load Serving Entity	3.2
Meter Authority	3.6
Scheduling Entity	3.3
Service Provider	3.1
System Operator	2.1
Transmission/Distribution Service Provider	3.5

¹ The Actor ID shown in the table refers to the item number of the corresponding actor or related object in the Entity-Relationship Diagram provided in Appendix A. Definitions of the actors and related objects are included in WEQ-000.



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018-1.3

USE CASE OVERVIEW

The use cases presented in these Business Practice Standards represent a combination of three dimensions of demand response participation in wholesale markets: product, deployment, and performance evaluation method. As shown in the table below, product and deployment dimensions are identified by a single alphabetic character and performance evaluation methods are indicated by a numeric identifier; each character is separated by a dash (-). For example, use case E-R-1 refers to the use case for the energy (economic) product with a resource-specific deployment and performance evaluated using a Baseline.

The use cases included in this Business Practice Standard are not to be required or exhaustive and are provided for ~~clarification~~ informational purposes.

Table 2 - Use Case Dimensions

Product	
Energy (Economic)	E
Energy (Reliability)	R
Capacity	C
Reserve	V
Regulation	G
Deployment	
Bulk	B
Resource	R
Self	S
Performance Evaluation	
Baseline	1
MB/MA	2
MBL	3
MGO	4



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A sample of the use case list is shown in the table below. Appendix B contains the complete list of valid use case combinations.

Table 3 - Sample Use Case List

Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO

The Figure 1 illustrates the business activity diagrams for use cases combinations that are considered to be representative of the types of demand response in [organized](#) wholesale electricity markets today. Each business activity diagram description includes a table of the use cases to which the business activity diagram applies, followed by the specific data elements that are exchanged in each numbered interaction shown in the business activity diagram.

The wholesale Demand Response end-to-end business activity diagram for the interactions between the SO and the Service Provider SP is comprised of four major functions:

- 1.0 Enrollment & Qualification,
- 2.0 Scheduling & Award Notification,
- 3.0 Deployment & Real-Time Communications,
- 4.0 Measurement & Performance.

Two additional activities are shown in the high-level business process flow, but are considered outside the scope of what is required for the interactions flow for demand response:

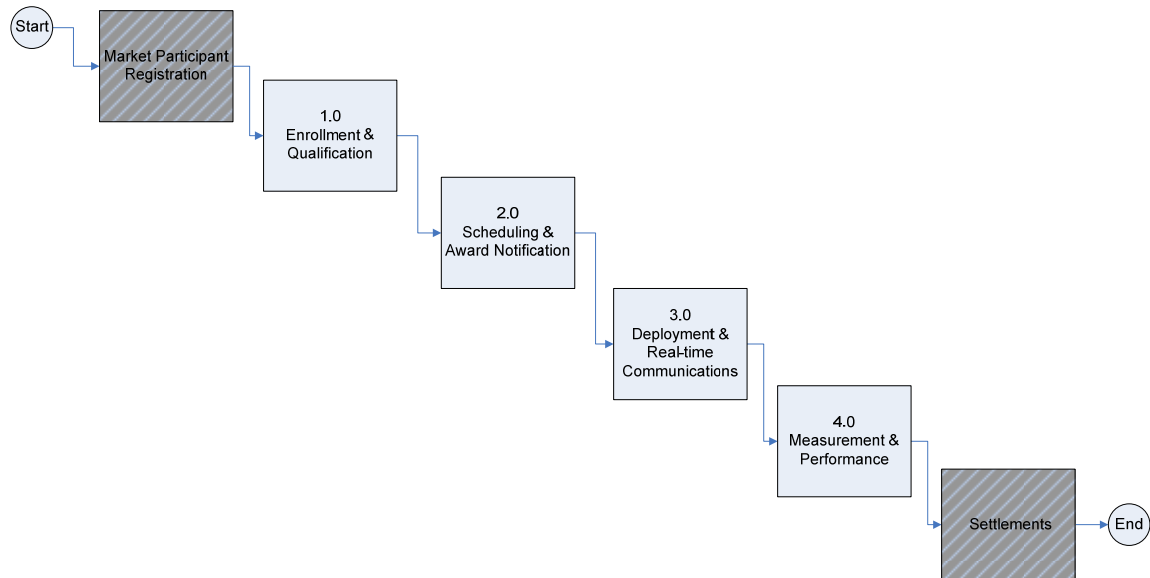
- Market Participant Registration
- Settlements



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Figure 1 - Demand Response



Business activity diagrams are numbered using the sequence shown in Figure 1. If a business process is further specified, the second position in the number sequence indicates this specification, as in 2.1 – Scheduling and Award Notification – Economic and 2.2 – Scheduling and Award Notification – Reliability.

Interactions between the System Operator and the Market Participant are numbered for each business activity diagram. To continue with the example above, 2.1.1 – Offer Parameters, is the first interaction between the System Operator and Market Participant in the business activity diagram 2.1 – Scheduling and Award Notification – Economic.

A table containing the data elements used in the interactions of the business activity diagram is shown. The numbers of the interactions in the table correspond to the numbered interactions in the business activity diagram. Cells showing an “M” (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an “O” (optional) are data elements that may be left blank if not used in a given interaction.



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018-1.4 SPECIFIC USE CASES

018-1.4.1 Enrollment and Qualification

Overview: The Enrollment and Qualification process documents the steps required to enroll a Resource in a wholesale demand response program.

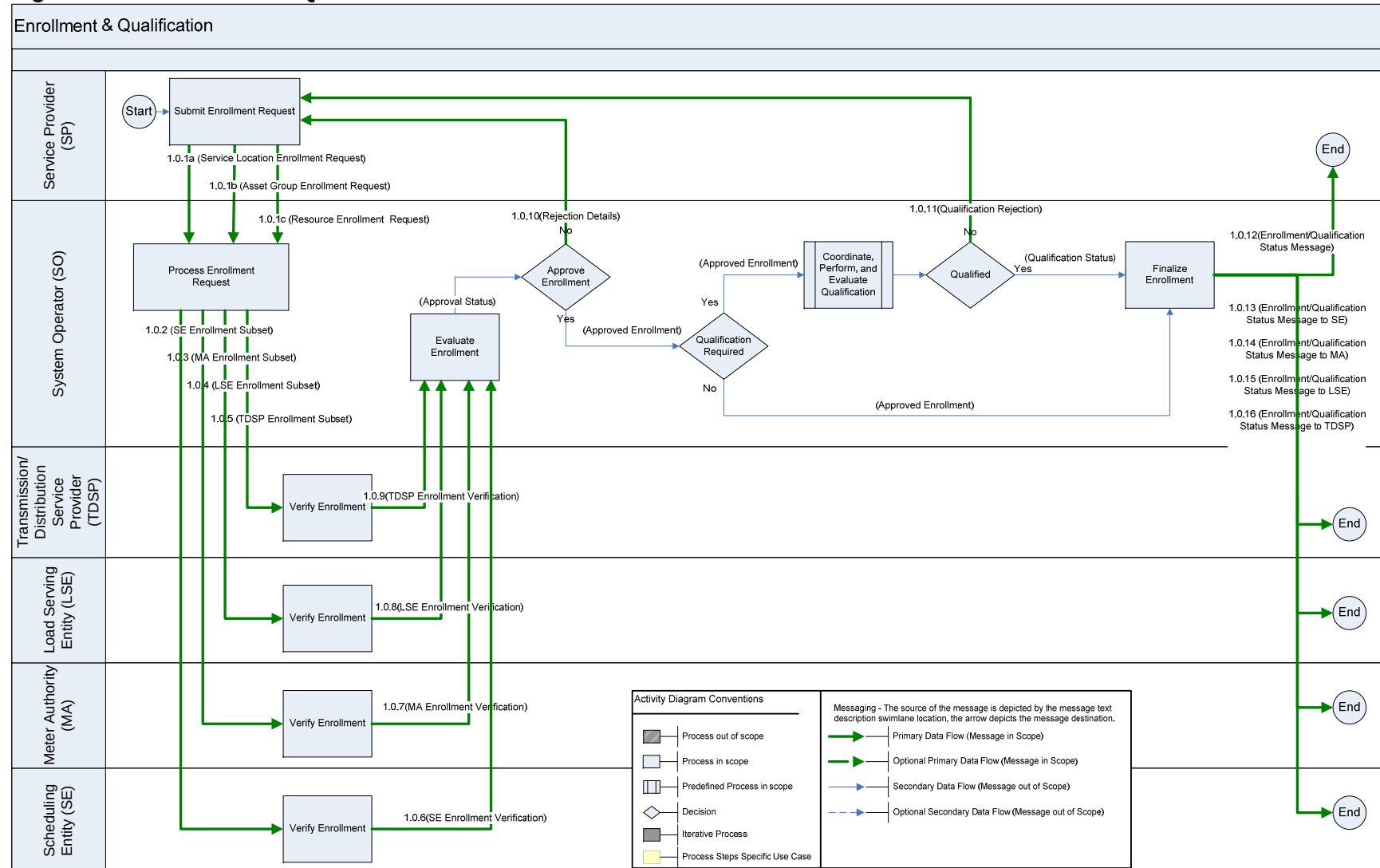
Use Cases: All valid use cases defined in these Business Practice Standards (see Figure 2)

- The process begins when the SP submits an enrollment request to the SO.
- The SO processes the enrollment request, which may include interactions with the TDSP, LSE, MA and/or SE.
- The SO evaluates the enrollment request, which may include verification information from the TDSP, LSE, MA and/or SE.
- The result of the evaluation is the approval or rejection of the enrollment request.
 - o If the enrollment request has been rejected, the SO sends information to the SP, indicating the rejection details.
 - o If the enrollment request has been approved, a determination is made by the SO as to whether qualification of the Resource's capability is required prior to final approval.
 - If no qualification is required, the SO sends information to the SP, indicating the approval of the enrollment.
 - If qualification is required, the SO coordinates the qualification procedure with the SP.
 - If the Resource has failed to qualify, the SO sends information to the SP, indicating the qualification rejection details.
 - If the Resource achieves qualification, the SO sends information to the SP and enrollment is finalized.
- At the end of the Enrollment and Qualification process, the SO finalizes enrollment, notifies the SP and may also notify the TDSP, LSE, MA and/or SE.

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Activity Diagram and Data Flow:

Figure 2 - Enrollment and Qualification





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Table 4. Data **Requirements** Elements by Interaction Number 1.0.1a through 1.0.9: Enrollment and Qualification

				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
					Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element				Short Description											
0	Common														
0	10	Submittal Date	Timestamp for the sender's use	O	O	M	O	O	O	O					
0	11	Submitted By	User ID of submitter	O	O	M	O	O	O	O					
0	12	Submitted Error	ID of submission error detected	O	O	M	O	O	O	O					
0	13	Rejection Code Type	Type of rejection message												
0	14	Rejection Code Value	Code referring to the reason for a rejection message												
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	M	M	M	M	
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M	M	M	M	
1	General Asset/Resource														



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	M	M	M	M	
1	11	Service Location Name	Name of the Service Location	O	O	M	M	O	O	O	M	O	O	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	O	M	M	O	O	O	M	O	O	O	
1	30	Asset Group ID	The identifier of a group of assets	M	M	M	M	M	M	M					
1	31	Asset Group Name	Name of the aggregated group of assets	M	M	M	M	M	M	M					
1	40	GenEMSID	Alias or point Identifier assigned to the Resource			M									
1	41	GenBillingID	Billing Identifier assigned to the Resource			M									



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
1	50	Business Segment	NAICS code of the Service Location	O	O	O									
1	51	Batch Load Flag	Flag set if the Resource is a Batch Load	O	O	O									
1	991	General Resource Comments	General comments associated with the Resource	O	O	O	O	O	O	O					
2	Location														
2	10	Address1	Address line 1	M	M	M	M	M	M	M	M			M	
2	11	Address2	Address line 2	O	O	O	O	O	O	O	O			O	
2	12	City	City	M	M	M	M	M	M	M	M			M	
2	13	Service Location State/Province	State or Province two-letter code	M	M	M	M	M	M	M	M			M	
2	14	Service Location Zip/Postal Code	Zip or Postal Code	M	M	M	M	M	M	M	M			M	
2	15	Service Location Country	Country	M	M	M	M	M	M	M	M			M	
2	20	GPS Coordinates	Latitude Latitude and longitude	O	O	O									



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
2	21	Weather Station	Weather Station code associated with the Service Location	M	M	M	O	O						
2	22	TimeZoneName	Name of the Time Zone in which the Service Location is located	O	O	O								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M	M	M	M	M				
2	31	Zone	Name of the Zone in which the Service Location is located	M	M	M	O	O	O	O				
2	32	Zone Type	Type of Zone	M	M	M	O	O	O	O				
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M	M	M	M	M	O	M				
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	M	M	M	O	O	O	O				M



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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	M	M	M	M	M	M	M				M
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O	O	O	O	O				
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M	M	M	M	M			M
2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	O	O	O	O	O	O	O	O			O
2	51	Asset Multiplier	Number of identical assets within the Service Location	O	O	O								
2	60	NERC Control Area	The NERC control area of the resource	O	O	O								
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource	O	O	O								



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
2	72	Connection Address	Address associated with the Connection Type	O	O	O									
2	991	Location Comments	Comments associated with the Service Location	O	O	O	O	O	O						
3	Contact														
3	10	Contact Type	Interest code associated with a Contact	M	M	M									
3	11	Contact Priority	Order in which this Contact should be selected	M	M	M									
3	12	DUNS Number	DUNS business number	M	M	M									
3	13	Third Party	Flag set if the Contact is a third-party entity	O	O	O									
3	20	Title	Title of the Contact	O	O	O									
3	21	First Name	First Name of the Contact	M	M	M									
3	22	Last Name	Last Name of the Contact	M	M	M									
3	23	Contact Middle Name	Middle Name of the Contact	O	O	O									
3	30	Contact Method	Method of communication with the Contact	M	M	M									



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				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version		MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element				Short Description											
3	31	Contact Address Data	Method-dependent Address of the Contact		M	M	M								
3	32	Contact Method Priority	Order in which a Communication Method should be selected for a Contact		O	O	O								
3	991	Contact Comments	Comments associated with the Contact		O	O	O								
4	Grid Connection														
4	10	Loss Factor Type	Type of Loss Factor		M	M	M	M	M						O
4	11	Loss Factor Value	Loss Factor		M	M	M	M	M						O
4	12	Connect Voltage	Voltage level		M	M	M	O	O	O	O				
4	991	Grid Connection Comments	Comments associated with the Attributes of the Resource		O	O	O								
5	Business Entity Relationships														
5	11	Service Provider ID	Identifier assigned to the Service Provider		M	M	M	M	M			M			



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			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
5	12	Service Provider Name	Name of the Service Provider	M	M	M	M	M			O			
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	M	M	M	M	M			M			
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider	M	M	M	M	M			O			M
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	M	M	M	M	M	O	O				O
5	30	Load-Serving Entity ID	Identifier assigned to the Load-Serving Entity	M	M	M	M	M	O	O				
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity	M	M	M	M	M	O	O				
5	40	Retail Rate ID	Identifier assigned to the Retail Rate	M	M	M			O					
5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location	O	O	O			O				O	
5	42	Retail Rate Name	Name of the Retail Rate for the Service Location	M	M	M			O				M	



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
5	43	Retail Rate Description	Description of the Retail Rate	O	O	O			O				O		
5	44	Retail Rate	Retail Rate	M	M	M			O				M		
5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider	M	M	M									
5	51	Meter Installation Provider Name	Name of the Meter Installation Provider	M	M	M									
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	M	M	M	M	M			M			M	
5	61	Meter Authority Name	Name of the Metering Authority	M	M	M	M	M			O			O	
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M	M				M			M	
5	71	Scheduling Entity Name	Name of the Scheduling Entity	M	M	M	M				O			O	
5	80	Designated Dispatch Entity ID	~~Identifier~~ Identifier assigned to the Designated Dispatch Entity	M	M	M	M				M			M	
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	M	M	M	M				O			O	



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
5	991	External Entity Comments	Comments associated with the External Entity	O	O	O									
6	Device and Qualification														
6	10	Meter Configuration	Configuration of the Meter at the Service Location	M	M	M	M								
6	11	Parent Meter ~~id~~ ID	ID of a Master or Parent Meter	O	O	O	O	O							
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M				M	
6	21	Meter Type	Type of Meter installed at the Service Location	M	M	M	M								
6	22	Meter Manufacturer	Manufacturer of the Meter	M	M	M									
6	221	Meter Installation Date	Date of Installation of the Meter	M	M	M									
6	222	PT Ratio	Ratio of the Potential Transformer	O	O	O									
6	223	Meter Installer License	Professional License Number of the Installer of the Meter	O	O	O									



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter	O	O	O									
6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter	M	M	M									
6	226	Meter Test Frequency	Frequency of Tests of the Meter	O	O	O									
6	227	Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter	M	M	M									
6	228	Date of Last Meter Test	Date of Last Test of the Meter	O	O	O									
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator	M	M	M	O	M							
6	2291	Meter Test Results	Results of Tests of the Meter	M	M	M									



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	M	M	M									
6	2293	Measurement Interval	Interval of time between Measurement readings	M	M	M									
6	2294	ANSI Compliance	ANSI standard with which the Meter complies	O	O	O									
6	2295	Meter Owner	Owner of the Meter	M	M	M									O
6	2296	Meter Asset Comments	Comments associated with the Meter Asset	O	O	O									
6	23	Meter Model	Model of the Meter	M	M	M									
6	24	Meter Rating	Load Rating of the Meter	O	O	O									
6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units	M	M	M									
6	26	Meter Accuracy Class	Accuracy Class of the Meter	M	M	M									
6	27	Meter Loss Compensation	Line Losses included in the Meter	M	M	M									



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			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error	O	O	O									
6	29	Meter Phase	Specific Phase information	O	O	O									
6	291	CT Ratio	Ratio of the Current Transformer	M	M	M									
6	30	Distributed Generator Type	Type of Distributed Generator	M	M	M									
6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator	M	M	M									
6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator	M	M	M									
6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator	M	M	M									
6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator	O	O	O									



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			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
6	35	Manufactured Date of the Distributed Generator	Date of Manufacture of the Distributed Generator	O	O	O								
6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator	O	O	O								
6	37	Generator In-Service Date	Date the Distributed Generator became operational	M	M	M								
6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours	M	M	M								
6	39	Distributed Generator Name	Name of the Distributed Generator	M	M	M								
6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP	M	M	M								



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			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location	M	M	M								
6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid	M	M	M								
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	M	M	M								
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	O	O	O								
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	M	M	M								
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	O	O	O								



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			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
6	51	UFR Settings	Setting of the Under-Frequency Relay	O	O	O									
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	M	M	M									
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O									
7	Market/Program Enrollment														
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	M	M	M	M	M
7	11	Program Name	Name of the Program	O	O	O	O	O	O	O	O	O	O	O	O
7	12	Market	Type of wholesale market	M	M	M	M	M	M	M					
7	13	Market Product	Market Product	M	M	M	M	M	M	M	M				M
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	M	M	M	O	O	O	O	M				
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M	O	O	O	O	M				



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Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
7	23	Resource Type	Type of Resource	M	M	M	M	M	M	M	M			M
7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service	M	M	M	M				M			O
7	25	Enrollment End Date	Date of Termination of Enrollment	M	M	M	M	M	M	M	M			O
7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service	M	M	M	M				M			O
7	30	Lead Time	Time between the advanced notification and deployment	O	O	O	O	O						
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	M	M	M	M	M						
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	M	M	M	M	M						
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	O	O	O								



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				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
7	40	Response Method Type	Type of Response Method	M	M	M	O	O	O	O	O			
7	41	Response Method ID	Identifier assigned to the Response Method	M	M	M	M	M	M	M				
7	42	Response Method Name	Name of the Response Method	O	O	O	O	O	O	O				
7	43	Response Method Value	Value of the Response Method	M	M	M	M	O	O	O	M			
7	44	Verified Capability	Audited Capability	O	O	O	M				M			
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	O	O	O								
7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	M	M	M	M	O			M			
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	O	O	O	O	O						
7	991	Market Enrollment Comments	Comments associated with the Enrollment	M	M	M	O	O	O	O	O			
8	Offer Parameters													



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
8	10	Offer Limit Value	Offer Limit Value	M	M	M	M	O			M				
8	11	Offer Limit Type	Type of Offer Limit	M	M	M	M	O			M				
8	12	Offer Limit Interval	Offer Limit Interval	M	M	M	M	O			M				
8	20	Physical Min Gen	Minimum Operating Level of a Resource	M	M	M	O				O			O	
8	21	Min Gen MW	Minimum MW available for dispatch	M	M	M	O	O			O			O	
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	M	M	M	O	O			O			O	
8	23	Ramp Rate Type	Type of Ramp Rate	M	M	M	M				M				
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	M	M	M	M				M				
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	M	M	M	M				M				



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	M	M	M	M					M			
8	30	Offer Dispatch Type	Type of Offer	M	M	M									
8	31	Offer Segment MW	Energy of Segment of the Offer	O	O	M									
8	32	Offer Segment Price	Price of Segment of the Offer	O	O	M									
8	33	Offer Segment Hour	Hour of Segment of the Offer	O	O	M									
8	34	Startup Cost	Cost of starting a response activity	O	O	M									
8	35	Strike Price	Threshold Price	O	O	M									
8	36	Offer Expiration Date	Date of Expiration of the Offer	O	O	M									
8	37	Startup Cost Type	Type of startup cost	M	M	M									
8	38	Offer Commit Status	Commitment status of offer	M	M	M									



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
8	39	Offer Dispatch Status	Dispatch Status of Offer	M	M	M								
8	331	Offer Price Curve Slope	Flag to smooth offer segments from step function to slope	M	M	M								
8	332	StrikePriceType	Type of strike price	O	O	O								
8	40	Market Clearing Day	Market Clearing Day of the Offer	O	O	O	O							
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O							
8	42	Schedule Description	Description of the Offer	O	O	O	O							
8	43	Schedule Status	Status of the Offer	M	M	M	O							
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O							
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint	M	M	M								
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.	M	M	M								



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description												
8	73	Operational Constraint Value	Value of the Constraint Type and Interval	M	M	M									
9	Energy Market														
9	0	Instruction ID		M	M	M									
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule												
9	11	Energy Schedule - End Time	End Time of the Energy Schedule												
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule												
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule												
9	14	Energy Schedule - Cleared Price	Awarded Price												
9	15	Schedule ID		M	M	M									



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version		MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element				Short Description											
9	20	Base Point	Per-interval dispatch instruction												
9	21	Breaker Status	Status of the Breaker for the Resource												
9	22	Output MW	Real Power Output of the Generation Device												
9	23	Output MVAR	Reactive Power Output of the Generation Device												
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services												
9	27	Set Point	Final dispatch target level												
10	Ancillary Service Market														
10	0	Ancillary Service Instruction ID													
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	M									



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted	O	O	O								
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award											
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award											
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval											
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award											
10	16	Ancillary Service Award - Cleared Price	Awarded Price											
10	17	Ancillary Service Schedule ID	?											



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
Service Location Enrollment	Asset Group Enrollment	Resource Enrollment		SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification			
Element			Short Description											
10	20	Ancillary Service Product Qualification Type	Type of Qualification	M	M	M	M				M			
10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid	O	O	O								
10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource	M	M	M	M				M			
10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified	M	M	M	M				M			
10	24	Requalification Requirement	Flag set if Requalification is Required	O	O	O								
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule											
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction											
10	33	Base Load MW	Level of Load at time of dispatch											



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			Process	1.0 Enrollment & Qualification														
			From	SP			SO				SE	MA	LSE	TDSP				
			To	SO			SE	MA	LSE	TDSP	SO							
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9				
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification				
Element			Short Description															
11	Capacity Market																	
11	10	Capacity Type	Type of Capacity	M	M	M	O	O										
11	11	Capacity Type description	Description of the Type of Capacity	O	O	O	O	O										
11	20	Peak Value	Measurement of Peak	M	M	M	O	O							M			
11	21	Peak Type	Type of measurement of Peak	M	M	M	O	O							M			
11	22	Peak Date/Time	Date and Time of measurement of Peak	M	M	M	O	O							M			
11	23	Nominal Capacity	Nominated load	M	M	M	O	O										
11	24	Qualified Capacity	Nominal ICAP derated for performance	O	O	O												
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	M	M	M	O	O										



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated	M	M	M	O	O							
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	O	O	O									
11	41	Capacity Supply Obligation	Capacity Obligation												
11	50	Capacity Reference ID	Identifier assigned to the External System award	O	O	O	O	O							
11	991	Capacity Comments	Comments associated with the Capacity market	O	O	O	O	O							



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Table 5. Data **Requirements** Elements by Interaction Number 1.0.10 through 1.0.16: Enrollment and Qualification

			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
0 Common											
0	10	Submittal Date	Timestamp for the sender's use	O	O	O			O	O	
0	11	Submitted By	User ID of submitter	O	O	O			O	O	
0	12	Submitted Error	ID of submission error detected	O	O	O			O	O	
0	13	Rejection Code Type	Type of rejection message	M	M						
0	14	Rejection Code Value	Code referring to the reason for a rejection message	M	M						
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	
1 General Asset/Resource											
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
1	11	Service Location Name	Name of the Service Location	M	M	M	M	M	M	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	M	M	M	O	O	O	
1	30	Asset Group ID	The identifier of a group of assets			O	O	O	O	O	
1	31	Asset Group Name	Name of the aggregated group of assets			O	O	O	O	O	
1	40	GenEMSID	Alias or point Identifier assigned to the Resource			M					
1	41	GenBillingID	Billing Identifier assigned to the Resource			M					
1	50	Business Segment	NAICS code of the Service Location								
1	51	Batch Load Flag	Flag set if the Resource is a Batch Load			O			O	O	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
1	991	General Resource Comments	General comments associated with the Resource	O	O	O			O	O	
2	Location										
2	10	Address1	Address line 1	M	M	O	M		O	O	
2	11	Address2	Address line 2	O	O	O	O		O	O	
2	12	City	City	M	M	O	M		O	O	
2	13	Service Location State/Province	State or Province two-letter code	M	M	O	M		O	O	
2	14	Service Location Zip/Postal Code	Zip or Postal Code	M	M	O	M		O	O	
2	15	Service Location Country	Country	M	M	O	M		O	O	
2	20	GPS Coordinates	~~Latitude~~ Latitude and longitude								
2	21	Weather Station	Weather Station code associated with the Service Location			O			O	O	
2	22	TimeZoneName	Name of the Time Zone in which the Service Location is located								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M			M	M	



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			Process	1.0 Enrollment & Qualification						
			From	SO		SO				
			To	SP		SP	SE	MA	LSE	TDSP
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element			Short Description							
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O			O	O
2	32	Zone Type	Type of Zone	O	O	O			O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M		M	M		M	M
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O		O			O	O
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O		O			O	O
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O			O	O
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M		M	M



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				Process	1.0 Enrollment & Qualification							
				From	SO		SO					
				To	SP		SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	O	O	O	O			O		
2	51	Asset Multiplier	Number of identical assets within the Service Location									
2	60	NERC Control Area	The NERC control area of the resource									
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource									
2	72	Connection Address	Address associated with the Connection Type									
2	991	Location Comments	Comments associated with the Service Location	O	O	O						
3	Contact											
3	10	Contact Type	Interest code associated with a Contact									
3	11	Contact Priority	Order in which this Contact should be selected									



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				Process	1.0 Enrollment & Qualification							
				From	SO		SO					
				To	SP		SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
3	12	DUNS Number		DUNS business number								
3	13	Third Party		Flag set if the Contact is a third-party entity								
3	20	Title		Title of the Contact								
3	21	First Name		First Name of the Contact								
3	22	Last Name		Last Name of the Contact								
3	23	Contact Middle Name		Middle Name of the Contact								
3	30	Contact Method		Method of communication with the Contact								
3	31	Contact Address Data		Method-dependent Address of the Contact								
3	32	Contact Method Priority		Order in which a Communication Method should be selected for a Contact								
3	991	Contact Comments		Comments associated with the Contact	O	O						
4	Grid Connection											
4	10	Loss Factor Type		Type of Loss Factor			O			O	O	
4	11	Loss Factor Value		Loss Factor			O			O	O	
4	12	Connect Voltage		Voltage level								



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
Rejection Details	Qualification Rejection	Qualification Status to SP		Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP				
Element			Short Description								
4	991	Grid Connection Comments	Comments associated with the Attributes of the Resource	O	O	O					
5			Business Entity Relationships								
5	11	Service Provider ID	Identifier assigned to the Service Provider	M	M	M	M		M	M	
5	12	Service Provider Name	Name of the Service Provider	O	O	O	O		O	O	
5	20	Transmission/Distributi on Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	M	M	M	M		M	M	
5	21	Transmission/Distributi on Service Provider Name	Name of the Transmission/Distribution Service Provider	O	O	O	O		O	O	
5	22	Transmission/Distributi on Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	O	O	O	O		O	O	
5	30	Load-Serving Entity ID	Identifier assigned to the Load- Serving Entity	O	O	M			M	M	
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity	O	O	O			O	O	
5	40	Retail Rate ID	Identifier assigned to the Retail Rate			O			O	O	



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
5	41	Retail Rate Code	Code representing the Retail Rate for the Service Location			O			O	O	
5	42	Retail Rate Name	Name of the Retail Rate for the Service Location			O			O	O	
5	43	Retail Rate Description	Description of the Retail Rate			O			O	O	
5	44	Retail Rate	Retail Rate			O			O	O	
5	50	Meter Installation Provider ID	Identifier assigned to the Meter Installation Provider			O			O	O	
5	51	Meter Installation Provider Name	Name of the Meter Installation Provider			O			O	O	
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	M	M	M					
5	61	Meter Authority Name	Name of the Metering Authority	O	O	O					
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M					
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O					
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	M	M					
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O					



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Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
5	991	External Entity Comments	Comments associated with the External Entity	O	O	O					
6	Device and Qualification										
6	10	Meter Configuration	Configuration of the Meter at the Service Location								
6	11	Parent Meter ~~id~~ ID	ID of a Master or Parent Meter								
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M				
6	21	Meter Type	Type of Meter installed at the Service Location								
6	22	Meter Manufacturer	Manufacturer of the Meter								
6	221	Meter Installation Date	Date of Installation of the Meter								
6	222	PT Ratio	Ratio of the Potential Transformer								
6	223	Meter Installer License	Professional License Number of the Installer of the Meter								
6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter								
6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter								



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			From	SO		SO				
			To	SP		SP	SE	MA	LSE	TDSP
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element			Short Description							
6	226	Meter Test Frequency	Frequency of Tests of the Meter							
6	227	Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter							
6	228	Date of Last Meter Test	Date of Last Test of the Meter							
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator			O			O	O
6	2291	Meter Test Results	Results of Tests of the Meter							
6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation							
6	2293	Measurement Interval	Interval of time between Measurement readings							
6	2294	ANSI Compliance	ANSI standard with which the Meter complies							
6	2295	Meter Owner	Owner of the Meter	O	O	O		O		O
6	2296	Meter Asset Comments	Comments associated with the Meter Asset	O						
6	23	Meter Model	Model of the Meter							



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				From	SO		SO				
				To	SP		SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description							
6	24	Meter Rating	Load Rating of the Meter								
6	25	Meter Multiplier (kH)	Multiplier used to convert pulses into power units								
6	26	Meter Accuracy Class	Accuracy Class of the Meter								
6	27	Meter Loss Compensation	Line Losses included in the Meter								
6	28	Maximum Error	Error of the Meter, including end-to-end Maximum Error								
6	29	Meter Phase	Specific Phase information								
6	291	CT Ratio	Ratio of the Current Transformer								
6	30	Distributed Generator Type	Type of Distributed Generator								
6	31	Nameplate Rating	Manufacturer's output rating of the Distributed Generator								
6	32	Distributed Generator Fuel Type	Type of Fuel consumed by the Distributed Generator								
6	33	Distributed Generator Permit Type	Type of environmental authorization required to operate the Distributed Generator								
6	34	Distributed Generator Manufacturer	Manufacturer of the Distributed Generator								



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			Process	1.0 Enrollment & Qualification							
			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
6	35	Manufactured Date of the Distributed Generator	Date of Manufacture of the Distributed Generator								
6	36	Installation Date of Distributed Generator	Date of Installation of the Distributed Generator								
6	37	Generator In-Service Date	Date the Distributed Generator became operational								
6	38	Normal Load Rating	Average load picked up by the Distributed Generator during the applicable performance hours								
6	39	Distributed Generator Name	Name of the Distributed Generator								
6	41	Interconnection Agreement Type	Type of Interconnection Agreement between the Distributed Generator or Service Location and the TDSP								
6	42	Interconnection Limits	Limits associated with the Interconnection of the Distributed Generator or Service Location								



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			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
6	43	Capable of Synchronizing to Grid	Flag set if the Service Location is capable of Synchronizing to the Grid								
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions								
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event								
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level								
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid								
6	51	UFR Settings	Setting of the Under-Frequency Relay								
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method								
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O			O	O	



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				Process		1.0 Enrollment & Qualification				
				From		SO		SO		
				To		SP		SP	SE	MA LSE TDSP
						1.0.10	1.0.11	1.0.12	1.0.13	1.0.14 1.0.15 1.0.16
				Interaction		Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA LSE TDSP
Element				Short Description						
7				Market/Program Enrollment						
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M
7	11	Program Name	Name of the Program	O	O	O	M	O	O	O
7	12	Market	Type of wholesale market	M	M	O			O	O
7	13	Market Product	Market Product	M	M	M	M		O	O
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment			M	M		M	M
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M			M	M
7	23	Resource Type	Type of Resource	O	O	O	O			O
7	24	Resource Qualification Test Date	Date the Resource demonstrated its ability to deliver a product or service	O	O	O	O			O
7	25	Enrollment End Date	Date of Termination of Enrollment	O	O	O	O		O	O
7	26	Requalification Test Date	Date the Resource will retest its ability to deliver a product or service	O	O	O	O			O



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			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
7	30	Lead Time	Time between the advanced notification and deployment			O			O	O	
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	O	O	O			O	O	
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	O	O	O			O	O	
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying								
7	40	Response Method Type	Type of Response Method	O	O	O	O		O	O	
7	41	Response Method ID	Identifier assigned to the Response Method	O	O	M			M	M	
7	42	Response Method Name	Name of the Response Method	O	O	O			O	O	
7	43	Response Method Value	Value of the Response Method	O	O	M	M		M	M	
7	44	Verified Capability	Audited Capability	O	O	M	M				
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability			M					



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			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
7	50	Performance Evaluation Method Type Code	Code representing the Type of Measurement	M	M	M	M				
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource	O	O	M					
7	991	Market Enrollment Comments	Comments associated with the Enrollment	O	O	O	O	O	O	O	
8	Offer Parameters										
8	10	Offer Limit Value	Offer Limit Value	M	O	M	M		O	O	
8	11	Offer Limit Type	Type of Offer Limit	M	O	M	M		O	O	
8	12	Offer Limit Interval	Offer Limit Interval	M	O	M	M		O	O	
8	20	Physical Min Gen	Minimum Operating Level of a Resource	O	O	O	O		O	O	
8	21	Min Gen MW	Minimum MW available for dispatch	O	O	O	O		O	O	
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	O	O	O	O				
8	23	Ramp Rate Type	Type of Ramp Rate	M	O	O	O				
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	M	O	O	O				



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				To	SP		SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description							
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment		M	O	O	O			
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction		M	O	O	O			
8	30	Offer Dispatch Type	Type of Offer			O					
8	31	Offer Segment MW	Energy of Segment of the Offer								
8	32	Offer Segment Price	Price of Segment of the Offer								
8	33	Offer Segment Hour	Hour of Segment of the Offer								
8	34	Startup Cost	Cost of starting a response activity								
8	35	Strike Price	Threshold Price								
8	36	Offer Expiration Date	Date of Expiration of the Offer								
8	37	Startup Cost Type	Type of startup cost								
8	38	Offer Commit Status	Commitment status of offer								



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			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
8	39	Offer Dispatch Status	Dispatch Status of Offer								
8	331	Offer Price Curve Slope	Flag to ~~smooth~~ <u>smooth</u> offer segments from step function to slope								
8	332	StrikePriceType	Type of strike price								
8	40	Market Clearing Day	Market Clearing Day of the Offer				O				
8	41	Schedule Name	Name or tag of the Offer				O				
8	42	Schedule Description	Description of the Offer				O				
8	43	Schedule Status	Status of the Offer				O				
8	50	Portfolio Name	Name of an aggregation of Resources for market participation				O				
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint								
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.								
8	73	Operational Constraint Value	Value of the Constraint Type and Interval								



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			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
9 Energy Market											
9	0	Instruction ID									
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule								
9	11	Energy Schedule - End Time	End Time of the Energy Schedule								
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule								
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule								
9	14	Energy Schedule - Cleared Price	Awarded Price								
9	15	Schedule ID									
9	20	Base Point	Per-interval dispatch instruction								
9	21	Breaker Status	Status of the Breaker for the Resource								
9	22	Output MW	Real Power Output of the Generation Device								



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			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
9	23	Output MVAR	Reactive Power Output of the Generation Device								
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services								
9	27	Set Point	Final dispatch target level								
10	Ancillary Service Market										
10	0	Ancillary Service Instruction ID									
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	O	O	O	M		O	O	
10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted		O						
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award								
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award								



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			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval								
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award								
10	16	Ancillary Service Award - Cleared Price	Awarded Price								
10	17	Ancillary Service Schedule ID	?								
10	20	Ancillary Service Product Qualification Type	Type of Qualification	O	O	M	M				
10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid								
10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource			M	M				



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			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified			M	M				
10	24	Requalification Requirement	Flag set if Requalification is Required	O	O						
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule								
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction								
10	33	Base Load MW	Level of Load at time of dispatch								
11	Capacity Market										
11	10	Capacity Type	Type of Capacity	O	O	M					
11	11	Capacity Type description	Description of the Type of Capacity	O	O	O					
11	20	Peak Value	Measurement of Peak			O			O	O	
11	21	Peak Type	Type of measurement of Peak			O			O	O	



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				Process	1.0 Enrollment & Qualification								
				From	SO		SO						
				To	SP		SP	SE	MA	LSE	TDSP		
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16		
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP		
Element				Short Description									
11	22	Peak Date/Time	Date and Time of measurement of Peak				O			O	O		
11	23	Nominal Capacity	Nominated load				O						
11	24	Qualified Capacity	Nominal ICAP derated for performance				M						
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated		O	O	M			M	M		
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated		O	O	M			M	M		
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program		O	O	O						
11	41	Capacity Supply Obligation	Capacity Obligation										
11	50	Capacity Reference ID	Identifier assigned to the External System award				O						



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			From	SO		SO					
			To	SP		SP	SE	MA	LSE	TDSP	
			Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element			Short Description								
11	991	Capacity Comments	Comments associated with the Capacity market	O	O	O					



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.2 Scheduling and Award Notification – Economic

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 6. Use Cases for Figure 3

Use Case	Product	Deployment	Performance Evaluation
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO

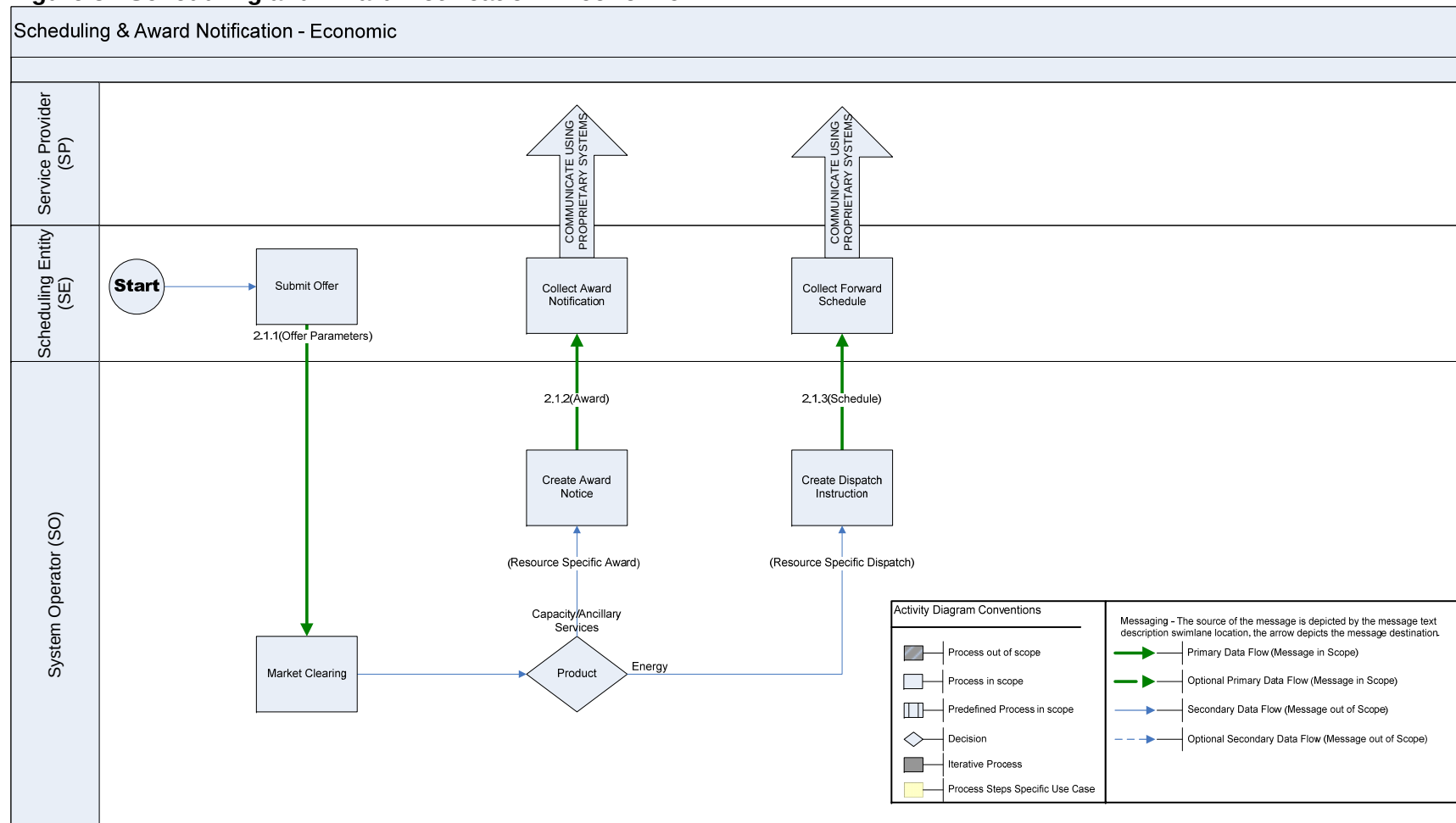
- The process begins when the SE submits a supply offer to the SO.
- The SO evaluates the offer through its market clearing process.
- The resulting resource-specific dispatch information is transformed into dispatch instructions by the SO.
- The SO makes the schedule available.
- The SE collects the forward schedule.



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Activity Diagram and Data Flow:

Figure 3 - Scheduling and Award Notification - Economic



Note: Data elements for Scheduling and Award Notification-Economic are listed with Scheduling and Award Notification-Reliability in [Table 8](#)~~Table 8~~
~~gTable 8~~.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.3 Scheduling and Award Notification – Reliability

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 7. Use Cases for Figure 4

Use Case	Product	Deployment	Performance Evaluation
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-4	Energy (Reliability)	Bulk	MGO
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
C-B-2	Capacity	Bulk	MB/MA
C-B-4	Capacity	Bulk	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-3	Reserve	Bulk	MBL
V-B-2	Reserve	Bulk	MB/MA
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-3	Reserve	Resource	MBL
V-R-2	Reserve	Resource	MB/MA
V-R-4	Reserve	Resource	MGO

- The process begins when the SE submits availability to the SO.
- The SO performs the Load Forecast and Supplemental Commitment process after the market has been settled. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - o If SO determines that the system is secure, no demand response advance notification is required and reliability is assessed by the SO at the next interval.
 - o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.
 - If the SO determines that demand response will be provided with an advance notification, the reliability event parameters are prepared by the SO to create a reliability event notification.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for
Wholesale Standard DR Signals - for NIST PAP09

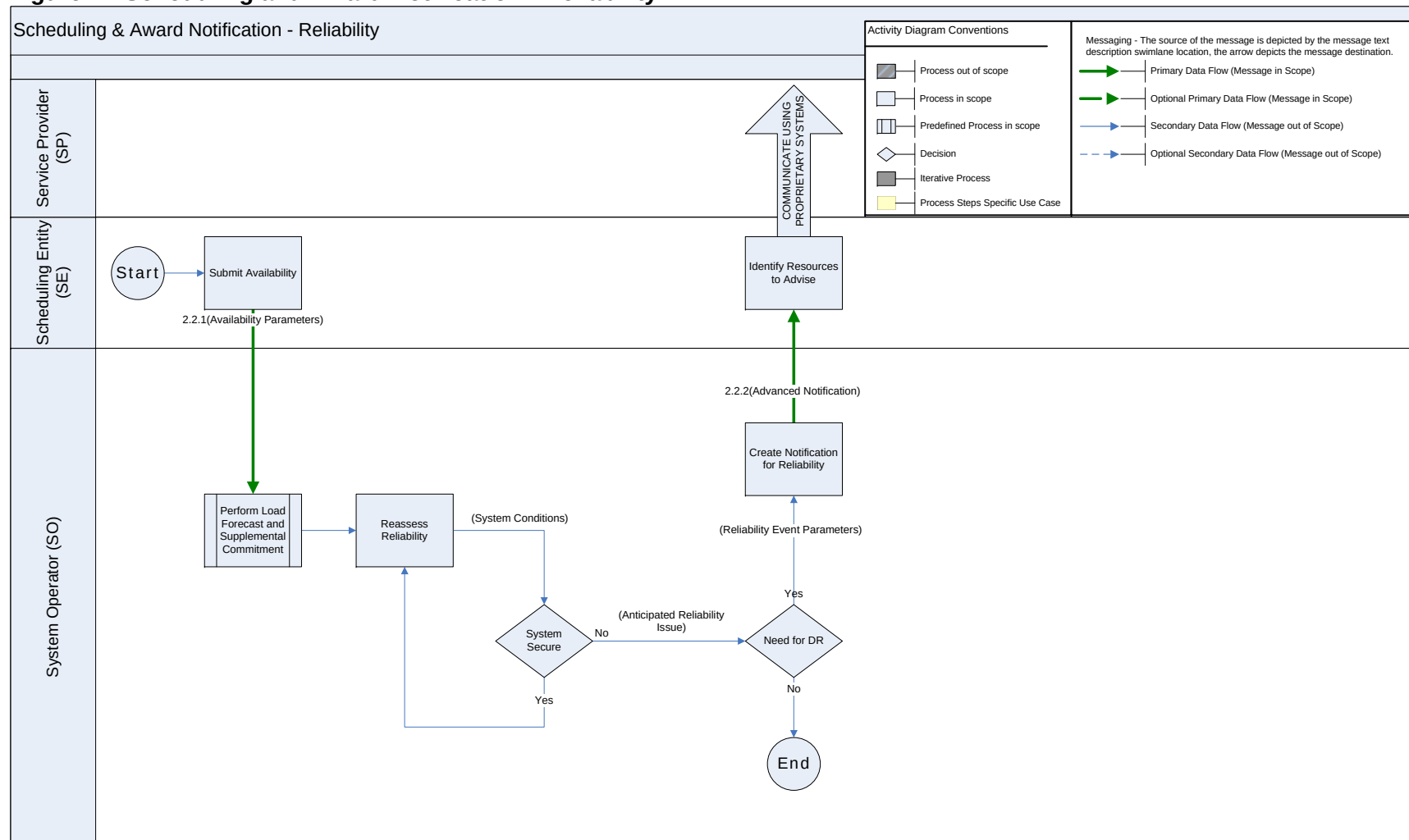
- The advance notification message is sent to the SE.
- The SE identifies the demand resources to notify and relays the message to SPs through the proprietary interaction system of the SE.



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Activity Diagram and Data Flow:

Figure 4 - Scheduling and Award Notification - Reliability





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Table 8. Data **RequirementsElements** by Interaction Number: Scheduling and Award Notification

				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
0 Common									
0	10	Submittal Date	Timestamp for the sender's use	O	O	O	O	O	
0	11	Submitted By	User ID of submitter	O	O	O	O	O	
0	12	Submitted Error	ID of submission error detected	O	O	O	O	O	
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	
1 General Asset/Resource									
1	10	Service Location ID	Identifier assigned to the Service Location	O	O	O	O	O	



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
1	11	Service Location Name	Name of the Service Location		O	O	O	M	O
1	12	Asset ID	The unique identifier of the asset		O	O	O	O	O
1	13	Asset Name	The name of the asset		O	O	O	O	O
1	20	Resource ID	Identifier assigned to the Resource		M	M	M	M	O
1	21	Resource Name	Name of the Resource		O	O	O	M	O
1	40	GenEMSID	Alias or point Identifier assigned to the Resource		M	M	M		
1	41	GenBillingID	Billing Identifier assigned to the Resource		M	M	M		
2	Location								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located		M	M	M	M	M



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O	O	O
2	32	Zone Type	Type of Zone	O	O	O	O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	M	M	M	O	
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O	O	
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O	O	O	O	
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O	O	O



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M	M
5 Business Entity Relationships								
5	11	Service Provider ID	Identifier assigned to the Service Provider			O	M	M
5	12	Service Provider Name	Name of the Service Provider			O	M	M
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider			O	O	
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider			O	O	
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource			O	O	



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
5	30	Load-Serving Entity ID	Identifier assigned to the Load-Serving Entity			O	O	
5	31	Load-Serving Entity Name	Name of the Load-Serving Entity			O	O	
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M	M	M
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O	O	O
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O
6	Device and Qualification							
6	20	Meter ID	Identifier assigned to the Meter	O	O	O	O	
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions				M	



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
			Element			Short Description		
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				M	
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				M	
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid				M	
6	51	UFR Settings	Setting of the Under-Frequency Relay				M	
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				M	
7	Market/Program Enrollment							
7	10	Program ID	Program Identifier	O	O	O	O	O
7	11	Program Name	Name of the Program	O	O	O	O	O



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
7	12	Market	Type of wholesale market	O	O	O	O	O	
7	13	Market Product	Market Product	O	O	O	O	O	
7	30	Lead Time	Time between the advanced notification and deployment	O	O		O	O	
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	M	M	M	M	M	
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	M	M	M	M	M	
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying	O	O	O	O		
7	40	Response Method Type	Type of Response Method		O	O			
7	41	Response Method ID	Identifier assigned to the Response Method		O	O			
7	42	Response Method Name	Name of the Response Method		O	O			



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				2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
				SE	SO		SE	SO
				SO	SE	SE	SO	SE
				2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description				
7	43	Response Method Value	Value of the Response Method		O	O		
7	44	Verified Capability	Audited Capability				O	
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability				O	
8	Offer Parameters							
8	10	Offer Limit Value	Offer Limit Value	M			M	O
8	11	Offer Limit Type	Type of Offer Limit	M			M	O
8	12	Offer Limit Interval	Offer Limit Interval	O			M	O
8	20	Physical Min Gen	Minimum Operating Level of a Resource	O			M	
8	21	Min Gen MW	Minimum MW available for dispatch	M			M	O



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
8	22	MinGenCost	The cost per hour for each Min Gen MW value.	M				M	O
8	23	Ramp Rate Type	Type of Ramp Rate	O				M	
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	O				M	
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	O					
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	O					
8	30	Offer Dispatch Type	Type of Offer	M	M	M			
8	31	Offer Segment MW	Energy of Segment of the Offer	M	M	M		O	O
8	32	Offer Segment Price	Price of Segment of the Offer	M	M	M		O	O



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
8	33	Offer Segment Hour	Hour of Segment of the Offer	M	M	M	O	O
8	34	Startup Cost	Cost of starting a response activity	M	M	M	O	O
8	35	Strike Price	Threshold Price	O	O	O		
8	36	Offer Expiration Date	Date of Expiration of the Offer	M				
8	37	Startup Cost Type	Type of startup cost	M			M	
8	38	Offer Commit Status	Commitment status of offer	M			M	
8	39	Offer Dispatch Status	Dispatch Status of Offer	M			M	
8	331	Offer Price Curve Slope	Flag to ~~smooth~~ <u>smooth</u> offer segments from step function to slope	M			M	
8	332	StrikePriceType	Type of strike price	O			O	
8	40	Market Clearing Day	Market Clearing Day of the Offer	M	M	M	M	M



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O	O
8	42	Schedule Description	Description of the Offer	O	O	O	O	O
8	43	Schedule Status	Status of the Offer	M	M	M	O	O
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	O
8	71	Operational Constraint Type	Type of operational, schedule or offer constraint	M			M	
8	72	Operational Constraint Interval	The timeframe over which the constraint type applies.	M			M	
8	73	Operational Constraint Value	Value of the Constraint Type and Interval	M			M	
9	Energy Market							
9	0	Instruction ID		O	O	O		
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	M	M	M		



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
			Element			Short Description			
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	M	M	M			
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	M	M	M			
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule		M	M			
9	14	Energy Schedule - Cleared Price	Awarded Price		M	M			
9	15	Schedule ID		O		O			
9	20	Base Point	Per-interval dispatch instruction						
9	21	Breaker Status	Status of the Breaker for the Resource						
9	22	Output MW	Real Power Output of the Generation Device						



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
9	23	Output MVAR	Reactive Power Output of the Generation Device					
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services					
9	27	Set Point	Final dispatch target level					
10	Ancillary Service Market							
10	0	Ancillary Service Instruction ID			O	O		
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	M	M	
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award		M			



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award		M			
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval		M			
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award		M			
10	16	Ancillary Service Award - Cleared Price	Awarded Price		M			
10	17	Ancillary Service Schedule ID	?			O		
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule		O	O		



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
			Element			Short Description		
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction					
10	33	Base Load MW	Level of Load at time of dispatch					
11	Capacity Market							
11	10	Capacity Type	Type of Capacity	M	M	M	O	
11	20	Peak Value	Measurement of Peak			O	O	
11	21	Peak Type	Type of measurement of Peak			O	O	
11	22	Peak Date/Time	Date and Time of measurement of Peak			O	O	
11	23	Nominal Capacity	Nominated load	O	O	O		
11	24	Qualified Capacity	Nominal ICAP derated for performance	M	M	M	O	



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
1 1	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	M	M	M	O	
1 1	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated	M	M	M	O	
1 1	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program	M	O	O	O	
1 1	41	Capacity Supply Obligation	Capacity Obligation	M	M	M	O	
1 1	50	Capacity Reference ID	Identifier assigned to the External System award	O	O	O	O	
1 1	991	Capacity Comments	Comments associated with the Capacity market	O	O	O	O	
1 2	Event and Performance							



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
1 2	10	Event ID	Identifier assigned to the Event						O
1 2	11	Deployment Type	Type of Deployment						M
1 2	12	Event Day	Operating Date of Start of Event						M
1 2	13	Event Description	Description of the Event						M
1 2	14	Event Start Time	Time of Start of deployment period for Event						M
1 2	15	Operator Comment	Additional Event information provided by the Operator						O
1 2	16	Deployment MW	Absolute or relative Deployment quantity						O
1 2	17	Event Status	Status of the Event						O



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
1 2	18	Event End Time	Time of End of deployment period					M
1 2	19	Event Modification Number	A modification number for the event.					O
1 2	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.					O
1 2	112	Event Modification Reason Code	The reason the event is being cancelled or modified.					O
1 2	991	Event & Performance comments	Comments associated with Event and Performance data					O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.4 Deployment and Real-Time Communications - Economic

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

Table 9. Use Cases for Figure 5

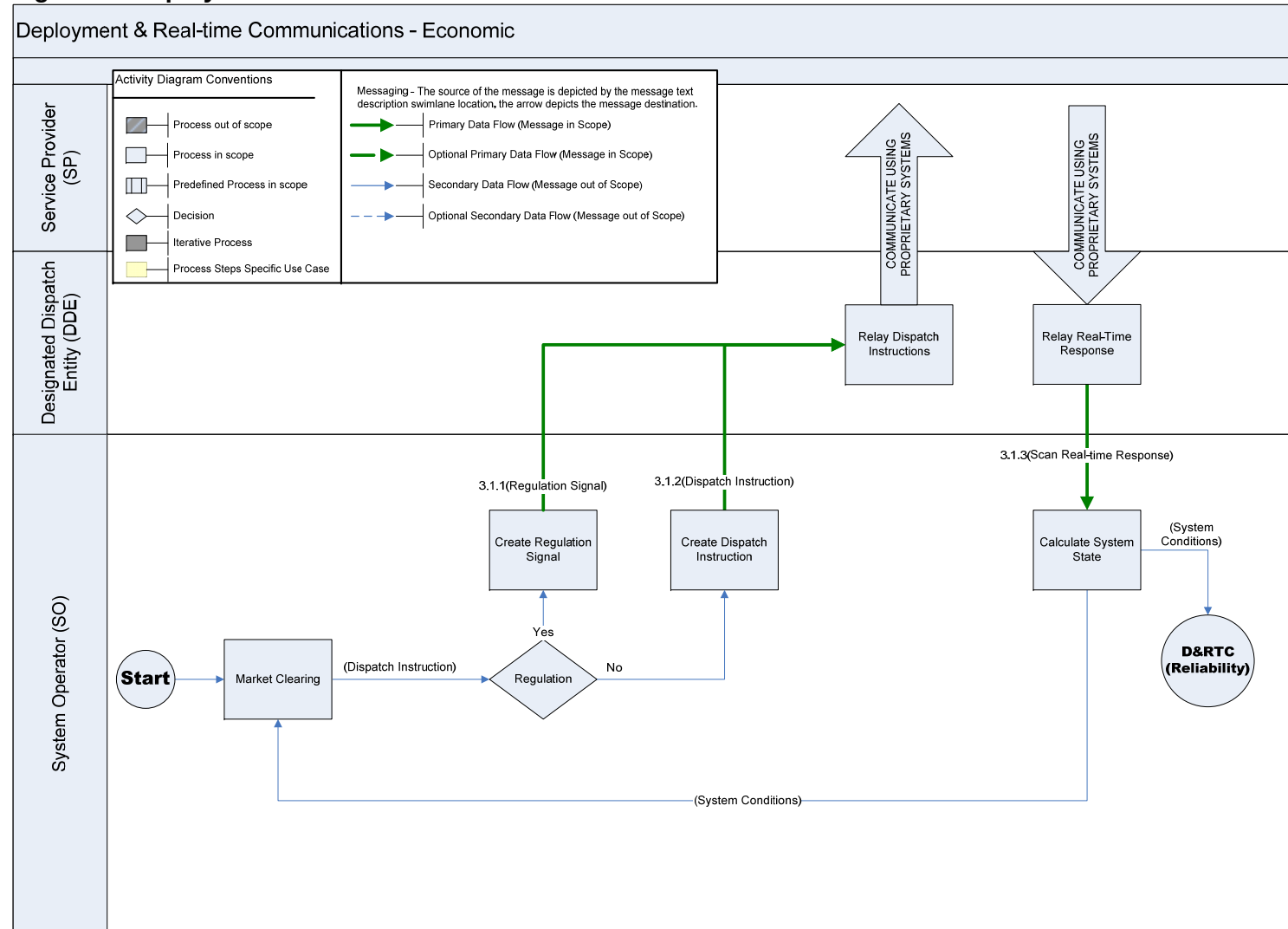
Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-4	Energy (Reliability)	Bulk	MGO
V-R-2	Reserve	Resource	MB/MA
G-R-2	Regulation	Resource	MB/MA

- The process begins when the SO evaluates real-time system conditions through its market clearing process.
- The resulting resource-specific real-time dispatch information is transformed into dispatch instructions by the SO.
 - o If the dispatch instruction is for Regulation, the SO sends the Regulation signal to the DDE.
 - o If the dispatch is not for Regulation, the SO sends the dispatch instruction to the DDE.
- The DDE communicates with the SP through the proprietary communication system of the DDE.
- The SO collects real-time response from the DDE for evaluating the next interval and uses the information to calculate the system state.
- System conditions are made available to the market clearing process for the next interval and to Deployment and Real-Time Communications – Reliability.

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Activity Diagram and Data Flow:

Figure 5 - Deployment and Real-Time Communications - Economic



Note: Data elements for Deployment & Real-Time Communications-Economic are listed with Deployment & Real-Time Communications-Reliability in [Table 11](#) ~~Table 11~~.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.5 Deployment and Real-Time Communications – Reliability

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

Table 10. Use Cases for Figure 6

Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO

- The SO performs the Load Forecast and Supplemental Commitment process after the interval has been dispatched. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - If SO determines that the system is secure, no demand response deployment is required and reliability is assessed by the SO at the next interval.
 - If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

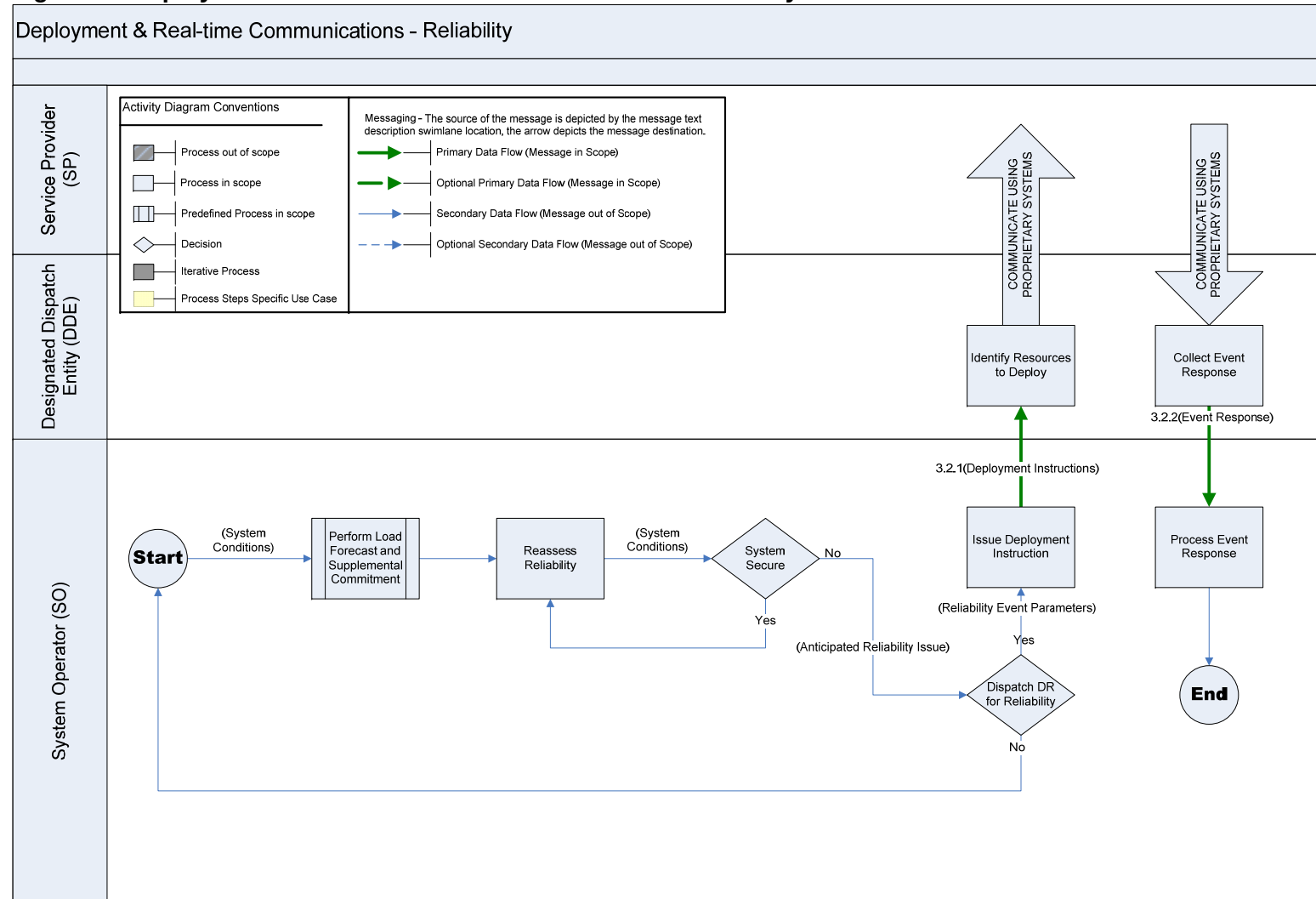
For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

- If the SO determines that demand response will be deployed, the reliability event parameters are prepared by the SO to create a reliability event notification.
 - The deployment instruction is sent to the DDE.
 - The DDE identifies the demand resources to notify and relays the message to SPs through the proprietary communication system of the DDE.
- Real-time or near real-time response data is collected by DDE using the proprietary communication system of the DDE.
- The DDE sends the event response information to the SO.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

Activity Diagram and Data Flow:

Figure 6 - Deployment and Real-Time Communications - Reliability





RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

Table 11. Data **RequirementsElements** by Interaction Number: Deployment & Real-Time Communications

			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	?	DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
0 Common									
0	10	Submittal Date	Timestamp for the sender's use		O			O	O
0	11	Submitted By	User ID of submitter		O			O	O
0	12	Submitted Error	ID of submission error detected		O			O	O
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability		M	M	M	M	M
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality		M	M	M	M	M
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity		M	M	M	M	M
1 General Asset/Resource									
1	10	Service Location ID	Identifier assigned to the Service Location		M	O	O	M	M
1	11	Service Location Name	Name of the Service Location		O	O	O	M	M



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	?	DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	
1	21	Resource Name	Name of the Resource	O	O	O	M	M	
1	30	Asset Group ID	The identifier of a group of assets			O		O	
1	31	Asset Group Name	Name of the aggregated group of assets			O		O	
1	40	GenEMSID	Alias or point Identifier assigned to the Resource	M	M	M			
1	41	GenBillingID	Billing Identifier assigned to the Resource	M	M	M			
2		Location							



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO	?	DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located				M	M
2	31	Zone	Name of the Zone in which the Service Location is located				O	O
2	32	Zone Type	Type of Zone				O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	O	O	O	O	O
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O		
2	43	PNode	Name of the Price Node associated with the Service Location		O			
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location		M			



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource		O	O		O	
2	72	Connection Address	Address associated with the Connection Type		O	O		O	
5 Business Entity Relationships									
5	11	Service Provider ID	Identifier assigned to the Service Provider					M	M
5	12	Service Provider Name	Name of the Service Provider					O	O
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider		O	O	O		
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider		O	O	O		
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity		M	M	M	M	M
5	71	Scheduling Entity Name	Name of the Scheduling Entity		O	O	O	O	O



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	?	DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity		M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity		O	O	O	O	O
6	Device and Qualification								
6	20	Meter ID	Identifier assigned to the Meter		O	O	O		
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions					M	
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				M	M	M
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				M	M	M
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid				M	M	M



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	?	DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
6	51	UFR Settings	Setting of the Under-Frequency Relay				M	M	M
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method				M	M	M
7	Market/Program Enrollment								
7	10	Program ID	Program Identifier		O	O	O	M	M
7	11	Program Name	Name of the Program		O	O	O	M	M
7	12	Market	Type of wholesale market		O	O	O	O	O
7	13	Market Product	Market Product		O	O	O	O	O
7	30	Lead Time	Time between the advanced notification and deployment		O	O	O		
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market		O	O	O		
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market		O	O	O		



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	?	DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying			O	O		
8	Offer Parameters								
8	10	Offer Limit Value	Offer Limit Value		O	O			
8	11	Offer Limit Type	Type of Offer Limit		O	O			
8	12	Offer Limit Interval	Offer Limit Interval		O	O			
8	21	Min Gen MW	Minimum MW available for dispatch		O	O			
8	22	MinGenCost	The cost per hour for each Min Gen MW value.		O	O			
8	40	Market Clearing Day	Market Clearing Day of the Offer		M	M	M	M	M
8	41	Schedule Name	Name or tag of the Offer		O	O	O	O	O
8	42	Schedule Description	Description of the Offer		O	O	O	O	O
8	43	Schedule Status	Status of the Offer		O	O	O	O	O



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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO		DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	O
9	Energy Market							
9	0	Instruction ID		O	O			
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule	O	O			
9	11	Energy Schedule - End Time	End Time of the Energy Schedule	O	O			
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule	O	O			
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule	O	O			
9	14	Energy Schedule - Cleared Price	Awarded Price	O				
9	15	Schedule ID		O	O			



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO	?	DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
9	20	Base Point	Per-interval dispatch instruction	M	M	O	M	
9	21	Breaker Status	Status of the Breaker for the Resource	M	M	O	M	O
9	22	Output MW	Real Power Output of the Generation Device	M	M	M	M	O
9	23	Output MVAR	Reactive Power Output of the Generation Device	M	M	O	M	O
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	O	O	O	O	O
9	27	Set Point	Final dispatch target level	M	M	O	M	
10	Ancillary Service Market							
10	0	Ancillary Service Instruction ID		O	O			



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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
			From	SO	?	DDE	SO	DDE
			To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response			
Element			Short Description					
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	O		
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award		M			
10	13	Ancillary Service Award - End Time	End Time of the ancillary service Award		M			
10	14	Ancillary Service Award - Interval Start Time	Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval		M			
10	15	Ancillary Service Award - Interval Value	The awarded Value for the Time Interval within the ancillary service Award		M			
10	17	Ancillary Service Schedule ID	?	O	O			
10	31	Reserve Pickup Flag	Flag set if this is a Reserve Pickup schedule	O	O	O		



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				Process	3.0 Deployment & Real-Time Communications				
				From	3.1 Economic			3.2 Reliability	
					SO	?	DDE	SO	DDE
				To	DDE	DDE	SO	DDE	SO
				Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
					Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description					
10	32	Regulation Base Point	Per-interval Regulation dispatch instruction	M	M	O			
10	33	Base Load MW	Level of Load at time of dispatch	O	O	O			M
12	Event and Performance								
12	10	Event ID	Identifier assigned to the Event				O		M
12	11	Deployment Type	Type of Deployment				M		
12	12	Event Day	Operating Date of Start of Event				M		M
12	13	Event Description	Description of the Event				M		O
12	14	Event Start Time	Time of Start of deployment period for Event				M		M
12	15	Operator Comment	Additional Event information provided by the Operator				O		O



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
Regulation Signal	Dispatch Instruction	Real-Time Response		Deployment Instructions	Event Response				
Element			Short Description						
1 2	16	Deployment MW	Absolute or relative Deployment quantity					M	
1 2	17	Event Status	Status of the Event					O	O
1 2	18	Event End Time	Time of End of deployment period					M	M
1 2	19	Event Modification Number	A modification number for the event.					O	O
1 2	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.					O	O
1 2	112	Event Modification Reason Code	The reason the event is being cancelled or modified.					O	O
1 2	21	Baseline Dates	Dates of days used to calculate the Energy Baseline						O
1 2	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline						O



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	?	DDE	SO	DDE	
				To	DDE	DDE	SO	DDE	SO
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
1 2	23	Energy Baseline Value	Calculated Energy Baseline						O
1 2	24	Energy Baseline Timestamp	Timestamp of Energy Baseline						O
1 2	30	Reporting Interval	Interval size required for Reporting						O
1 2	31	Measurement Value Timestamp	The time when the value was last updated		O	O	M		M
1 2	32	Measurement Value	Value of the interval reading		O	O	M		M
1 2	33	Response Value	Response		O	O	O		O
1 2	991	Event & Performance comments	Comments associated with Event and Performance data					O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.6 Measurement and Performance – Baseline

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

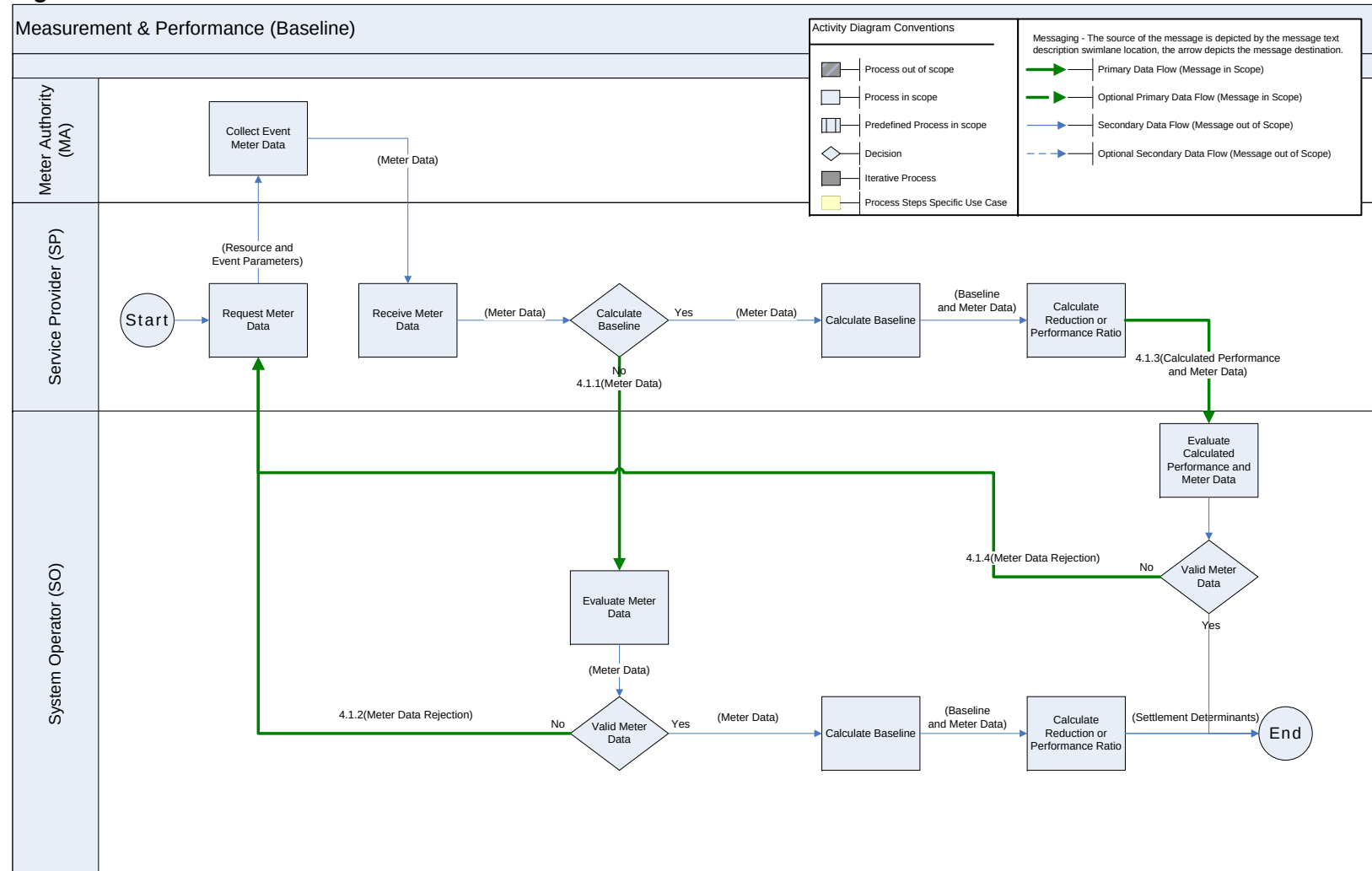
Use Cases: All use cases where Baseline applies (see Figure 7).

- The process begins when the SP requests event meter data from the MA.
- The MA sends the event meter data to the SP.
- If the SP is required to calculate the baseline, the SP uses the event meter data to calculate the baseline.
 - o The SP uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates the baseline, the SP sends the event meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate the baseline.
 - The SO uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.

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Activity Diagram and Data Flow:

Figure 7 - Measurement and Performance – Baseline



Note: Data elements for Measurement and Performance-Baseline are listed with Measurement and Performance-All Others in [Table 12Table 12](#).



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.7 Measurement and Performance - All Others

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

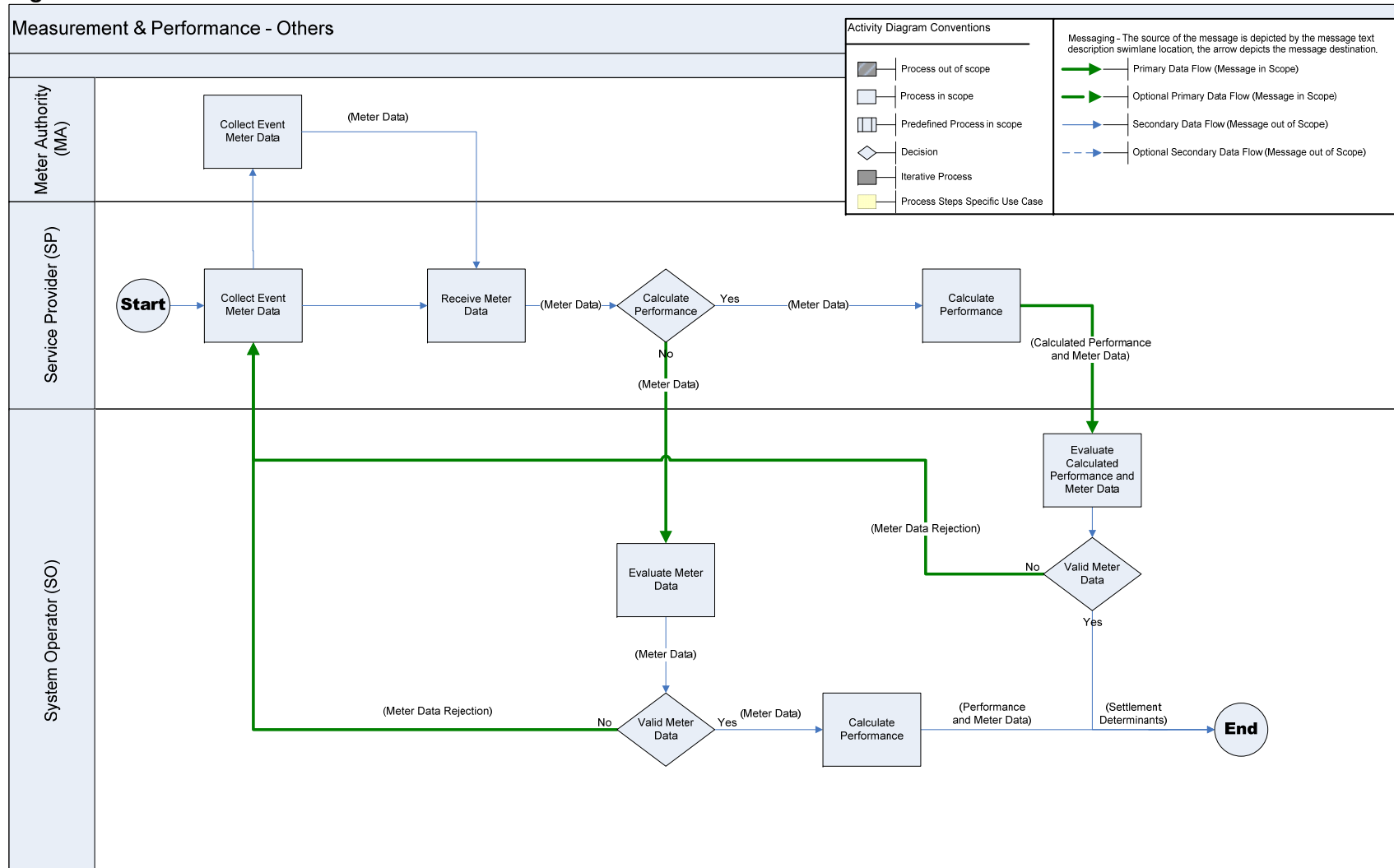
Use Cases: All use cases where Meter Before/Meter After, Maximum Base Load, or Meter Generator Output applies (see Figure 8).

- The process begins when the SP collects event meter data from the MA for the specified performance evaluation method.
 - o If the performance evaluation method is Meter Before/Meter After or Maximum Base Load, the MA sends the event meter data to the SP.
 - o If the performance evaluation method is Meter Generator Output, the SP uses the data from the meter on the generator.
- If the SP is required to calculate performance, the SP uses the event meter data to calculate performance.
 - o The SP uses the meter data to calculate the event reduction amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates performance, the SP sends the meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate performance.
 - The SO uses the event meter data to calculate the event reduction amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.

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Activity Diagram and Data Flow:

Figure 8 - Measurement and Performance – All Others





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Table 12. Data **Requirements****Elements** by Interaction Number: Measurement and Performance

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element			Short Description								
0	Common										
0	10	Submittal Date	Timestamp for the sender's use	O	O	O	O	O	O	O	O
0	11	Submitted By	User ID of submitter	O	O	O	O	O	O	O	O
0	12	Submitted Error	ID of submission error detected	O	O	O	O	O	O	O	O
0	13	Rejection Code Type	Type of rejection message		M	O	M		M	O	M
0	14	Rejection Code Value	Code referring to the reason for a rejection message		M	O	M		M	O	M
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	M
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	M
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M



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				Process	4.0 Measurement & Performance								
					4.1 Baseline				4.2 Other				
				From	SP	SO	SP	SO	SP	SO	SP	SO	
				To	SO	SP	SO	SP	SO	SP	SO	SP	
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection					
Element				Short Description									
1	General Asset/Resource												
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	M		
1	11	Service Location Name	Name of the Service Location	M	M	M	M	M	M	M	M		
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O		
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O		
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	M		
1	21	Resource Name	Name of the Resource	M	O	O	O	O	O	O	O		
1	30	Asset Group ID	The identifier of a group of assets	M	M	M	M	M	M	M	M		
1	31	Asset Group Name	Name of the aggregated group of assets	O	O	O	O	O	O	O	O		
2	Location												



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				Process	4.0 Measurement & Performance							
				From	4.1 Baseline				4.2 Other			
					SP	SO	SP	SO	SP	SO	SP	SO
				To	SO	SP	SO	SP	SO	SP	SO	SP
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
					Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description								
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located		M	M	M	M	M	M	M	M
2	31	Zone	Name of the Zone in which the Service Location is located		O	O	O	O	O	O	O	O
2	32	Zone Type	Type of Zone		O	O	O	O	O	O	O	O
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected		O	M	M	M	O	M	M	M
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected		O	O	O	O	O	O	O	O
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached		O				O			



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
2	43	PNode	Name of the Price Node associated with the Service Location	O				O			
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	O				O			
4	Grid Connection										
4	10	Loss Factor Type	Type of Loss Factor			M				M	
4	11	Loss Factor Value	Loss Factor			M				M	
5	Business Entity Relationships										
5	11	Service Provider ID	Identifier assigned to the Service Provider	O	O	O	O	O	O	O	O
5	12	Service Provider Name	Name of the Service Provider	O	O	O	O	O	O	O	O
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	O	O			O	O		



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

				Process	4.0 Measurement & Performance							
				From	4.1 Baseline				4.2 Other			
					SP	SO	SP	SO	SP	SO	SP	SO
				To	SO	SP	SO	SP	SO	SP	SO	SP
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
					Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description								
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider		O	O			O	O		
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource		O	O			O	O		
5	44	Retail Rate	Retail Rate				O				O	
5	60	Meter Authority ID	Identifier assigned to the Metering Authority		O	O	O	O	O	O	O	O
5	61	Meter Authority Name	Name of the Metering Authority		O	O	O	O	O	O	O	O
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity		M	O	O	O	O	O	O	O
5	71	Scheduling Entity Name	Name of the Scheduling Entity		O	O	O	O	O	O	O	O
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity		M	O	O	O	O	O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
Element			Short Description									
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O	O	O	O	
6	Device and Qualification											
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M	M	
6	2293	Measurement Interval	Interval of time between Measurement readings	O				O				
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	O	O	O	O	O	O	O	O	
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	O	O	O	O	O	O	O	O	
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	O	O	O	O	O	O	O	O	
6	51	UFR Settings	Setting of the Under-Frequency Relay	O	O	O	O	O	O	O	O	



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	O	O	O	O	O	O	O	O
7	Market/Program Enrollment										
7	10	Program ID	Program Identifier	O	O	O	O	O	O	O	O
7	11	Program Name	Name of the Program	O	O	O	O	O	O	O	O
7	12	Market	Type of wholesale market	O	O	O	O	O	O	O	O
7	13	Market Product	Market Product	O	O	O	O	O	O	O	O
7	40	Response Method Type	Type of Response Method			O				O	
7	41	Response Method ID	Identifier assigned to the Response Method			O				O	
7	42	Response Method Name	Name of the Response Method			O				O	
7	51	Performance Evaluation Method	Method used to Evaluate the Performance of a Resource			O				O	



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
Request Title: Phase Two **Requirements** Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
7	991	Market Enrollment Comments	Comments associated with the Enrollment		O		O		O		O	
11	Capacity Market											
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated	O	O	O	O	O	O	O	O	
11	31	Capacity Obligation Period	Period of time for which the Capacity Resource is obligated	O	O	O	O	O	O	O	O	
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program			O				O		
11	41	Capacity Supply Obligation	Capacity Obligation			O				O		
11	50	Capacity Reference ID	Identifier assigned to the External System award			O				O		
11	991	Capacity Comments	Comments associated with the Capacity market			O				O		



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				Process	4.0 Measurement & Performance								
					4.1 Baseline				4.2 Other				
				From	SP	SO	SP	SO	SP	SO	SP	SO	
					To	SO	SP	SO	SP	SO	SP	SO	SP
				Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
					Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
Element				Short Description									
12	Event and Performance												
12	10	Event ID	Identifier assigned to the Event	M	M	O	M	M	M	O	M		
12	11	Deployment Type	Type of Deployment			O				O			
12	12	Event Day	Operating Date of Start of Event			M				M			
12	14	Event Start Time	Time of Start of deployment period for Event	O	O	M	O	O	O	M	O		
12	16	Deployment MW	Absolute or relative Deployment quantity			O				O			
12	17	Event Status	Status of the Event			O				O			
12	18	Event End Time	Time of End of deployment period	O	O	M	O	O	O	M	O		
12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline	O	O	O	O	O	O	O	O		



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline	O	O	O	O	O	O	O	O
12	23	Energy Baseline Value	Calculated Energy Baseline	O	O	O	O	O	O	O	O
12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline	O	O	O	O	O	O	O	O
12	30	Reporting Interval	Interval size required for Reporting	O	O	O	O	O	O	O	O
12	31	Measurement Value Timestamp	The time when the value was last updated	M	M	M	O	M	O	M	O
12	32	Measurement Value	Value of the interval reading	M	M	M	O	M	O	M	O
12	33	Response Value	Response	O	O	O	O	O	O	O	O
12	991	Event & Performance comments	Comments associated with Event and Performance data		O	O	O		O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model. Abbreviations/Acronyms correspond to the IDs shown in the figure.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a Service Location contains one or more Service Delivery Points. The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a Service Location is related to one-or-more Service Delivery Points (reading top to bottom) and every Service Delivery Point is related to exactly-one Service Location (reading bottom to top).

Optional Entities, Roles and Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all entities, roles and/or objects to function. Therefore, all entities, roles and objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and Service Locations, but does not require Asset Groups and Assets.

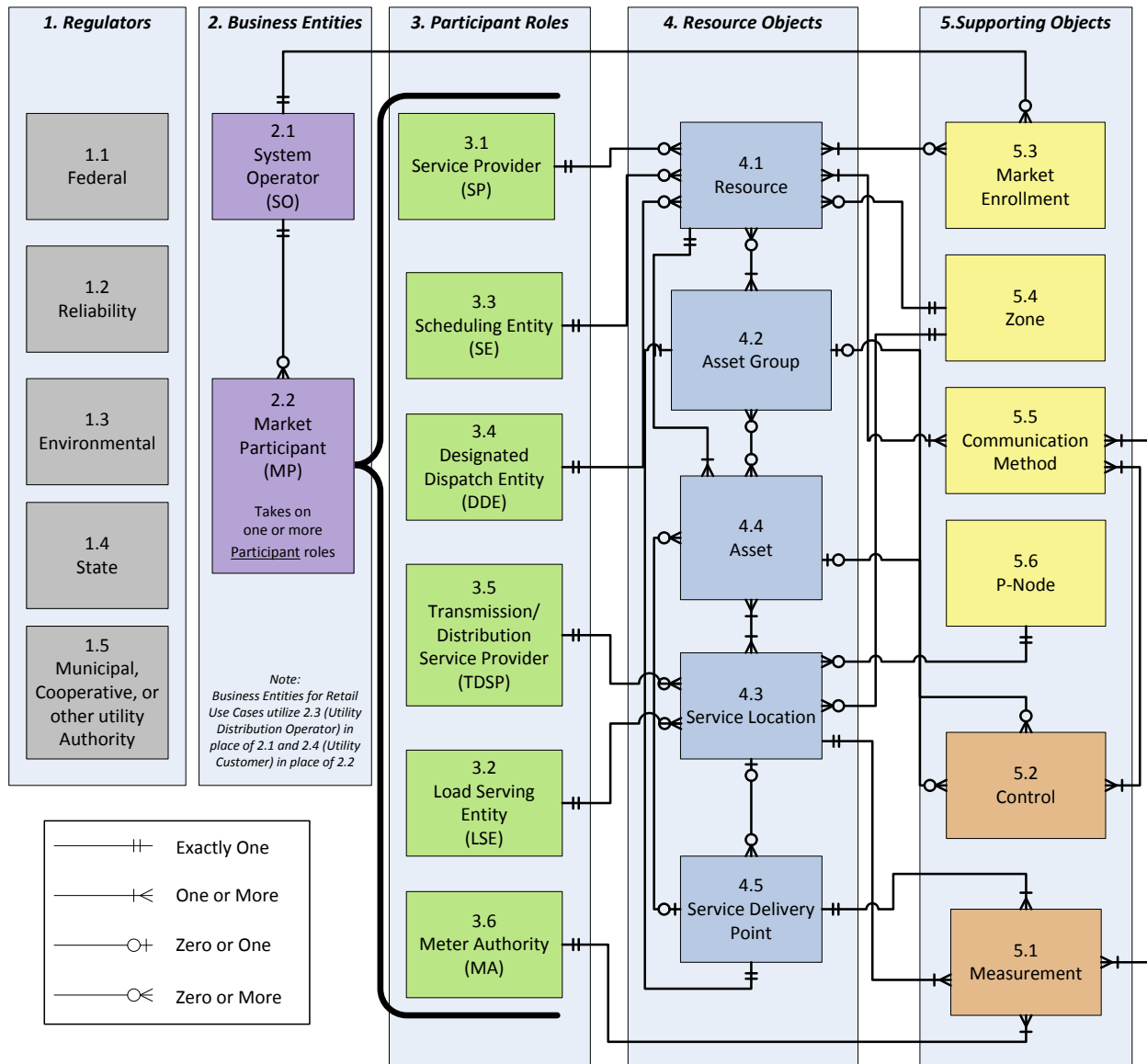
Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the applicable business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



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Figure 1A. **Sample** Entity-Relationship Model for Smart Grid Use Cases





RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-B

Appendix B – Use Case Combinations

The following table is a complete list of use case combinations ~~included~~[referenced](#) in these Business Practice Standards.

Use Case	Product	Deployment	Performance Evaluation
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-2	Energy (Economic)	Bulk	MB/MA
E-B-3	Energy (Economic)	Bulk	MBL
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-4	Energy (Reliability)	Bulk	MGO
R-R-1	Energy (Reliability)	Resource	Baseline
R-R-2	Energy (Reliability)	Resource	MB/MA
R-R-3	Energy (Reliability)	Resource	MBL
R-R-4	Energy (Reliability)	Resource	MGO
R-S-1	Energy (Reliability)	Self	Baseline
R-S-2	Energy (Reliability)	Self	MB/MA
R-S-3	Energy (Reliability)	Self	MBL
R-S-4	Energy (Reliability)	Self	MGO



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-2	Capacity	Bulk	MB/MA
C-B-3	Capacity	Bulk	MBL
C-B-4	Capacity	Bulk	MGO
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
C-S-1	Capacity	Self	Baseline
C-S-2	Capacity	Self	MB/MA
C-S-3	Capacity	Self	MBL
C-S-4	Capacity	Self	MGO
G-B-1	Regulation	Bulk	Baseline
G-B-2	Regulation	Bulk	MB/MA
G-B-3	Regulation	Bulk	MBL
G-B-4	Regulation	Bulk	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
G-S-1	Regulation	Self	Baseline
G-S-2	Regulation	Self	MB/MA
G-S-3	Regulation	Self	MBL
G-S-4	Regulation	Self	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09

4. Supporting Documentation

a. Description of Request:

WEQ Annual Plan Item 6(c) (ii) – “Develop Requirements and Use Cases for PAP 09 – Demand Response/Distributed Energy Resources” – Phase Two.

b. Description of Recommendation:

This recommendation associates the data elements to the use cases developed during the Phase One effort.

c. Business Purpose:

This recommendation has been developed in response to a request to include a Phase two effort for PAP-09 to associate data elements with the use cases developed in Phase 1 for standard DR and DER signals. Additionally, the recommendation addresses the directive from the WEQ Executive Committee for “the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted
- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted
- October 7, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:	Wholesale Electric Quadrant (WEQ)
Requesters:	NAESB Smart Grid Task Force (SGTF)
Request No.:	2010 WEQ Annual Plan Item 6(c)(ii)
Request Title:	Phase Two ~~Requirements~~ Specifications for Wholesale Standard DR Signals - for NIST PAP09



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
Requesters: Smart Grid Interoperability Panel
Request No.: 2010 WEQ Annual Plan Item 6(c)(ii)
Request Title: Phase Two Requirements Specification for Wholesale Standard DR Signals – for NIST PAP09

1. RECOMMENDED ACTION:

☒ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

Per Recommendation:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☐ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☐ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The ~~business process flow~~business activity diagrams and use cases presented in these Business Practice Standards illustrate the standard interactions between a System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets.

RECOMMENDED STANDARDS:

In response to NIST's Priority Action Plan 9, this recommendation contains draft requirements specifications, in the form of ~~business process flow~~business activity diagrams, ~~and~~ use cases and data requirements elements for each interaction, to support the standardization of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. Common terminology from the NAESB Measurement and Verification Standards for Demand Response has been incorporated into the development of the ~~business process flow~~business activity diagrams and use cases. As a result of the

~~Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010~~



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrant
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development of these Business Practice Standards, a standard set of actors and additional terminology will expand the existing NAESB documentation of associated terms and definitions for demand response.

WEQ-018

RECOMMENDED STANDARDS:

Executive Summary

Specifications for Wholesale Standard Demand Response Signals

The following addresses the business objectives and context for standardizing ~~control and pricing~~ signals for DR and DER as part of the Smart Grid implementation, which is called for by NIST PAP 09. ~~The NAESB SGTF in cooperation with UCAIug, OpenSG Task Force, the ISO/RTO Council, and other organizations, have developed DR use cases that provide requirements for developing consistent DR control and pricing signal standards. This Business Practice Standard and data elements included herein are not intended to (i) require the use of any of these data elements, (ii) require the provision or purchase of any products, programs, rates markets or services, or (iii) supercede~~replace applicable Governing Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

The ~~business process flow~~business activity diagrams and use cases contained in this ~~recommendation~~Business Practice Standard address the ~~requirements for~~standardizing of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. ~~Additional Business Practice Standards under development through the NAESB SGTF will focus on other aspects of the PAP 09 objectives.~~ To maintain consistency ~~throughout materials developed by the NAESB SGTF,~~ a master list of data elements and a common set of actors, terms and definitions have been adopted.

The following describes the end-to-end ~~business process flow~~business activity diagrams relating to the wholesale market ~~communication~~interactions between the System Operator (SO) and ~~the SP~~various Market Participants common to all ISOs/RTOs that offer opportunities for demand resources to participate in organized wholesale electric markets.

~~All data element names and implied or stated structures are not intended to specify specific message payloads or information object. The intent is to clearly specify the business information that may be necessary to be exchanged to make effective and reasonable business decisions, and NAESB understands that standards or implementations that do not directly use such schemas and element names may conform to these requirements through clearly defined mapping documentation.~~



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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Introduction

Specifications for Wholesale Standard Demand Response Signals

Purpose: ~~To accelerate the development of standards for Smart Grid Interoperability, NIST is working with all stakeholders of Smart Grid and has developed a set of PAPs¹. A number of PAPs (03, 04, and 09) are related to the use of Smart Grid technologies to enable DR and the integration of DER for DR purposes.~~

~~Specifically for PAP 09, NAESB, with support from UCAIug OpenSG task forces and the ISO/RTO Council, have responsibility to collect, analyze, and consolidate use cases and develop UML-based use case models for DR. Such responsibility now falls under the NAESB-SGTF.~~

~~NIST Smart Grid Interoperability² Roadmap leverages the GWAC interoperability framework. This framework calls for the establishment of business objectives, procedures and context before technical interoperability standards can be established. To apply this framework to the development of interoperability standards for DR Signals, it is clear that the industry needs an overarching business framework to guide the development of technical standards, given the complexity and range of DR programs.~~

The purpose of the following is to provide standards developers with a context for understanding the range of scenarios-interactions between wholesale electricity market sSystem eOperators and Market Participants ~~to which DR programs and DERs may be applied and implemented across the~~ various electricity systems and jurisdictions in the United States of America with some overlaps to Canada. A major objective in producing these Business Practice Standards is to emphasize the importance of interoperability at all levels of the GWAC interoperability framework.

The use cases included in these Business Practice Standards are not to be required or exhaustive and are provided for clarification-informational purposes.

¹ [http://collaborate.nist.gov/wiki-sggrid/bin/view/ SmartGridInterimRoadmap/PriorityActionPlans](http://collaborate.nist.gov/wiki-sggrid/bin/view/SmartGridInterimRoadmap/PriorityActionPlans)

² ~~Interoperability is the capability of two or more networks, systems, devices, applications, or components to share and readily use information securely and effectively with little or no inconvenience to the user. The characteristics of interoperability as set forth in the GridWise[®] Interoperability Context Setting Framework are (1) exchange of meaningful, actionable information between two or more systems across organizational boundaries, (2) a shared understanding of the exchanged information, (3) an agreed expectation for the response to the information exchange, and (4) a requisite quality of service: reliability, fidelity, and security. The result of interoperability is that interfaces, systems, and devices are capable of being integrated, scalable, adaptable, and upgradable and utilize open standards to promote competitive technology and to avoid stranded investments. Interoperability can only be achieved if there is a seamless, end-to-end coordination and exchange of data between many organizations, interfaces, systems, and devices resulting in behavior-changing information given to the consumer.~~



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Requesters: Smart Grid Interoperability Panel
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Scope: There are certain principles and boundaries that have been established. These include:

1. Demand Response practices must be consistent with NERC and applicable regional reliability authority requirements.
2. All involved entities are registered through the applicable ISO/RTO market participant registration process, which may include credit checks. However, the specifics related to the business processes associated with Market Participant registration are not documented in these requirements specifications.
3. Settlement input parameters are defined as an output to the measurement and performance business process. However, specific business processes associated with settlements are not documented in these requirements specifications.
4. Intra-system operator information exchanges and specific system operators market rules, calculations, algorithms, and Performance Evaluation models are excluded.
5. Planning functions are not documented in these requirements specifications. This includes, but is not limited to, long-term load forecasting and transmission planning.
6. Capacity auctions, awards processes, and resource certification are not documented in these requirements specifications.
7. References in these Recommendations to "Dispatch", "Markets", and "Reliability", are made relative to Demand Response and apply to Demand Response resources only, not to Generation resources.
8. Compliance standards for Demand Response resources are determined by the market rules or other Governing Documents of the respective system System operator Operator and are specific to the product or service and the reliability need being addressed.

Business Practice Standards

018-1 Specifications for Wholesale Standard Demand Response Signals

The following describes the wholesale market business process flow business activity diagram and provides the necessary business context and reference architecture for use cases that connect to the retail level between the System Operator and Market Participant. The descriptions provide a common linkage to the retail use cases presented in the companion specification for the Retail Electricity Quadrant.

This Business Practice Standard contains the list of data elements used in Business Practice Standards WEQ-016 and WEQ-018. Specific application of the data elements to a given use case contained in WEQ-016 and WEQ-018 are identified within the appropriate Business Practice Standard. This Business Practice Standard and data elements included herein are not intended to (i) require the use of any these data elements; (ii) require the provision or purchase of any products, programs, rates, markets or services, or (iii) supersede replace applicable Governing



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Documents, and in the event of a conflict, the latter documents shall have precedence over this standard.

018-1.1 Conventions

- Glossary terms are ~~to be~~ capitalized. This convention does not apply to data elements. Capitalization of words within the Short Description or Long Description of a data element refers to the name of another data element within the Master Data Element List, not a NAESB defined term.
- ~~Implementation does not require every communication;~~ Interactions flow ~~interaction~~ shown in the ~~process flow~~ business activity diagrams ~~business activity diagrams~~ are not required.



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018-2 ACTORS

The actors listed in the table below are specific to this recommendation and are a subset of the actors and related objects defined in WEQ-000. Details on the relationships between the actors and related objects are further defined in Appendix A.

Table 1 - Actor Roles

Term	Actor ID ³
Designated Dispatch Entity	3.4
Load Serving Entity	3.2
Meter Authority	3.6
Scheduling Entity	3.3
Service Provider	3.1
System Operator	2.1
Transmission/Distribution Service Provider	3.5

³ The Actor ID shown in the table refers to the item number of the corresponding actor or related object in the Entity-Relationship Diagram provided in Appendix A. Definitions of the actors and related objects are included in WEQ-000.



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018-1.3

USE CASE OVERVIEW

The use cases presented in these Business Practice Standards represent a combination of three dimensions of demand response participation in wholesale markets: product, deployment, and performance evaluation method. As shown in the table below, product and deployment dimensions are identified by a single alphabetic character and performance evaluation methods are indicated by a numeric identifier; each character is separated by a dash (-). For example, use case E-R-1 refers to the use case for the energy (economic) product with a resource-specific deployment and performance evaluated using a Baseline.

The use cases included in this Business Practice Standard are not to be required or exhaustive and are provided for clarification-informational purposes.

Table 2 - Use Case Dimensions

Product	
Energy (Economic)	E
Energy (Reliability)	R
Capacity	C
Reserve	V
Regulation	G
Deployment	
Bulk	B
Resource	R
Self	S
Performance Evaluation	
Baseline	1
MB/MA	2
MBL	3
MGO	4



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A sample of the use case list is shown in the table below. Appendix B contains the complete list of [valid](#) use case combinations.

Table 3 - Sample Use Case List

Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO

The Figure 1 illustrates the [process-flowbusiness activity diagrams](#) for use cases combinations that are considered to be representative of the types of demand response in [organized](#) wholesale electricity markets today. Each [process-flowbusiness activity diagram](#) description includes a table of the use cases to which the [process-flowbusiness activity diagram](#) applies, [followed by the specific data elements that are exchanged in each numbered interaction shown in the business activity diagram](#).

The wholesale Demand Response end-to-end [business-process-flowbusiness activity diagram](#) for the [communicationinteractions](#) between the SO and the Service Provider SP is comprised of four major functions:

- [1.0](#) Enrollment & Qualification,
- [2.0](#) Scheduling & Award Notification,
- [3.0](#) Deployment & Real-Time Communications,
- [4.0](#) Measurement & Performance.

Two additional [processes-activities](#) are shown in the high-level business process flow, but are considered outside the scope of what is required for the [communicationinteractions](#) flow for demand response:

- Market Participant Registration
- Settlements

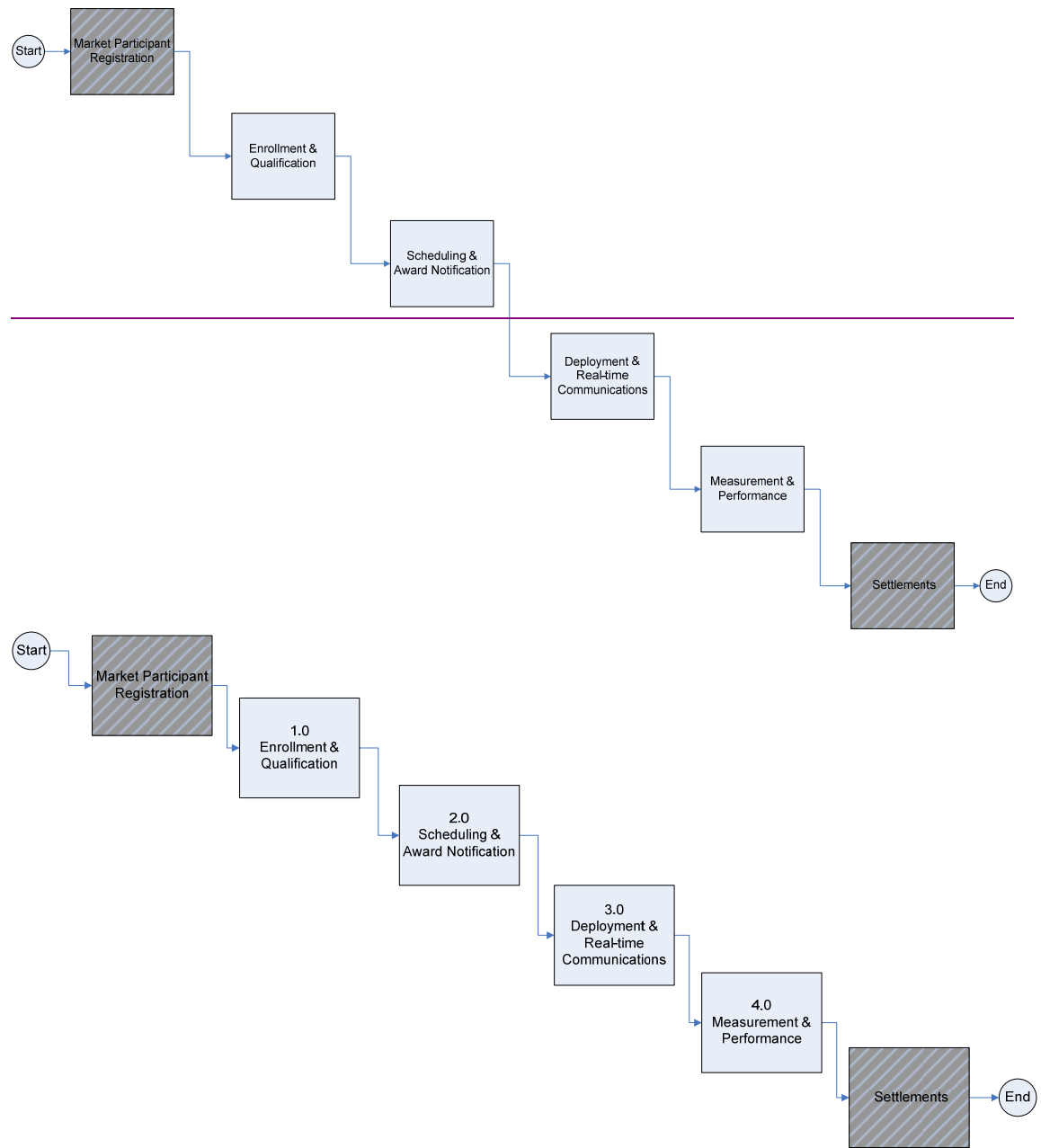
Late Comments Submitted by D. Pratt, J. Phillips and B. Bartell



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Figure 1 - Demand Response





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Business activity diagrams are numbered using the sequence shown in Figure 1. If a business process is further specified, the second position in the number sequence indicates this specification, as in 2.1 – Scheduling and Award Notification – Economic and 2.2 – Scheduling and Award Notification – Reliability.

Interactions between the System Operator and the Market Participant are numbered for each business activity diagram. To continue with the example above, 2.1.1 – Offer Parameters, is the first interaction between the System Operator and Market Participant in the business activity diagram 2.1 – Scheduling and Award Notification – Economic.

A table containing the data elements used in the interactions of the business activity diagram is shown. The numbers of the interactions in the table correspond to the numbered interactions in the business activity diagram. Only data elements with at least one active interaction will be displayed in the tables. Any data elements identified in the Master Data Element List but not currently used in one of the interactions in this document were agreed upon to be included in the Master Data Element List to support future market needs.

Cells showing an “M” (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an “O” (optional) are data elements that may be left blank if not used in a given interaction.



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018-1.4 SPECIFIC USE CASES

018-1.4.1 Enrollment and Qualification

Overview: The Enrollment and Qualification process documents the steps required to enroll a Resource in a wholesale demand response program.

Use Cases: All valid use cases defined in these Business Practice Standards (see Figure 2)

- The process begins when the SP submits an enrollment request to the SO.
- The SO processes the enrollment request, which may include interactions with the TDSP, LSE, MA and/or SE.
- The SO evaluates the enrollment request, which may include verification information from the TDSP, LSE, MA and/or SE.
- The result of the evaluation is the approval or rejection of the enrollment request.
 - o If the enrollment request has been rejected, the SO sends information to the SP, indicating the rejection details.
 - o If the enrollment request has been approved, a determination is made by the SO as to whether qualification of the Resource's capability is required prior to final approval.
 - If no qualification is required, the SO sends information to the SP, indicating the approval of the enrollment.
 - If qualification is required, the SO coordinates the qualification procedure with the SP.
 - If the Resource has failed to qualify, the SO sends information to the SP, indicating the qualification rejection details.
 - If the Resource achieves qualification, the SO sends information to the SP and enrollment is finalized.
- At the end of the Enrollment and Qualification process, the SO finalizes enrollment, notifies the SP and may also notify the TDSP, LSE, MA and/or SE.



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Activity Diagram and Data Flow:

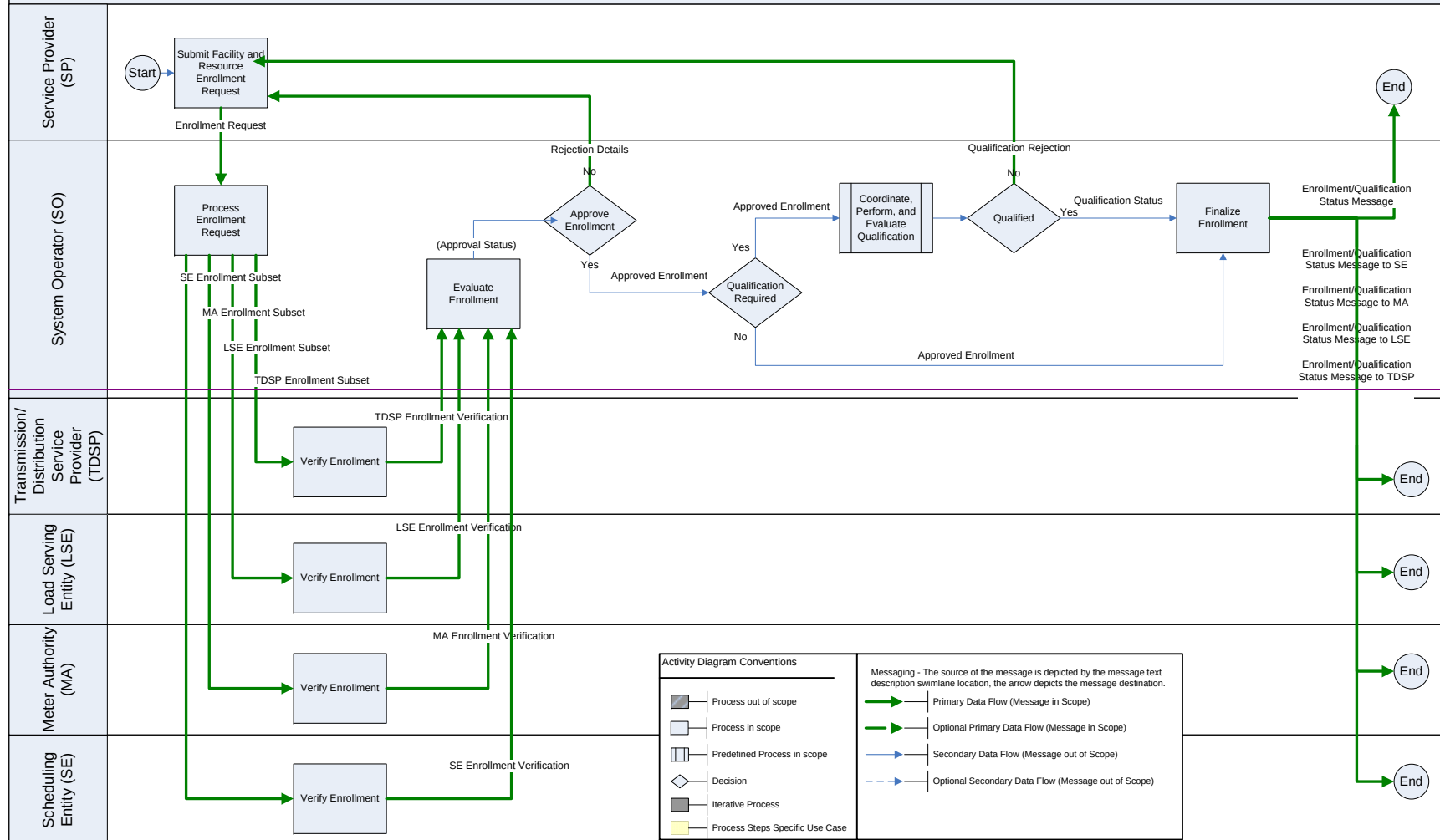
Figure 2 - Enrollment and Qualification



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Demand Response - Enrollment & Qualification





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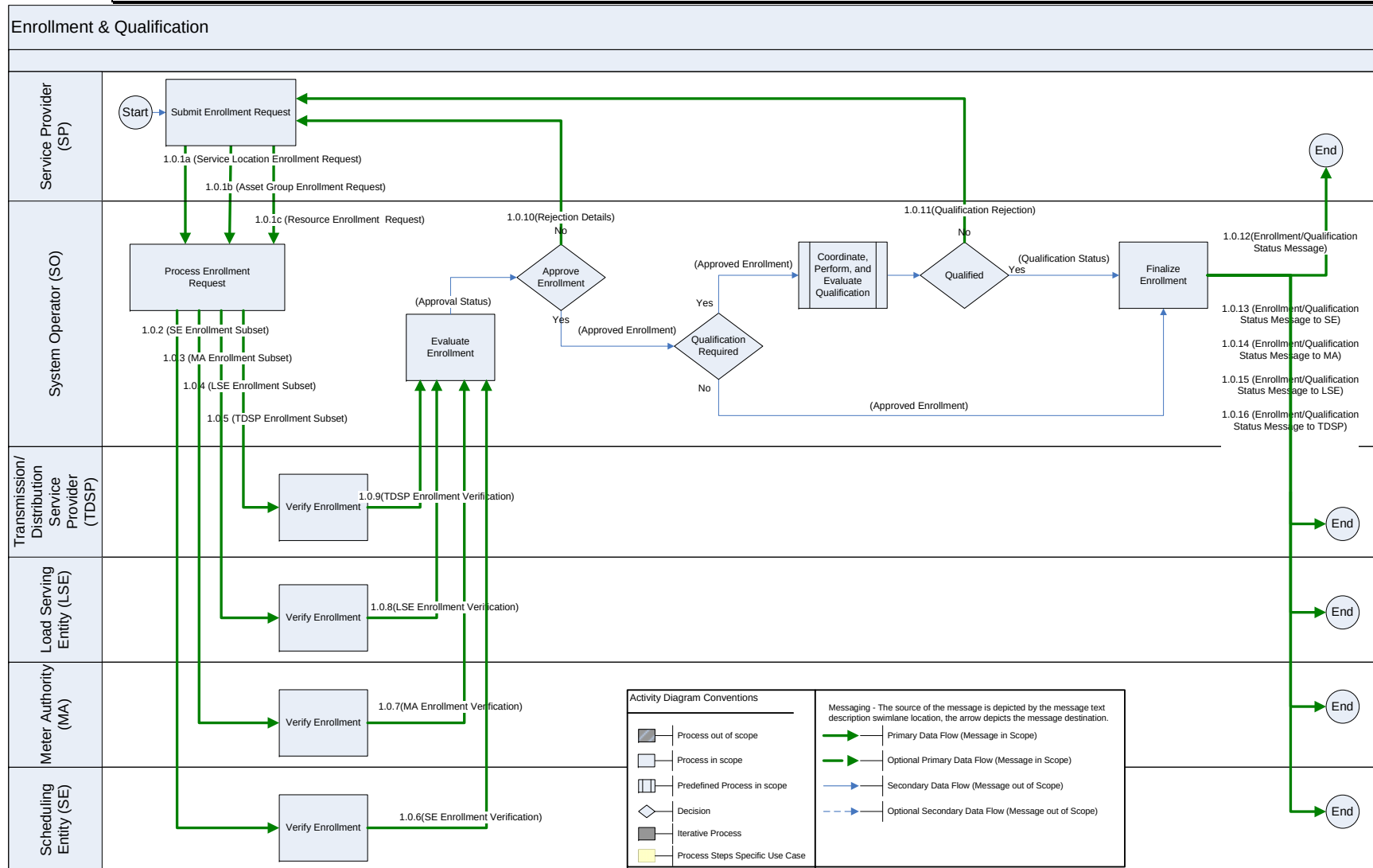


Table 4. Data Requirements Elements by Interaction Number 1.0.1a through 1.0.9: Enrollment and Qualification

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



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The data elements for Enrollment and Qualification are split into two tables because the number of interactions in this business activity are too numerous to fit into a single table. Some data elements shown in one table may not display an "M" or an "O" for any interactions because they will be shown in interactions that show in the second table for Enrollment and Qualification. Only data elements with at least one active interaction will be displayed in the tables.

Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
0	Common														
0	10	Submittal Date	Timestamp for the sender's use	O	O	M	O	O	O	O					
0	11	Submitted By	User ID of submitter	O	O	M	O	O	O	O					
0	12	Submitted Error	ID of submission error detected	O	O	M	O	O	O	O					
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	M	M	M	M	



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
					Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element				Short Description											
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	M	M	M	M	
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M	M	M	M	
1	General Asset/Resource				M	M	M	M	M	M	M	M	M	M	
1	10	Service Location ID	Identifier assigned to the Service Location	M	M	M	M	M	M	M	M	M	M	M	
1	11	Service Location Name	Name of the Service Location	O	O	M	M	O	O	O	M	O	O	M	
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O	O	O	O	
1	20	Resource ID	Identifier assigned to the Resource	M	M	M	M	M	M	M	M	M	M	M	



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				Process										
				1.0 Enrollment & Qualification										
				From			SO				SE	MA	LSE	TDSP
				To			SE	MA	LSE	TDSP	SO			
				<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
				Interaction										
Element				Short Description										
<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>30</u>	<u>Asset Group ID</u>	<u>The identifier of a group of assets</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-
<u>1</u>	<u>31</u>	<u>Asset Group Name</u>	<u>Name of the aggregated group of assets</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-
<u>1</u>	<u>40</u>	<u>Gen EMS ID</u>	<u>Alias or point Identifier assigned to the Resource</u>	-	-	<u>M</u>	-	-	-	-	-	-	-	-
<u>1</u>	<u>41</u>	<u>Gen Billing ID</u>	<u>Billing Identifier assigned to the Resource</u>	-	-	<u>M</u>	-	-	-	-	-	-	-	-
<u>1</u>	<u>50</u>	<u>Business Segment</u>	<u>NAICS code of the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-
<u>1</u>	<u>51</u>	<u>Batch Load Flag</u>	<u>Flag set if the Resource is a Batch Load</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-



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				Process	1.0 Enrollment & Qualification											
				From	SP			SO				SE	MA	LSE	TDSP	
				To	SO			SE	MA	LSE	TDSP	SO				
				Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
					Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element				Short Description												
1	991	General Resource Comments	General comments associated with the Resource	O	O	O	O	O	O	O						
2	Location															
2	10	Address1	Address line 1	M	M	M	M	M	M	M	M			M		
2	11	Address2	Address line 2	O	O	O	O	O	O	O	O			O		
2	12	City	City	M	M	M	M	M	M	M	M			M		
2	13	State/Province	State or Province two-letter code	M	M	M	M	M	M	M	M			M		
2	14	Zip/Postal Code	Zip or Postal Code	M	M	M	M	M	M	M	M			M		
2	15	Country	Country	M	M	M	M	M	M	M	M			M		
2	20	GPS Coordinates	Latitude Latitude and longitude	O	O	O										



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
<u>2</u>	<u>21</u>	<u>Weather Station</u>	<u>Weather Station code associated with the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>						
<u>2</u>	<u>22</u>	<u>TimeZoneName</u>	<u>Name of the Time Zone in which the Service Location is located</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the Zone in which the Service Location is located</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				
<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is located</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				
<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element				Short Description											
<u>2</u>	<u>40</u>	<u>Electrical Node ID</u>	<u>Identifier assigned to the Electrical Node at which the Service Location is connected</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>M</u>					
<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				<u>M</u>	
<u>2</u>	<u>42</u>	<u>Electrical Node Type</u>	<u>Type of Electrical Node at which the Service Location is attached</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>	
<u>2</u>	<u>43</u>	<u>PNode</u>	<u>Name of the Price Node associated with the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>					
<u>2</u>	<u>44</u>	<u>PNode ID</u>	<u>Identifier assigned to the Price Node associated with the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>	

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
<u>2</u>	<u>50</u>	<u>Competitive Choice Area</u>	<u>Flag set if the Service Location is in an area with Competitive Choice</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>0</u>	
<u>2</u>	<u>51</u>	<u>Asset Multiplier</u>	<u>Number of identical assets within the Service Location</u>	<u>0</u>	<u>0</u>	<u>0</u>									
<u>2</u>	<u>60</u>	<u>NERC Control Area</u>	<u>The NERC control area of the resource</u>	<u>0</u>	<u>0</u>	<u>0</u>									
<u>2</u>	<u>71</u>	<u>Connection Type</u>	<u>Additional type of connection associated with the Service Location/Resource</u>	<u>0</u>	<u>0</u>	<u>0</u>									
<u>2</u>	<u>72</u>	<u>Connection Address</u>	<u>Address associated with the Connection Type</u>	<u>0</u>	<u>0</u>	<u>0</u>									



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
<u>2</u>	<u>991</u>	<u>Location Comments</u>	<u>Comments associated with the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>					
<u>3</u>		<u>Contact</u>													
<u>3</u>	<u>10</u>	<u>Contact Type</u>	<u>Interest code associated with a Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>3</u>	<u>11</u>	<u>Contact Priority</u>	<u>Order in which this Contact should be selected</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>3</u>	<u>12</u>	<u>DUNS Number</u>	<u>DUNS business number</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>3</u>	<u>13</u>	<u>Third Party</u>	<u>Flag set if the Contact is a third-party entity</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>3</u>	<u>20</u>	<u>Title</u>	<u>Title of the Contact</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>3</u>	<u>21</u>	<u>First Name</u>	<u>First Name of the Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>3</u>	<u>22</u>	<u>Last Name</u>	<u>Last Name of the Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>3</u>	<u>23</u>	<u>Middle Name</u>	<u>Middle Name of the</u>	<u>O</u>	<u>O</u>	<u>O</u>									

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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
Element				Short Description											
				<u>Contact</u>											
<u>3</u>	<u>30</u>	<u>Contact Method</u>		<u>Method of communication</u> <u>with the Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>31</u>	<u>Contact Address Data</u>		<u>Method-dependent</u> <u>Address of the Contact</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>3</u>	<u>32</u>	<u>Contact Method Priority</u>		<u>Order in which a</u> <u>Communication Method</u> <u>should be selected for a</u> <u>Contact</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>3</u>	<u>991</u>	<u>Contact Comments</u>		<u>Comments associated with</u> <u>the Contact</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>4</u>		<u>Grid Connection</u>													
<u>4</u>	<u>10</u>	<u>Loss Factor Type</u>		<u>Type of Loss Factor</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>						<u>O</u>
<u>4</u>	<u>11</u>	<u>Loss Factor Value</u>		<u>Loss Factor</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>						<u>O</u>



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				Process	1.0 Enrollment & Qualification													
				From	SP			SO				SE	MA	LSE	TDSP			
				To	SO			SE	MA	LSE	TDSP	SO						
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>			
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element				Short Description														
<u>4</u>	<u>12</u>	<u>Connect Voltage</u>	<u>Voltage level</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>4</u>	<u>991</u>	<u>Grid Connection Comments</u>	<u>Comments associated with the Attributes of the Resource</u>	<u>O</u>	<u>O</u>	<u>O</u>												
<u>5</u>	<u>-</u>	<u>Business Entity Relationships</u>				<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>		
<u>5</u>	<u>11</u>	<u>Service Provider ID</u>	<u>Identifier assigned to the Service Provider</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>						
<u>5</u>	<u>12</u>	<u>Service Provider Name</u>	<u>Name of the Service Provider</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>O</u>						
<u>5</u>	<u>20</u>	<u>Transmission/Distribution on Service Provider ID</u>	<u>Identifier assigned to the Transmission/Distribution Service Provider</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>						



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>	
Element			Short Description												
<u>5</u>	<u>21</u>	<u>Transmission/Distribution Service Provider Name</u>	<u>Name of the Transmission/Distribution Service Provider</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>O</u>				<u>M</u>
<u>5</u>	<u>22</u>	<u>Transmission/Distribution Account Number</u>	<u>Transmission/Distribution Service Provider's account number for the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>					<u>O</u>
<u>5</u>	<u>30</u>	<u>Load Serving Entity ID</u>	<u>Identifier assigned to the Load Serving Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>					
<u>5</u>	<u>31</u>	<u>Load Serving Entity Name</u>	<u>Name of the Load Serving Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>					
<u>5</u>	<u>40</u>	<u>Retail Rate ID</u>	<u>Identifier assigned to the Retail Rate</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>O</u>						
<u>5</u>	<u>41</u>	<u>Retail Rate Code</u>	<u>Code representing the Retail Rate for the Service Location</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>					<u>O</u>	



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element				Short Description											
5	42	<u>Retail Rate Name</u>	Name of the Retail Rate for the Service Location		M	M	M			O				M	
5	43	<u>Retail Rate Description</u>	Description of the Retail Rate		O	O	O			O				O	
5	44	<u>Retail Rate</u>	Retail Rate		M	M	M			O				M	
5	60	<u>Meter Authority ID</u>	Identifier assigned to the Metering Authority		M	M	M	M	M			M			M
5	61	<u>Meter Authority Name</u>	Name of the Metering Authority		M	M	M	M	M			O			O
5	70	<u>Scheduling Entity ID</u>	Identifier assigned to the Scheduling Entity		M	M	M	M				M			M
5	71	<u>Scheduling Entity Name</u>	Name of the Scheduling Entity		M	M	M	M				O			O
5	80	<u>Designated Dispatch Entity ID</u>	Identifier assigned to the Designated Dispatch Entity		M	M	M	M				M			M



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				Process	1.0 Enrollment & Qualification										
				From	SP		SO				SE	MA	LSE	TDSP	
				To	SO		SE	MA	LSE	TDSP	SO				
Interaction				<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>	
Element				Short Description											
<u>5</u>	<u>81</u>	<u>Designated Dispatch Entity Name</u>	<u>Name of the Designated Dispatch Entity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>O</u>			<u>O</u>	
<u>5</u>	<u>991</u>	<u>External Entity Comments</u>	<u>Comments associated with the External Entity</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>		<u>Device and Qualification</u>													
<u>6</u>	<u>10</u>	<u>Meter Configuration</u>	<u>Configuration of the Meter at the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>6</u>	<u>11</u>	<u>Parent Meter ID</u>	<u>ID of a Master or Parent Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>							
<u>6</u>	<u>20</u>	<u>Meter ID</u>	<u>Identifier assigned to the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>	
<u>6</u>	<u>21</u>	<u>Meter Type</u>	<u>Type of Meter installed at the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>								



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				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element				Short Description											
6	22	Meter Manufacturer	Manufacturer of the Meter	M	M	M									
6	221	Meter Installation Date	Date of Installation of the Meter	M	M	M									
6	222	PT Ratio	Ratio of the Potential Transformer	O	O	O									
6	223	Meter Installer License	Professional License Number of the Installer of the Meter	O	O	O									
6	224	Meter Correction Factors	Device-specific Factors used to adjust for atmospheric changes at the point of installation of the Meter	O	O	O									



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			Process	1.0 Enrollment & Qualification										
			From	SP	SO				SE	MA	LSE	TDSP		
			To	SO	SE	MA	LSE	TDSP	SO					
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification
Element			Short Description											
6	225	Meter Test Criteria	Test Criteria required to qualify the installation of the Meter	M	M	M	-	-	-	-	-	-	-	-
6	226	Meter Test Frequency	Frequency of Tests of the Meter	O	O	O	-	-	-	-	-	-	-	-
6	227	Meter Device QA Plan	Quality Assurance plan for maintenance and testing of the Meter	M	M	M	-	-	-	-	-	-	-	-
6	228	Date of Last Meter Test	Date of Last Test of the Meter	O	O	O	-	-	-	-	-	-	-	-
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator	M	M	M	O	M	-	-	-	-	-	-



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
6	2291	Meter Test Results	Results of Tests of the Meter	M	M	M									
6	2292	VEE Compliance	Compliance standard for Validation, Editing, and Estimation	M	M	M									
6	2293	Measurement Interval	Interval of time between Measurement readings	M	M	M									
6	2294	ANSI Compliance	ANSI standard with which the Meter complies	O	O	O									
6	2295	Meter Owner	Owner of the Meter	M	M	M									O
6	2296	Meter Asset Comments	Comments associated with the Meter Asset	O	O	O									
6	23	Meter Model	Model of the Meter	M	M	M									



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element				Short Description											
<u>6</u>	<u>24</u>	<u>Meter Rating</u>	<u>Load Rating of the Meter</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>25</u>	<u>Meter Multiplier (kH)</u>	<u>Multiplier used to convert pulses into power units</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>26</u>	<u>Meter Accuracy Class</u>	<u>Accuracy Class of the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>27</u>	<u>Meter Loss Compensation</u>	<u>Line Losses included in the Meter</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>28</u>	<u>Maximum Error</u>	<u>Error of the Meter, including end-to-end Maximum Error</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>29</u>	<u>Meter Phase</u>	<u>Specific Phase information</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>291</u>	<u>CT Ratio</u>	<u>Ratio of the Current Transformer</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>30</u>	<u>Distributed Generator Type</u>	<u>Type of Distributed Generator</u>	<u>M</u>	<u>M</u>	<u>M</u>									

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			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>											
				From	SP		SO				SE	MA	LSE	TDSP	
			To		SO		SE	MA	LSE	TDSP	SO				
				<u>Interaction</u>	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
			<u>Service Location Enrollment</u>		<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
<u>Element</u>			<u>Short Description</u>												
<u>6</u>	<u>31</u>	<u>Nameplate Rating</u>	<u>Manufacturer's output rating of the Distributed Generator</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>32</u>	<u>Distributed Generator Fuel Type</u>	<u>Type of Fuel consumed by the Distributed Generator</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>33</u>	<u>Distributed Generator Permit Type</u>	<u>Type of environmental authorization required to operate the Distributed Generator</u>	<u>M</u>	<u>M</u>	<u>M</u>									
<u>6</u>	<u>34</u>	<u>Distributed Generator Manufacturer</u>	<u>Manufacturer of the Distributed Generator</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>6</u>	<u>35</u>	<u>Manufactured Date of the Distributed Generator</u>	<u>Date of Manufacture of the Distributed Generator</u>	<u>O</u>	<u>O</u>	<u>O</u>									



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			Process	1.0 Enrollment & Qualification											
			From	SP			SO				SE	MA	LSE	TDSP	
			To	SO			SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element			Short Description												
6	36	<u>Installation Date of Distributed Generator</u>	<u>Date of Installation of the Distributed Generator</u>	<u>O</u>	<u>O</u>	<u>O</u>									
6	37	<u>In-Service Date</u>	<u>Date the Distributed Generator became operational</u>	<u>M</u>	<u>M</u>	<u>M</u>									
6	38	<u>Normal Load Rating</u>	<u>Average load picked up by the Distributed Generator during the applicable performance hours</u>	<u>M</u>	<u>M</u>	<u>M</u>									
6	39	<u>Distributed Generator Name</u>	<u>Name of the Distributed Generator</u>	<u>M</u>	<u>M</u>	<u>M</u>									
6	41	<u>Interconnection Agreement Type</u>	<u>Type of Interconnection Agreement between the Distributed Generator or Service Location and the</u>	<u>M</u>	<u>M</u>	<u>M</u>									

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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
			<u>TDSP</u>											
6	42	<u>Interconnection Limits</u>	<u>Limits associated with the Interconnection of the Distributed Generator or Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>								
6	43	<u>Capable of Synchronizing to Grid</u>	<u>Flag set if the Service Location is capable of Synchronizing to the Grid</u>	<u>M</u>	<u>M</u>	<u>M</u>								
6	44	<u>Normal Breaker Status</u>	<u>Status of the Breaker for the Service Location under Normal operating conditions</u>	<u>M</u>	<u>M</u>	<u>M</u>								



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element			Short Description											
<u>6</u>	<u>45</u>	<u>Breaker Status During Event</u>	<u>Status of the Breaker for the Service Location during an Emergency Event</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>6</u>	<u>46</u>	<u>Wholesale Delivery Point Status</u>	<u>Flag set if the Service Location is metered at the Wholesale level</u>	<u>M</u>	<u>M</u>	<u>M</u>								
<u>6</u>	<u>47</u>	<u>Private Use Network</u>	<u>Flag set if the Resource is an Electric Network connected to the transmission grid</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>6</u>	<u>51</u>	<u>UFR Settings</u>	<u>Setting of the Under-Frequency Relay</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>6</u>	<u>52</u>	<u>Load Resource Control Device</u>	<u>Type of Control Device at a Service Location or deployed by a Response</u>	<u>M</u>	<u>M</u>	<u>M</u>								



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			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>	
Element			Short Description												
			Method												
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O									
7	Market/Program Enrollment														
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	M	M	M	M	M
7	11	Program Name	Name of the Program	O	O	O	O	O	O	O	O	O	O	O	O
7	12	Market	Type of wholesale market	M	M	M	M	M	M	M					
7	13	Market Product	Market Product	M	M	M	M	M	M	M	M				M
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment	M	M	M	O	O	O	O	M				



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					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
<u>Element</u>				<u>Short Description</u>											
<u>7</u>	<u>22</u>	<u>Enrollment Status</u>	<u>Status of the Enrollment for the Service Location or Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>				
<u>7</u>	<u>23</u>	<u>Resource Type</u>	<u>Type of Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>M</u>	
<u>7</u>	<u>24</u>	<u>Resource Qualification Test Date</u>	<u>Date the Resource demonstrated its ability to deliver a product or service</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>			<u>O</u>	
<u>7</u>	<u>25</u>	<u>Enrollment End Date</u>	<u>Date of Termination of Enrollment</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>			<u>O</u>	
<u>7</u>	<u>26</u>	<u>Regualification Test Date</u>	<u>Date the Resource will retest its ability to deliver a product or service</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>			<u>O</u>	
<u>7</u>	<u>30</u>	<u>Lead Time</u>	<u>Time between the advanced notification and</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>							

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			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
Element			Short Description											
			<u>deployment</u>											
<u>7</u>	<u>31</u>	<u>Day Ahead Flag</u>	Flag set if the Resource will be participating in the Day-Ahead market	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>						
<u>7</u>	<u>32</u>	<u>Real Time Flag</u>	Flag set if the Resource will be participating in the Real-Time market	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>						
<u>7</u>	<u>33</u>	<u>Self-Schedule Flag</u>	Flag set if the Resource is Self-Deploying	<u>O</u>	<u>O</u>	<u>O</u>								
<u>7</u>	<u>40</u>	<u>Response Method Type</u>	Type of Response Method	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>			
<u>7</u>	<u>41</u>	<u>Response Method ID</u>	Identifier assigned to the Response Method	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				
<u>7</u>	<u>42</u>	<u>Response Method Name</u>	Name of the Response Method	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
Element				Short Description											
<u>7</u>	<u>43</u>	<u>Response Method Value</u>	<u>Value of the Response Method</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>				
<u>7</u>	<u>44</u>	<u>Verified Capability</u>	<u>Audited Capability</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>				<u>M</u>				
<u>7</u>	<u>45</u>	<u>Verified Capability Factor</u>	<u>Ratio of the Verified Capability to the qualified capability</u>	<u>O</u>	<u>O</u>	<u>O</u>									
<u>7</u>	<u>50</u>	<u>Performance Evaluation Method Type Code</u>	<u>Code representing the Type of Measurement</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
<u>7</u>	<u>51</u>	<u>Performance Evaluation Method</u>	<u>Method used to Evaluate the Performance of a Resource</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>							
<u>7</u>	<u>991</u>	<u>Market Enrollment Comments</u>	<u>Comments associated with the Enrollment</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>				
<u>8</u>	Offer Parameters														



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				Process	1.0 Enrollment & Qualification										
				From	SP			SO				SE	MA	LSE	TDSP
				To	SO			SE	MA	LSE	TDSP	SO			
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
					<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
Element				Short Description											
<u>8</u>	<u>10</u>	<u>Offer Limit Value</u>	<u>Offer Limit Value</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
<u>8</u>	<u>11</u>	<u>Offer Limit Type</u>	<u>Type of Offer Limit</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
<u>8</u>	<u>12</u>	<u>Offer Limit Interval</u>	<u>Offer Limit Interval</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>			<u>M</u>				
<u>8</u>	<u>20</u>	<u>Physical Min Gen</u>	<u>Minimum Operating Level</u> <u>of a Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>				<u>O</u>			<u>O</u>	
<u>8</u>	<u>21</u>	<u>Min Gen MW</u>	<u>Minimum MW available</u> <u>for dispatch</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>			<u>O</u>			<u>O</u>	
<u>8</u>	<u>22</u>	<u>Min Gen Cost</u>	<u>The cost per hour for each</u> <u>Min Gen MW value.</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>			<u>O</u>			<u>O</u>	
<u>8</u>	<u>23</u>	<u>Ramp Rate Type</u>	<u>Type of Ramp Rate</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>				
<u>8</u>	<u>24</u>	<u>Ramp Rate Segment</u>	<u>Energy of Segment of the</u> <u>Ramp Rate</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>				<u>M</u>				



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			Process	1.0 Enrollment & Qualification										
				From	SP		SO				SE	MA	LSE	TDSP
			To	SO		SE	MA	LSE	TDSP	SO				
Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>			
	<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element			Short Description											
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	M	M	M	M				M			
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	M	M	M	M				M			
8	30	Offer Dispatch Type	Type of Offer	M	M	M								
8	31	Offer Segment MW	Energy of Segment of the Offer	O	O	M								
8	32	Offer Segment Price	Price of Segment of the Offer	O	O	M								
8	33	Offer Segment Hour	Hour of Segment of the Offer	O	O	M								



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			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location</u> <u>Enrollment</u>	<u>Asset Group</u> <u>Enrollment</u>	<u>Resource</u> <u>Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment</u> <u>Verification</u>	<u>MA Enrollment</u> <u>Verification</u>	<u>LSE Enrollment</u> <u>Verification</u>	<u>TDSP Enrollment</u> <u>Verification</u>
Element			Short Description											
8	34	<u>Startup Cost</u>	<u>Cost of starting a response activity</u>	O	O	M	-	-	-	-	-	-	-	-
8	35	<u>Strike Price</u>	<u>Threshold Price</u>	O	O	M	-	-	-	-	-	-	-	-
8	36	<u>Offer Expiration Date</u>	<u>Date of Expiration of the Offer</u>	O	O	M	-	-	-	-	-	-	-	-
8	37	<u>Startup Cost Type</u>	<u>Type of startup cost</u>	M	M	M	-	-	-	-	-	-	-	-
8	38	<u>Offer Commit Status</u>	<u>Commitment status of offer</u>	M	M	M	-	-	-	-	-	-	-	-
8	39	<u>Offer Dispatch Status</u>	<u>Dispatch Status of Offer</u>	M	M	M	-	-	-	-	-	-	-	-
8	331	<u>Offer Price Curve Slope</u>	<u>Flag to smooth offer segments from step function to slope</u>	M	M	M	-	-	-	-	-	-	-	-
8	332	<u>Strike Price Type</u>	<u>Type of strike price</u>	O	O	O	-	-	-	-	-	-	-	-



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				Process	1.0 Enrollment & Qualification											
				From	SP			SO				SE	MA	LSE	TDSP	
				To	SO			SE	MA	LSE	TDSP	SO				
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element				Short Description												
<u>8</u>	<u>40</u>	<u>Market Clearing Day</u>	<u>Market Clearing Day of the Offer</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>41</u>	<u>Schedule Name</u>	<u>Name or tag of the Offer</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>42</u>	<u>Schedule Description</u>	<u>Description of the Offer</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>43</u>	<u>Schedule Status</u>	<u>Status of the Offer</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>50</u>	<u>Portfolio Name</u>	<u>Name of an aggregation of Resources for market participation</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>71</u>	<u>Constraint Type</u>	<u>Type of operational, schedule or offer constraint</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-	-
<u>8</u>	<u>72</u>	<u>Constraint Interval</u>	<u>The timeframe over which the constraint type applies.</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-	-	-	-	-	-	-



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			From	SP		SO				SE	MA	LSE	TDSP	
			To	SO		SE	MA	LSE	TDSP	SO				
			Interaction	<u>1.0.1</u> a	<u>1.0.1</u> b	<u>1.0.1</u> c	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>		<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>			
Element			Short Description											
8	73	Constraint Value	Value of the Constraint Type and Interval	M	M	M								
9		Energy Market												
9	0	Instruction ID	Unique identifier assigned to each instruction.	M	M	M								
9	15	Schedule ID	Unique identifier assigned to each schedule.	M	M	M								
10		Ancillary Service Market												
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide	M	M	M								
10	11	Have Engineering Diagram	Flag set if One-Line Diagrams have been submitted	O	O	O								



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			From	SP		SO				SE	MA	LSE	TDSP		
			To	SO		SE	MA	LSE	TDSP	SO					
			Interaction	1.0.1 a	1.0.1 b	1.0.1 c	1.0.2	1.0.3	1.0.4	1.0.5	1.0.6	1.0.7	1.0.8	1.0.9	
				Service Location Enrollment	Asset Group Enrollment	Resource Enrollment	SE Version	MA Version	LSE Version	TDSP Version	SE Enrollment Verification	MA Enrollment Verification	LSE Enrollment Verification	TDSP Enrollment Verification	
Element			Short Description												
210	20	Ancillary Service Product Qualification Type	Type of Qualification	M	M	M	M	-	-	-	M	-	-	-	
10	21	Synchronization Test Date	Target Date of Test of Synchronization to the grid	O	O	O	-	-	-	-	-	-	-	-	
10	22	Ancillary Service Product Type Qualification Date	Date of Qualification of the Resource	M	M	M	M	-	-	-	M	-	-	-	
10	23	Ancillary Service Product Type Qualified	Type of Ancillary Service Product(s) for which the Resource has Qualified	M	M	M	M	-	-	-	M	-	-	-	
10	24	Regualification Requirement	Flag set if Regualification is Required	O	O	O	-	-	-	-	-	-	-	-	
11	-	Capacity Market	-	-	-	-	-	-	-	-	-	-	-	-	



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				From	SP			SO				SE	MA	LSE	TDSP	
				To	SO			SE	MA	LSE	TDSP	SO				
				Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>	
					<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>	
Element				Short Description												
<u>11</u>	<u>10</u>	<u>Capacity Type</u>	Type of Capacity	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	
<u>11</u>	<u>11</u>	<u>Capacity Type Description</u>	Description of the Type of Capacity	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	
<u>11</u>	<u>20</u>	<u>Peak Value</u>	Measurement of Peak	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	<u>M</u>	
<u>11</u>	<u>21</u>	<u>Peak Type</u>	Type of measurement of Peak	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	<u>M</u>	
<u>11</u>	<u>22</u>	<u>Peak Date/Time</u>	Date and Time of measurement of Peak	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	<u>M</u>	
<u>11</u>	<u>23</u>	<u>Nominal Capacity</u>	Nominated load	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	
<u>11</u>	<u>24</u>	<u>Qualified Capacity</u>	Nominal installed capacity (ICAP) derated for performance	<u>O</u>	<u>O</u>	<u>O</u>	-	-	-	-	-	-	-	-	-	



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Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	1.0 Enrollment & Qualification										
			From	SP			SO				SE	MA	LSE	TDSP
			To	SO			SE	MA	LSE	TDSP	SO			
			Interaction	<u>1.0.1</u> <u>a</u>	<u>1.0.1</u> <u>b</u>	<u>1.0.1</u> <u>c</u>	<u>1.0.2</u>	<u>1.0.3</u>	<u>1.0.4</u>	<u>1.0.5</u>	<u>1.0.6</u>	<u>1.0.7</u>	<u>1.0.8</u>	<u>1.0.9</u>
				<u>Service Location Enrollment</u>	<u>Asset Group Enrollment</u>	<u>Resource Enrollment</u>	<u>SE Version</u>	<u>MA Version</u>	<u>LSE Version</u>	<u>TDSP Version</u>	<u>SE Enrollment Verification</u>	<u>MA Enrollment Verification</u>	<u>LSE Enrollment Verification</u>	<u>TDSP Enrollment Verification</u>
Element			Short Description											
<u>11</u>	<u>30</u>	<u>Capacity Obligation Period Type</u>	<u>Type of Capacity Obligation Time Period within which the Resource is obligated</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>						
<u>11</u>	<u>31</u>	<u>Capacity Obligation Period</u>	<u>Period of time for which the Capacity Resource is obligated</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>						
<u>11</u>	<u>40</u>	<u>Minimum Payment Nomination</u>	<u>Strike price for the economic dispatch of the energy component of the capacity program</u>	<u>O</u>	<u>O</u>	<u>O</u>								
<u>11</u>	<u>50</u>	<u>Capacity Reference ID</u>	<u>Identifier assigned to the External System award</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>						
<u>11</u>	<u>991</u>	<u>Capacity Comments</u>	<u>Comments associated with the Capacity market</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>						

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Table 5. Data Requirements by Interaction Number 1.0.10 through 1.0.16: Enrollment and Qualification

The data elements for Enrollment and Qualification are split into two tables because the number of interactions in this business activity are too numerous to fit into a single table. Some data elements shown in one table may not display an “M” or an “O” for any interactions because they will be shown in interactions that show in the second table for Enrollment and Qualification. Only data elements with at least one active interaction will be displayed in the tables for Enrollment and Qualification.

Legend: Cells showing an “M” (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an “O” (optional) are data elements that may be left blank if not used in a given interaction.

				1.0 Enrollment & Qualification						
Process										
From				SO	-	SO	-	-	-	-
To				SP	-	SP	SE	MA	LSE	TDSP
				1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
Interaction				Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description						
0 Common										
0	10	Submittal Date	Timestamp for the sender's use	O	O	O	-	-	O	O
0	11	Submitted By	User ID of submitter	O	O	O	-	-	O	O
0	12	Submitted Error	ID of submission error detected	O	O	O	-	-	O	O
0	13	Rejection Code Type	Type of rejection message	M	M	-	-	-	-	-
0	14	Rejection Code Value	Code referring to the reason for a rejection message	M	M	-	-	-	-	-



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Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
			<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
			<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
			<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
				<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>			<u>Short Description</u>							
<u>0</u>	<u>20</u>	<u>NERC CIP Security - Availability</u>	<u>CIP Security Classification for Availability</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>21</u>	<u>NERC CIP Security - Confidentiality</u>	<u>CIP Security Classification for Confidentiality</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>	<u>CIP Security Classification for Integrity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	-	<u>General Asset/Resource</u>	-	-	-	-	-	-	-	-
<u>1</u>	<u>10</u>	<u>Service Location ID</u>	<u>Identifier assigned to the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>11</u>	<u>Service Location Name</u>	<u>Name of the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>12</u>	<u>Asset ID</u>	<u>The unique identifier of the asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>13</u>	<u>Asset Name</u>	<u>The name of the asset</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>21</u>	<u>Resource Name</u>	<u>Name of the Resource</u>	<u>O</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>



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				Process	1.0 Enrollment & Qualification						
				From	SO	-	SO	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description	-	-	-	-	-	-	-
<u>1</u>	<u>30</u>	<u>Asset Group ID</u>	The identifier of a group of assets				O	O	O	O	O
<u>1</u>	<u>31</u>	<u>Asset Group Name</u>	Name of the aggregated group of assets				O	O	O	O	O
<u>1</u>	<u>40</u>	<u>Gen EMS ID</u>	Alias or point Identifier assigned to the Resource				M	-	-	-	-
<u>1</u>	<u>41</u>	<u>Gen Billing ID</u>	Billing Identifier assigned to the Resource				M	-	-	-	-
<u>1</u>	<u>51</u>	<u>Batch Load Flag</u>	Flag set if the Resource is a Batch Load				O	-	-	O	O
<u>1</u>	<u>991</u>	<u>General Resource Comments</u>	General comments associated with the Resource		O	O	O	-	-	O	O
<u>2</u>	-	<u>Location</u>									
<u>2</u>	<u>10</u>	<u>Address1</u>	Address line 1		M	M	O	M	-	O	O
<u>2</u>	<u>11</u>	<u>Address2</u>	Address line 2		O	O	O	O	-	O	O
<u>2</u>	<u>12</u>	<u>City</u>	City		M	M	O	M	-	O	O
<u>2</u>	<u>13</u>	<u>State/Province</u>	State or Province two-letter code		M	M	O	M	-	O	O
<u>2</u>	<u>14</u>	<u>Zip/Postal Code</u>	Zip or Postal Code		M	M	O	M	-	O	O
<u>2</u>	<u>15</u>	<u>Country</u>	Country		M	M	O	M	-	O	O

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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
				<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
					<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>	-	-	-	-	-	-	-
<u>2</u>	<u>21</u>	<u>Weather Station</u>	<u>Weather Station code associated with the Service Location</u>		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the Zone in which the Service Location is located</u>		<u>M</u>	<u>M</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>
<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is located</u>		<u>O</u>	<u>O</u>	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>		<u>O</u>	<u>O</u>	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>2</u>	<u>40</u>	<u>Electrical Node ID</u>	<u>Identifier assigned to the Electrical Node at which the Service Location is connected</u>		<u>M</u>	-	<u>M</u>	<u>M</u>	-	<u>M</u>	<u>M</u>
<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>		<u>O</u>	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>



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				Process	1.0 Enrollment & Qualification						
				From	SO	-	SO	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP
					1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Interaction	Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description	-	-	-	-	-	-	-
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached	O		O				O	O
2	43	PNode	Name of the Price Node associated with the Service Location	O	O	O				O	O
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	M	M	M	M			M	M
2	50	Competitive Choice Area	Flag set if the Service Location is in an area with Competitive Choice	O	O	O	O				O
2	991	Location Comments	Comments associated with the Service Location	O	O	O					
3	-	Contact									
3	991	Contact Comments	Comments associated with the Contact	O	O						
4	-	Grid Connection									



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				Process	1.0 Enrollment & Qualification						
				From	SO	-	SO	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP
					1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Interaction	Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description	-	-	-	-	-	-	-
4	10	Loss Factor Type	Type of Loss Factor		-	-	O	-	-	O	O
4	11	Loss Factor Value	Loss Factor		-	-	O	-	-	O	O
4	991	Grid Connection Comments	Comments associated with the Attributes of the Resource		O	O	O	-	-	-	-
5	-	Business Entity Relationships			-	-	-	-	-	-	-
5	11	Service Provider ID	Identifier assigned to the Service Provider		M	M	M	M	-	M	M
5	12	Service Provider Name	Name of the Service Provider		O	O	O	O	-	O	O
5	20	Transmission/Distributi on Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider		M	M	M	M	-	M	M
5	21	Transmission/Distributi on Service Provider Name	Name of the Transmission/Distribution Service Provider		O	O	O	O	-	O	O
5	22	Transmission/Distributi on Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource		O	O	O	O	-	O	O



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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
				<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
					<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>	-	-	-	-	-	-	-
<u>5</u>	<u>30</u>	<u>Load Serving Entity ID</u>	Identifier assigned to the Load Serving Entity		<u>O</u>	<u>O</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>
<u>5</u>	<u>31</u>	<u>Load Serving Entity Name</u>	Name of the Load Serving Entity		<u>O</u>	<u>O</u>	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>40</u>	<u>Retail Rate ID</u>	Identifier assigned to the Retail Rate		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>41</u>	<u>Retail Rate Code</u>	Code representing the Retail Rate for the Service Location		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>42</u>	<u>Retail Rate Name</u>	Name of the Retail Rate for the Service Location		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>43</u>	<u>Retail Rate Description</u>	Description of the Retail Rate		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>44</u>	<u>Retail Rate</u>	Retail Rate		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>50</u>	<u>Meter Installation Provider ID</u>	Identifier assigned to the Meter Installation Provider		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>51</u>	<u>Meter Installation Provider Name</u>	Name of the Meter Installation Provider		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>5</u>	<u>60</u>	<u>Meter Authority ID</u>	Identifier assigned to the Metering Authority		<u>M</u>	<u>M</u>	<u>M</u>	-	-	-	-



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				Process	1.0 Enrollment & Qualification							
				From	SO	-	SO	-	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP	-
					1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	-
				Interaction	Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	-
Element				Short Description	-	-	-	-	-	-	-	-
5	61	Meter Authority Name	Name of the Metering Authority		O	O	O	-	-	-	-	-
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity		M	M	M	-	-	-	-	-
5	71	Scheduling Entity Name	Name of the Scheduling Entity		O	O	O	-	-	-	-	-
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity		M	M	M	-	-	-	-	-
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity		O	O	O	-	-	-	-	-
5	991	External Entity Comments	Comments associated with the External Entity		O	O	O	-	-	-	-	-
6	-	Device and Qualification			-	-	-	-	-	-	-	-
6	20	Meter ID	Identifier assigned to the Meter		M	M	M	M	-	-	-	-
6	229	Meter Qualification Date	Date of Qualification of the Meter by the Metering Authority or System Operator		-	-	O	-	-	O	O	-
6	2295	Meter Owner	Owner of the Meter		O	O	O	-	O	-	O	-



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THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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				Process	1.0 Enrollment & Qualification							
				From	SO		SO					
				To	SP		SP	SE	MA	LSE	TDSP	
				Interaction	1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
					Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description								
6	2296	Meter Asset Comments	Comments associated with the Meter Asset	O								
6	991	Distributed Generator Comments	Comments associated with the Distributed Generator	O	O	O			O	O		
7		Market/Program Enrollment										
7	10	Program ID	Program Identifier	M	M	M	M	M	M	M	M	
7	11	Program Name	Name of the Program	O	O	O	M	O	O	O	O	
7	12	Market	Type of wholesale market	M	M	O			O	O		
7	13	Market Product	Market Product	M	M	M	M		O	O		
7	21	Effective Enrollment Date	Effective Start Date for the Enrollment			M	M		M	M		
7	22	Enrollment Status	Status of the Enrollment for the Service Location or Resource	M	M	M			M	M		
7	23	Resource Type	Type of Resource	O	O	O	O			O		



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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>							
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-	
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>	
				<u>Interaction</u>	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>	
					<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>	
<u>Element</u>				<u>Short Description</u>								
<u>7</u>	<u>24</u>	<u>Resource Qualification Test Date</u>		<u>Date the Resource demonstrated its ability to deliver a product or service</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>	
<u>7</u>	<u>25</u>	<u>Enrollment End Date</u>		<u>Date of Termination of Enrollment</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>		<u>O</u>	<u>O</u>	
<u>7</u>	<u>26</u>	<u>Regualification Test Date</u>		<u>Date the Resource will retest its ability to deliver a product or service</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>	
<u>7</u>	<u>30</u>	<u>Lead Time</u>		<u>Time between the advanced notification and deployment</u>			<u>O</u>			<u>O</u>	<u>O</u>	
<u>7</u>	<u>31</u>	<u>Day Ahead Flag</u>		<u>Flag set if the Resource will be participating in the Day-Ahead market</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>	<u>O</u>	
<u>7</u>	<u>32</u>	<u>Real Time Flag</u>		<u>Flag set if the Resource will be participating in the Real-Time market</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>	<u>O</u>	
<u>7</u>	<u>33</u>	<u>Self-Schedule Flag</u>		<u>Flag set if the Resource is Self- Deploying</u>								
<u>7</u>	<u>40</u>	<u>Response Method Type</u>		<u>Type of Response Method</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>		<u>O</u>	<u>O</u>	

Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
				-	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
				<u>Interaction</u>	<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>	-	-	-	-	-	-	-
<u>7</u>	<u>41</u>	<u>Response Method ID</u>	Identifier assigned to the Response Method		<u>O</u>	<u>O</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>
<u>7</u>	<u>42</u>	<u>Response Method Name</u>	Name of the Response Method		<u>O</u>	<u>O</u>	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>7</u>	<u>43</u>	<u>Response Method Value</u>	Value of the Response Method		<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>	-	<u>M</u>	<u>M</u>
<u>7</u>	<u>44</u>	<u>Verified Capability</u>	Audited Capability		<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>	-	-	-
<u>7</u>	<u>45</u>	<u>Verified Capability Factor</u>	Ratio of the Verified Capability to the qualified capability		-	-	<u>M</u>	-	-	-	-
<u>7</u>	<u>50</u>	<u>Performance Evaluation Method Type Code</u>	Code representing the Type of Measurement		<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-	-
<u>7</u>	<u>51</u>	<u>Performance Evaluation Method</u>	Method used to Evaluate the Performance of a Resource		<u>O</u>	<u>O</u>	<u>M</u>	-	-	-	-
<u>7</u>	<u>991</u>	<u>Market Enrollment Comments</u>	Comments associated with the Enrollment		<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>8</u>	-	<u>Offer Parameters</u>			-	-	-	-	-	-	-
<u>8</u>	<u>10</u>	<u>Offer Limit Value</u>	Offer Limit Value		<u>M</u>	<u>O</u>	<u>M</u>	<u>M</u>	-	<u>O</u>	<u>O</u>

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**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES REVISED BY
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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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				Process	1.0 Enrollment & Qualification						
				From	SO	-	SO	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP
					1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16
				Interaction	Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP
Element				Short Description	-	-	-	-	-	-	-
8	11	Offer Limit Type	Type of Offer Limit		M	O	M	M	-	O	O
8	12	Offer Limit Interval	Offer Limit Interval		M	O	M	M	-	O	O
8	20	Physical Min Gen	Minimum Operating Level of a Resource		O	O	O	O	-	O	O
8	21	Min Gen MW	Minimum MW available for dispatch		O	O	O	O	-	O	O
8	22	Min Gen Cost	The cost per hour for each Min Gen MW value.		O	O	O	O	-	-	-
8	23	Ramp Rate Type	Type of Ramp Rate		M	O	O	O	-	-	-
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate		M	O	O	O	-	-	-
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment		M	O	O	O	-	-	-



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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
				-	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
				<u>Interaction</u>	<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>	-	-	-	-	-	-	-
<u>8</u>	<u>26</u>	<u>Ramp Rate Value</u>	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	M	O	O	O	-	-	-	-
<u>8</u>	<u>30</u>	<u>Offer Dispatch Type</u>	Type of Offer	-	O	-	-	-	-	-	-
<u>8</u>	<u>40</u>	<u>Market Clearing Day</u>	Market Clearing Day of the Offer	-	-	-	O	-	-	-	-
<u>8</u>	<u>41</u>	<u>Schedule Name</u>	Name or tag of the Offer	-	-	-	O	-	-	-	-
<u>8</u>	<u>42</u>	<u>Schedule Description</u>	Description of the Offer	-	-	-	O	-	-	-	-
<u>8</u>	<u>43</u>	<u>Schedule Status</u>	Status of the Offer	-	-	-	O	-	-	-	-
<u>8</u>	<u>50</u>	<u>Portfolio Name</u>	Name of an aggregation of Resources for market participation	-	-	-	O	-	-	-	-
<u>10</u>	-	<u>Ancillary Service Market</u>	-	-	-	-	-	-	-	-	-
<u>10</u>	<u>10</u>	<u>Ancillary Service Product Type</u>	Type of Ancillary Service product(s) the Resource is enrolling to provide	O	O	O	M	-	O	O	-

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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
				-	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
				<u>Interaction</u>	<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>	-	-	-	-	-	-	-
<u>10</u>	<u>11</u>	<u>Have Engineering Diagram</u>	<u>Flag set if One-Line Diagrams have been submitted</u>		-	O	-	-	-	-	-
<u>21</u> <u>0</u>	<u>20</u>	<u>Ancillary Service Product Qualification Type</u>	<u>Type of Qualification</u>		O	O	M	M	-	-	-
<u>10</u>	<u>22</u>	<u>Ancillary Service Product Type Qualification Date</u>	<u>Date of Qualification of the Resource</u>		-	-	M	M	-	-	-
<u>10</u>	<u>23</u>	<u>Ancillary Service Product Type Qualified</u>	<u>Type of Ancillary Service Product(s) for which the Resource has Qualified</u>		-	-	M	M	-	-	-
<u>10</u>	<u>24</u>	<u>Requalification Requirement</u>	<u>Flag set if Requalification is Required</u>		O	O	-	-	-	-	-
<u>11</u>	-	<u>Capacity Market</u>			-	-	-	-	-	-	-
<u>11</u>	<u>10</u>	<u>Capacity Type</u>	<u>Type of Capacity</u>		O	O	M	-	-	-	-
<u>11</u>	<u>11</u>	<u>Capacity Type Description</u>	<u>Description of the Type of Capacity</u>		O	O	O	-	-	-	-



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				<u>Process</u>	<u>1.0 Enrollment & Qualification</u>						
				<u>From</u>	<u>SO</u>	-	<u>SO</u>	-	-	-	-
				<u>To</u>	<u>SP</u>	-	<u>SP</u>	<u>SE</u>	<u>MA</u>	<u>LSE</u>	<u>TDSP</u>
				-	<u>1.0.10</u>	<u>1.0.11</u>	<u>1.0.12</u>	<u>1.0.13</u>	<u>1.0.14</u>	<u>1.0.15</u>	<u>1.0.16</u>
				<u>Interaction</u>	<u>Rejection Details</u>	<u>Qualification Rejection</u>	<u>Qualification Status to SP</u>	<u>Qualification Status to SE</u>	<u>Qualification Status to MA</u>	<u>Qualification Status to LSE</u>	<u>Qualification Status to TDSP</u>
<u>Element</u>				<u>Short Description</u>	-	-	-	-	-	-	-
<u>11</u>	<u>20</u>	<u>Peak Value</u>	<u>Measurement of Peak</u>		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>11</u>	<u>21</u>	<u>Peak Type</u>	<u>Type of measurement of Peak</u>		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>11</u>	<u>22</u>	<u>Peak Date/Time</u>	<u>Date and Time of measurement of Peak</u>		-	-	<u>O</u>	-	-	<u>O</u>	<u>O</u>
<u>11</u>	<u>23</u>	<u>Nominal Capacity</u>	<u>Nominated load</u>		-	-	<u>O</u>	-	-	-	-
<u>11</u>	<u>24</u>	<u>Qualified Capacity</u>	<u>Nominal installed capacity (ICAP) derated for performance</u>		-	-	<u>M</u>	-	-	-	-
<u>11</u>	<u>30</u>	<u>Capacity Obligation Period Type</u>	<u>Type of Capacity Obligation Time Period within which the Resource is obligated</u>		<u>O</u>	<u>O</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>
<u>11</u>	<u>31</u>	<u>Capacity Obligation Period</u>	<u>Period of time for which the Capacity Resource is obligated</u>		<u>O</u>	<u>O</u>	<u>M</u>	-	-	<u>M</u>	<u>M</u>



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				Process	1.0 Enrollment & Qualification							
				From	SO	-	SO	-	-	-	-	-
				To	SP	-	SP	SE	MA	LSE	TDSP	
					1.0.10	1.0.11	1.0.12	1.0.13	1.0.14	1.0.15	1.0.16	
				Interaction	Rejection Details	Qualification Rejection	Qualification Status to SP	Qualification Status to SE	Qualification Status to MA	Qualification Status to LSE	Qualification Status to TDSP	
Element				Short Description	-	-	-	-	-	-	-	-
<u>11</u>	<u>40</u>	<u>Minimum Payment Nomination</u>		Strike price for the economic dispatch of the energy component of the capacity program	O	O	O	-	-	-	-	-
<u>11</u>	<u>50</u>	<u>Capacity Reference ID</u>		Identifier assigned to the External System award	-	-	O	-	-	-	-	-
<u>11</u>	<u>991</u>	<u>Capacity Comments</u>		Comments associated with the Capacity market	O	O	O	-	-	-	-	-



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ca)(ii)
Request Title: Phase Two Requirements Specifications for
 Wholesale Standard DR Signals - for NIST PAP09

018-1.4.2 Scheduling and Award Notification – Economic

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 4 – Use Cases for Figure 3

Table 6. Use Cases for Figure 3

Use Case	Product	Deployment	Performance Evaluation
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO

- The process begins when the SE submits a supply offer to the SO.
- The SO evaluates the offer through its market clearing process.
- The resulting resource-specific dispatch information is transformed into dispatch instructions by the SO.
- The SO makes the schedule available.
- The SE collects the forward schedule.



RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEE~~ AS REVISED BY
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Activity Diagram and Data Flow:

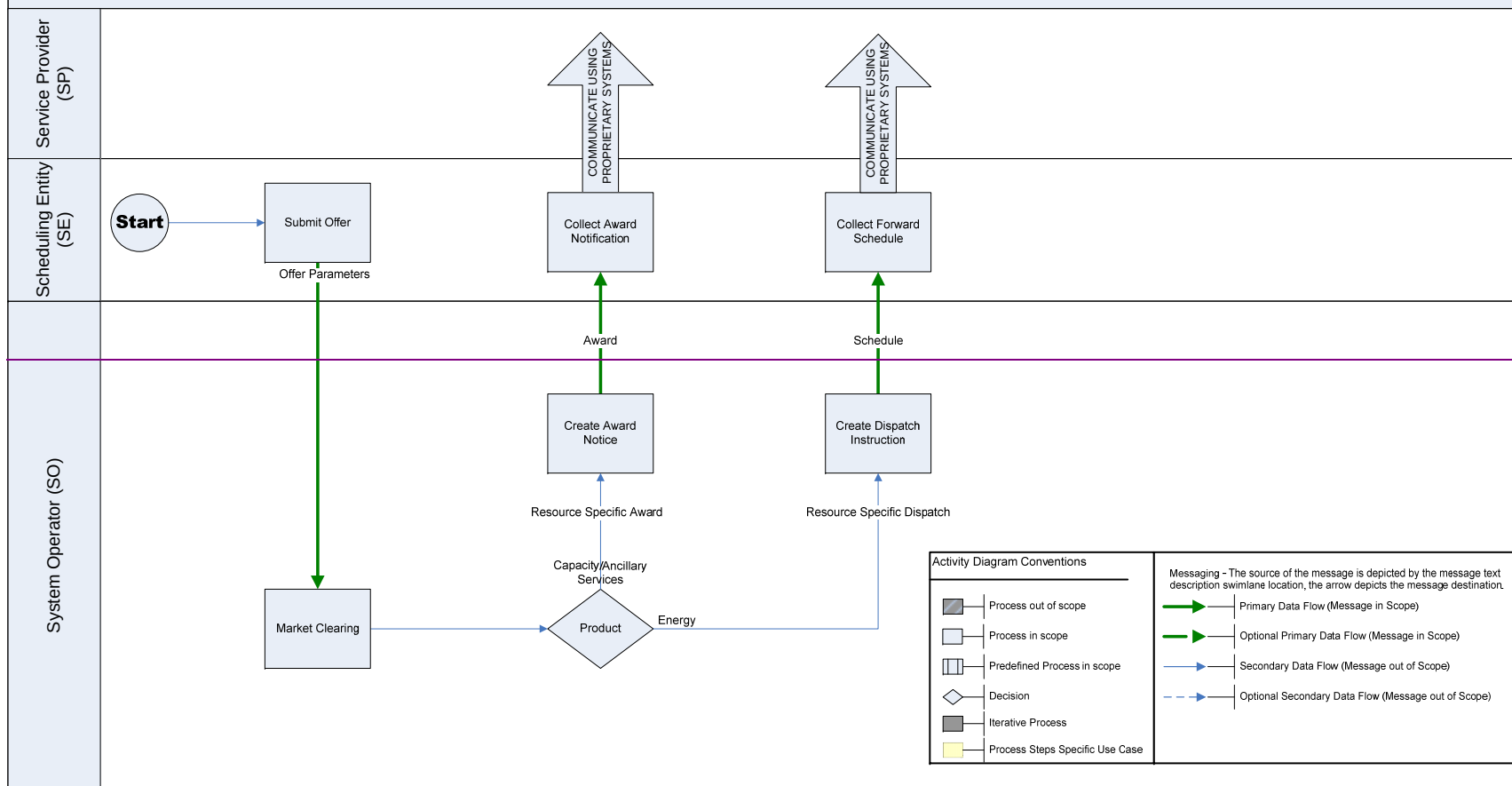
Figure 3 - Scheduling and Award Notification - Economic



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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Demand Response – Scheduling & Award Notification - Economic

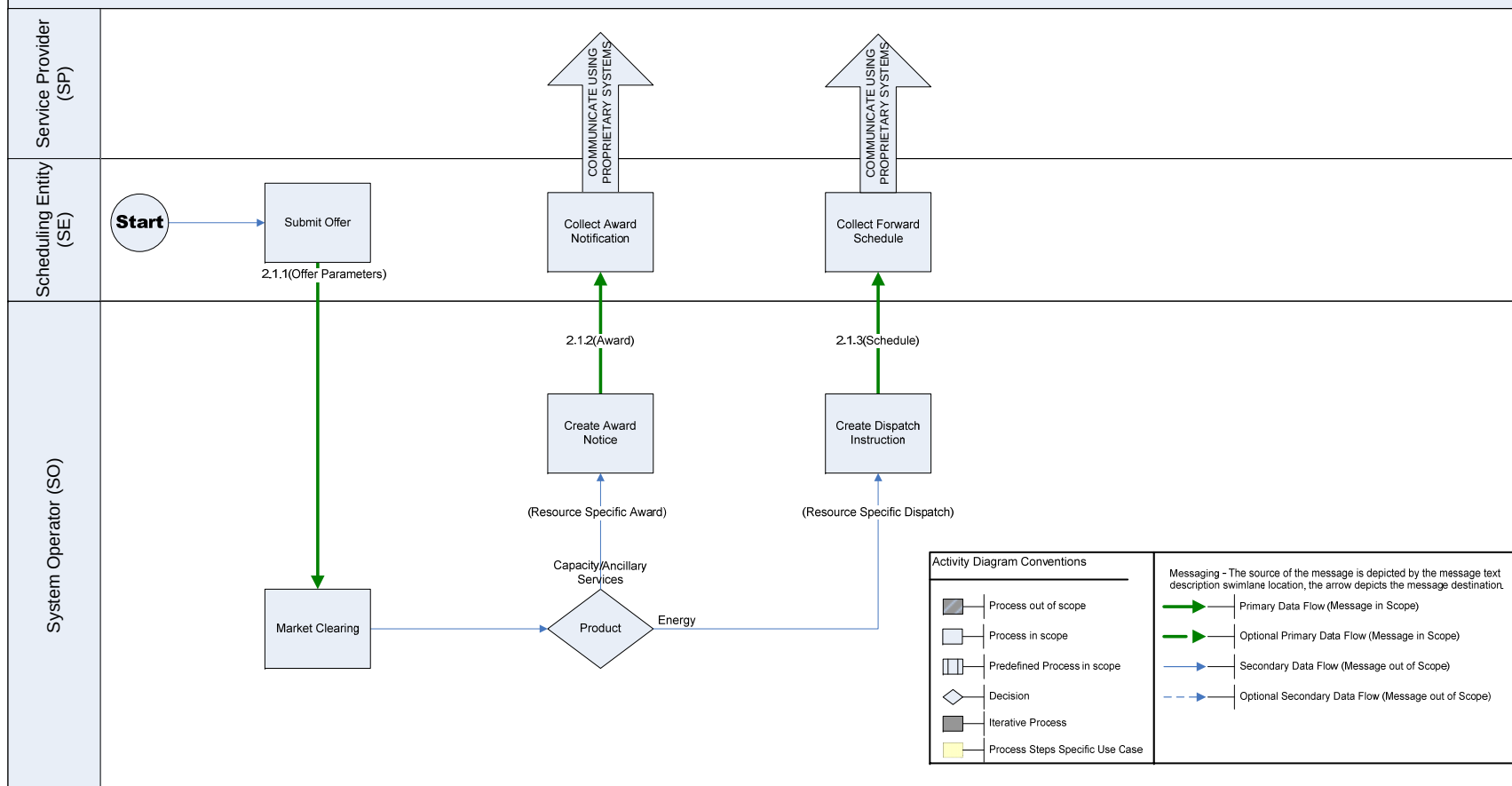




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Scheduling & Award Notification - Economic



Note: Data elements for Scheduling and Award Notification-Economic are listed with Scheduling and Award Notification-Reliability in Table 8.



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ac)(ii)
Request Title: Phase Two Requirements Specifications for
 Wholesale Standard DR Signals - for NIST PAP09

018-1.4.3 Scheduling and Award Notification – Reliability

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

Table 5 – Use Cases for Figure 4
Table 7. Use Cases for Figure 4

Use Case	Product	Deployment	Performance Evaluation
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-4	Energy (Reliability)	Bulk	MGO
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
C-B-2	Capacity	Bulk	MB/MA
C-B-4	Capacity	Bulk	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-3	Reserve	Bulk	MBL
V-B-2	Reserve	Bulk	MB/MA
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-3	Reserve	Resource	MBL
V-R-2	Reserve	Resource	MB/MA
V-R-4	Reserve	Resource	MGO

- The process begins when the SE submits availability to the SO.
- The SO performs the Load Forecast and Supplemental Commitment process after the market has been settled. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - o If SO determines that the system is secure, no demand response advance notification is required and reliability is assessed by the SO at the next interval.
 - o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.



**RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEE~~ AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6 ~~(ac)~~ (ii)
Request Title: Phase Two Requirements Specifications for
 Wholesale Standard DR Signals - for NIST PAP09

- If the SO determines that demand response will be provided with an advance notification, the reliability event parameters are prepared by the SO to create a reliability event notification.
 - The advance notification message is sent to the SE.
 - The SE identifies the demand resources to notify and relays the message to SPs through the proprietary communication interaction system of the SE.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES ~~AS REVISED BY~~
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

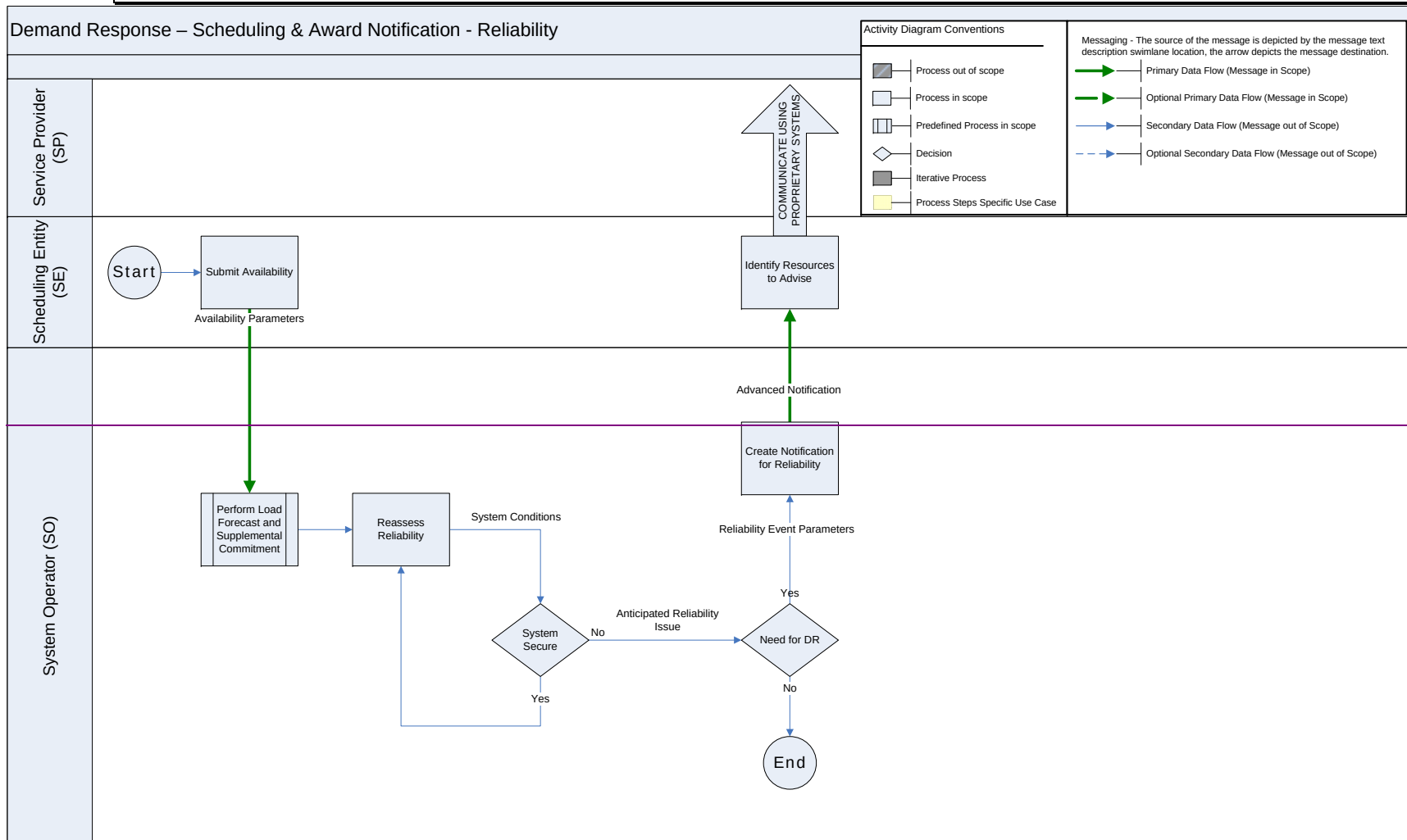
Activity Diagram and Data Flow:

Figure 4 - Scheduling and Award Notification - Reliability



**RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEES~~ REVISED BY
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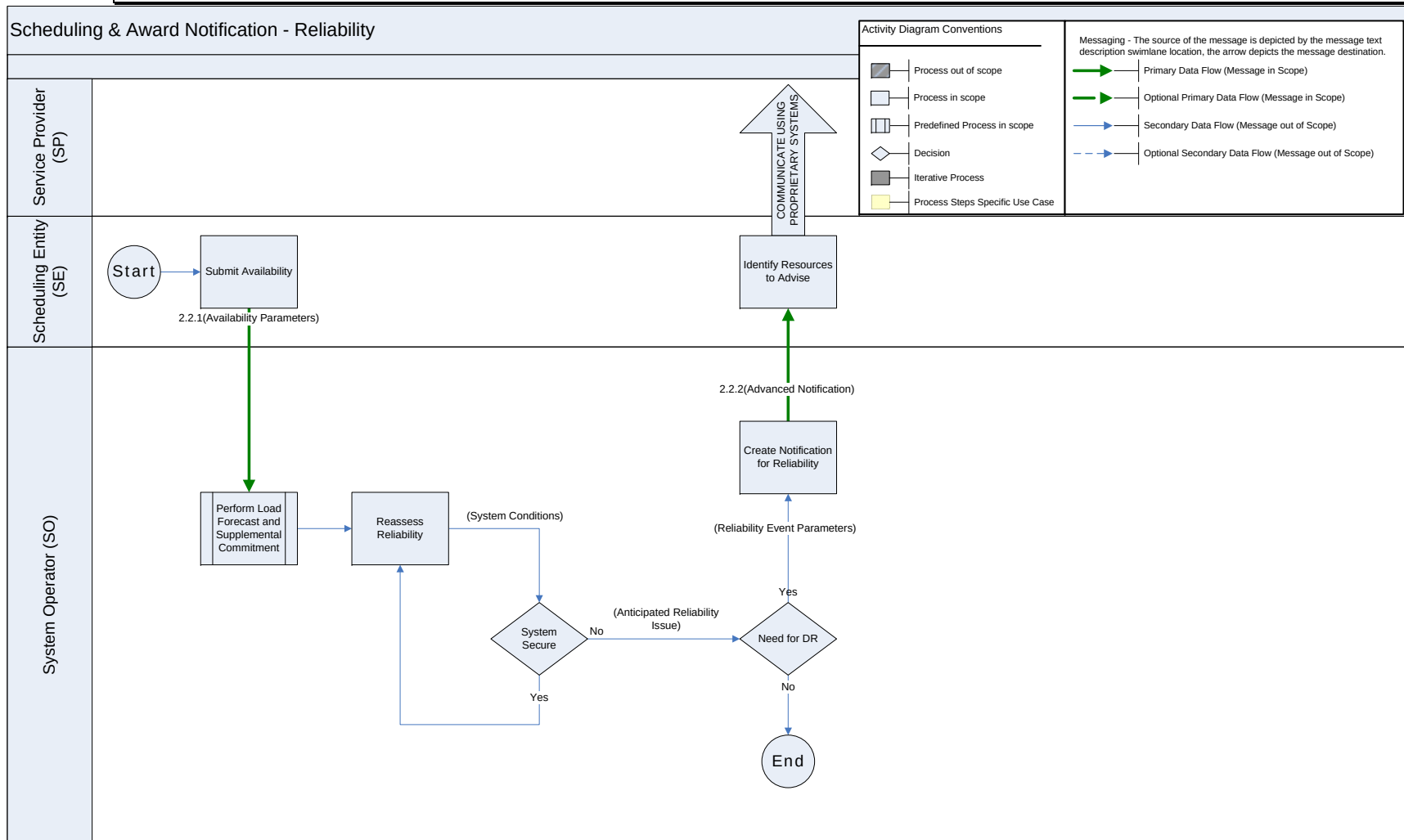
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09





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Table 8. Data RequirementsElements by Interaction Number: Scheduling and Award Notification

Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification				
Element			Short Description						
0 Common									
0	10	Submittal Date	Timestamp for the sender's use		0	0	0	0	0
0	11	Submitted By	User ID of submitter		0	0	0	0	0
0	12	Submitted Error	ID of submission error detected		0	0	0	0	0

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M
1	-	General Asset/Resource	-	-	-	-	-	-
1	10	Service Location ID	Identifier assigned to the Service Location	O	O	O	O	O

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

~~Draft Recommendation as revised by the NAESB WEQ Executive Committee on July 7, 2010- October 7, 2010~~

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>1</u>	<u>40</u>	<u>Gen EMS ID</u>	<u>Alias or point Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-
<u>1</u>	<u>41</u>	<u>Gen Billing ID</u>	<u>Billing Identifier assigned to the Resource</u>	<u>M</u>	<u>M</u>	<u>M</u>	-	-
<u>2</u>	-	<u>Location</u>	-	-	-	-	-	-
<u>2</u>	<u>30</u>	<u>Zone ID</u>	<u>Identifier assigned to the Zone in which the Service Location is located</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>2</u>	<u>31</u>	<u>Zone</u>	<u>Name of the Zone in which the Service Location is located</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>2</u>	<u>32</u>	<u>Zone Type</u>	<u>Type of Zone</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>2</u>	<u>40</u>	<u>Electrical Node ID</u>	<u>Identifier assigned to the Electrical Node at which the Service Location is connected</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	-

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>2</u>	<u>41</u>	<u>Electrical Node Name</u>	<u>Name of the Electrical Node at which the Service Location is connected</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-
<u>2</u>	<u>42</u>	<u>Electrical Node Type</u>	<u>Type of Electrical Node at which the Service Location is attached</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	-
<u>2</u>	<u>43</u>	<u>PNode</u>	<u>Name of the Price Node associated with the Service Location</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>2</u>	<u>44</u>	<u>PNode ID</u>	<u>Identifier assigned to the Price Node associated with the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>5</u>	-	<u>Business Entity Relationships</u>			-	-	-	-
<u>5</u>	<u>11</u>	<u>Service Provider ID</u>	<u>Identifier assigned to the Service Provider</u>	-	-	<u>O</u>	<u>M</u>	<u>M</u>
<u>5</u>	<u>12</u>	<u>Service Provider Name</u>	<u>Name of the Service Provider</u>	-	-	<u>O</u>	<u>M</u>	<u>M</u>

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description						
<u>5</u>	<u>20</u>	<u>Transmission/Distribution Service Provider ID</u>	<u>Identifier assigned to the Transmission/Distribution Service Provider</u>	-	-	-	-	-	
				-	-	<u>0</u>	<u>0</u>	-	
<u>5</u>	<u>21</u>	<u>Transmission/Distribution Service Provider Name</u>	<u>Name of the Transmission/Distribution Service Provider</u>	-	-	<u>0</u>	<u>0</u>	-	
				-	-	<u>0</u>	<u>0</u>	-	
<u>5</u>	<u>22</u>	<u>Transmission/Distribution Service Provider Account Number</u>	<u>Transmission/Distribution Service Provider's account number for the Resource</u>	-	-	<u>0</u>	<u>0</u>	-	
				-	-	<u>0</u>	<u>0</u>	-	



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~~THE NAESB WEQ EXECUTIVE COMMITTEE~~ on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	<u>SE</u>	<u>SO</u>		<u>SE</u>	<u>SO</u>
					<u>SO</u>	<u>SE</u>	<u>SE</u>	<u>SO</u>	<u>SE</u>
				Interaction	<u>2.1.1</u>	<u>2.1.2</u>	<u>2.1.3</u>	<u>2.2.1</u>	<u>2.2.2</u>
<u>Offer Parameters</u>	<u>Award</u>	<u>Schedule</u>	<u>Availability Parameters</u>		<u>Advanced Notification</u>				

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O
6	-	Device and Qualification	-	-	-	-	-	-
6	20	Meter ID	Identifier assigned to the Meter	O	O	O	O	-

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description					
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions	-	-	-	-	-
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event	-	-	-	M	-
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	-	-	-	M	-

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description					
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	-	-	-	-	-
6	51	UFR Settings	Setting of the Under-Frequency Relay	-	-	-	M	-
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	-	-	-	M	-
7	Market/Program Enrollment							



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			Process	2.0 Scheduling and Award Notification					
			From	2.1 Economic			2.2 Reliability		
			To	SE	SO		SE	SO	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
Element			Short Description						
7	10	Program ID	Program Identifier		O	O	O	O	O
7	11	Program Name	Name of the Program		O	O	O	O	O
7	12	Market	Type of wholesale market		O	O	O	O	O
7	13	Market Product	Market Product		O	O	O	O	O
7	30	Lead Time	Time between the advanced notification and deployment		O	O		O	O

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>7</u>	<u>31</u>	<u>Day Ahead Flag</u>	<u>Flag set if the Resource will be participating in the Day-Ahead market</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>7</u>	<u>32</u>	<u>Real Time Flag</u>	<u>Flag set if the Resource will be participating in the Real-Time market</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>7</u>	<u>33</u>	<u>Self-Schedule Flag</u>	<u>Flag set if the Resource is Self-Deploying</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-
<u>7</u>	<u>40</u>	<u>Response Method Type</u>	Type of Response Method		O	O		

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
7	41	Response Method ID	Identifier assigned to the Response Method	-	0	0	-	-
7	42	Response Method Name	Name of the Response Method	-	0	0	-	-
7	43	Response Method Value	Value of the Response Method	-	0	0	-	-
7	44	Verified Capability	Audited Capability	-	-	-	0	-



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			Process	2.0 Scheduling and Award Notification				
				-				
				-				
				2.1 Economic			2.2 Reliability	
				-			-	
				-			-	
			From	SE	SO	-	SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
				-	-	-	-	-
7	45	Verified Capability Factor	Ratio of the Verified Capability to the qualified capability	-	-	-	O	-
8	-	Offer Parameters	-	-	-	-	-	-
8	10	Offer Limit Value	Offer Limit Value	M	-	-	M	O
8	11	Offer Limit Type	Type of Offer Limit	M	-	-	M	O
8	12	Offer Limit Interval	Offer Limit Interval	O	-	-	M	O



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			Process	2.0 Scheduling and Award Notification					
				From			To		
			Interaction	2.1 Economic			2.2 Reliability		
				SE			SE		
			Interaction	SE	SO		SE	SO	
				SO	SE	SE	SO	SE	
				2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
8	20	Physical Min Gen	Minimum Operating Level of a Resource	O			M		
8	21	Min Gen MW	Minimum MW available for dispatch	M			M	O	
8	22	Min Gen Cost	The cost per hour for each Min Gen MW value.	M			M	O	
8	23	Ramp Rate Type	Type of Ramp Rate	O			M		
8	24	Ramp Rate Segment	Energy of Segment of the Ramp Rate	O			M		

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
8	25	Ramp Rate Direction	Direction of the selected Ramp Rate Type and Ramp Rate Segment	O	-	-	-	-
8	26	Ramp Rate Value	Ramp Rate associated with the selected Ramp Rate Type for the selected Ramp Rate Segment and Ramp Rate Direction	O	-	-	-	-
8	30	Offer Dispatch Type	Type of Offer	M	M	M	-	-

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
8	31	Offer Segment MW	Energy of Segment of the Offer	M	M	M	O	O
8	32	Offer Segment Price	Price of Segment of the Offer	M	M	M	O	O
8	33	Offer Segment Hour	Hour of Segment of the Offer	M	M	M	O	O
8	34	Startup Cost	Cost of starting a response activity	M	M	M	O	O
8	35	Strike Price	Threshold Price	O	O	O	-	-
8	36	Offer Expiration Date	Date of Expiration of the Offer	M	-	-	-	-



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
Offer Parameters	Award	Schedule	Availability Parameters		Advanced Notification				



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			Process	2.0 Scheduling and Award Notification				
				2.1 Economic			2.2 Reliability	
			From	SE	SO		SE	SO
			To	SO	SE	SE	SO	SE
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element			Short Description					
8	40	Market Clearing Day	Market Clearing Day of the Offer	M	M	M	M	M
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O	O
8	42	Schedule Description	Description of the Offer	O	O	O	O	O
8	43	Schedule Status	Status of the Offer	M	M	M	O	O
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	O



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			Process	2.0 Scheduling and Award Notification					
				From			To		
			Interaction	2.1 Economic			2.2 Reliability		
				SE			SE		
			Interaction	SE	SO		SE	SO	
				SO	SE	SE	SO	SE	
				2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
8	71	Constraint Type	Type of operational, schedule or offer constraint		M			M	
8	72	Constraint Interval	The timeframe over which the constraint type applies.		M			M	
8	73	Constraint Value	Value of the Constraint Type and Interval		M			M	
9			Energy Market						
9	0	Instruction ID	Unique identifier assigned to each		O	O	O		



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			Process	2.0 Scheduling and Award Notification					
				-					
				-					
				-					
				-					
				-					
				2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
			From	SE	SO	-	SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
			instruction.		-	-	-	-	-
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule		M	M	M	-	-
9	11	Energy Schedule - End Time	End Time of the Energy Schedule		M	M	M	-	-
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule		M	M	M	-	-



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			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEES~~ REVISED BY
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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			Process	2.0 Scheduling and Award Notification						
						2.1 Economic			2.2 Reliability	
			From	SE	SO	-	SE	SO		
			To	SO	SE	SE	SO	SE		
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2		
				Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification		
Element			Short Description							
10	0	Ancillary Service Instruction ID	Unique identifier assigned to each ancillary service instruction.			0	0			
10	10	Ancillary Service Product Type	Type of Ancillary Service product(s) the Resource is enrolling to provide		M	M	M	M		
10	12	Ancillary Service Award - Start Time	Start Time of the ancillary service Award			M				



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO	-	SE	SO	
			To	SO	SE	SE	SO	SE	
			Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
Offer Parameters	Award	Schedule		Availability Parameters	Advanced Notification				
<u>Element</u>			<u>Short Description</u>						
<u>10</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>	<u>End Time of the ancillary service Award</u>			M			
<u>10</u>	<u>14</u>	<u>Ancillary Service Award - Interval Start Time</u>	<u>Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval</u>			M			

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>1</u> <u>0</u>	<u>15</u>	<u>Ancillary Service Award - Interval Value</u>	<u>The awarded Value for the Time Interval within the ancillary service Award</u>	-	<u>M</u>	-	-	-
<u>1</u> <u>0</u>	<u>16</u>	<u>Ancillary Service Award - Cleared Price</u>	<u>Awarded Price</u>	-	<u>M</u>	-	-	-
<u>1</u> <u>0</u>	<u>17</u>	<u>Ancillary Service Schedule ID</u>	<u>Unique identifier assigned to each ancillary service schedule.</u>	-	-	<u>O</u>	-	-

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>1</u> <u>0</u>	<u>31</u>	<u>Reserve Pickup Flag</u>	<u>Flag set if this is a Reserve Pickup schedule</u>	-	<u>0</u>	<u>0</u>	-	-
<u>1</u> <u>1</u>	-	<u>Capacity Market</u>	-	-	-	-	-	-
<u>1</u> <u>1</u>	<u>10</u>	<u>Capacity Type</u>	<u>Type of Capacity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>0</u>	-
<u>1</u> <u>1</u>	<u>20</u>	<u>Peak Value</u>	<u>Measurement of Peak</u>	-	-	<u>0</u>	<u>0</u>	-

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description					
<u>1</u> <u>1</u>	<u>21</u>	<u>Peak Type</u>	<u>Type of measurement of Peak</u>	-	-	-	-	-
				-	-	<u>Q</u>	<u>Q</u>	-
<u>1</u> <u>1</u>	<u>22</u>	<u>Peak Date/Time</u>	<u>Date and Time of measurement of Peak</u>	-	-	<u>Q</u>	<u>Q</u>	-
<u>1</u> <u>1</u>	<u>23</u>	<u>Nominal Capacity</u>	<u>Nominated load</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	-	-
<u>1</u> <u>1</u>	<u>24</u>	<u>Qualified Capacity</u>	<u>Nominal installed capacity (ICAP) derated for performance</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>Q</u>	-



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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]

Element			Short Description	-	-	-	-	-
<u>1</u> <u>1</u>	<u>40</u>	<u>Minimum Payment Nomination</u>	<u>Strike price for the economic dispatch of the energy component of the capacity program</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>O</u>	-
<u>1</u> <u>1</u>	<u>41</u>	<u>Capacity Supply Obligation</u>	<u>Capacity Obligation</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>O</u>	-
<u>1</u> <u>1</u>	<u>50</u>	<u>Capacity Reference ID</u>	<u>Identifier assigned to the External System award</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	-



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			Process	2.0 Scheduling and Award Notification					
				-					
				-					
				-					
				-					
				-					
			From	2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
			To	2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
			Interaction	2.1 Economic			2.2 Reliability		
				-			-		
				-			-		
				-			-		
				-			-		
				-			-		
Element			Short Description						
11	991	Capacity Comments	Comments associated with the Capacity market		O	O	O	O	
12			Event and Performance						
12			Event ID		O				
12			Deployment Type		M				



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			Process	2.0 Scheduling and Award Notification								
				From			To			Interaction		
			2.1 Economic			2.2 Reliability						
			SE	SO		SE	SO					
			SO	SE	SE	SO	SE					
			2.1.1	2.1.2	2.1.3	2.2.1	2.2.2					
			Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification					
Element			Short Description									
1 2	12	Event Day	Operating Date of Start of Event							M		
1 2	13	Event Description	Description of the Event							M		
1 2	14	Event Start Time	Time of Start of deployment period for Event							M		
1 2	15	Operator Comment	Additional Event information provided by the Operator							O		



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				Process	2.0 Scheduling and Award Notification				
					2.1 Economic			2.2 Reliability	
				From	SE	SO		SE	SO
				To	SO	SE	SE	SO	SE
				Interaction	2.1.1	2.1.2	2.1.3	2.2.1	2.2.2
					Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification
Element				Short Description					
12	16	Deployment MW	Absolute or relative Deployment quantity						0
12	17	Event Status	Status of the Event						0
12	18	Event End Time	Time of End of deployment period						M
12	19	Event Modification Number	A modification number for the event.						0

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[illegible]

Element			Short Description					
<u>1</u> <u>2</u>	<u>111</u>	<u>Notification Acknowledgement</u>	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.	-	-	-	-	-
				-	-	-	-	<u>0</u>
<u>1</u> <u>2</u>	<u>112</u>	<u>Event Modification Reason Code</u>	The reason the event is being cancelled or modified.	-	-	-	-	<u>0</u>



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			Process	2.0 Scheduling and Award Notification					
				2.1 Economic			2.2 Reliability		
			From	SE	SO		SE	SO	
			To	SO	SE	SE	SO	SE	
				2.1.1	2.1.2	2.1.3	2.2.1	2.2.2	
			Interaction	Offer Parameters	Award	Schedule	Availability Parameters	Advanced Notification	
Element			Short Description						
1 2	991	Event & Performance Comments	Comments associated with Event and Performance data						0



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ac)(ii)
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

018-1.4.4 Deployment and Real-Time Communications - Economic

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The process flow business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

Table 6 – Use Cases for Figure 5
Table 9. Use Cases for Figure 5

Use Case	Product	Deployment	Performance Evaluation
E-R-1	Energy (Economic)	Resource	Baseline
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-4	Energy (Reliability)	Bulk	MGO
V-R-2	Reserve	Resource	MB/MA
G-R-2	Regulation	Resource	MB/MA

- The process begins when the SO evaluates real-time system conditions through its market clearing process.
- The resulting resource-specific real-time dispatch information is transformed into dispatch instructions by the SO.
 - o If the dispatch instruction is for Regulation, the SO sends the Regulation signal to the DDE.
 - o If the dispatch is not for Regulation, the SO sends the dispatch instruction to the DDE.
- The DDE communicates with the SP through the proprietary communication system of the DDE.
- The SO collects real-time response from the DDE for evaluating the next interval and uses the information to calculate the system state.
- System conditions are made available to the market clearing process for the next interval and to Deployment and Real-Time Communications – Reliability.



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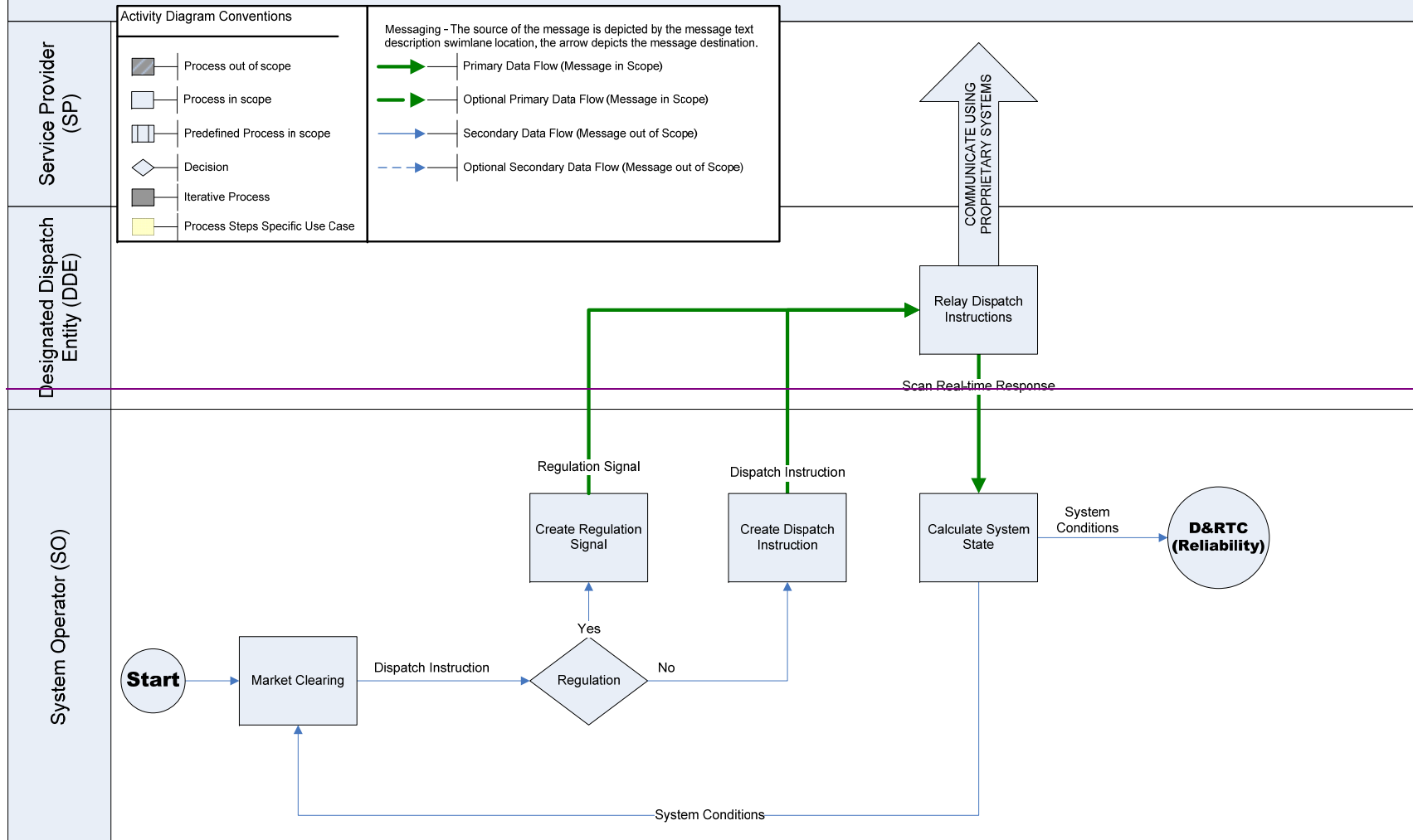
Activity Diagram and Data Flow:

Figure 5 - Deployment and Real-Time Communications - Economic

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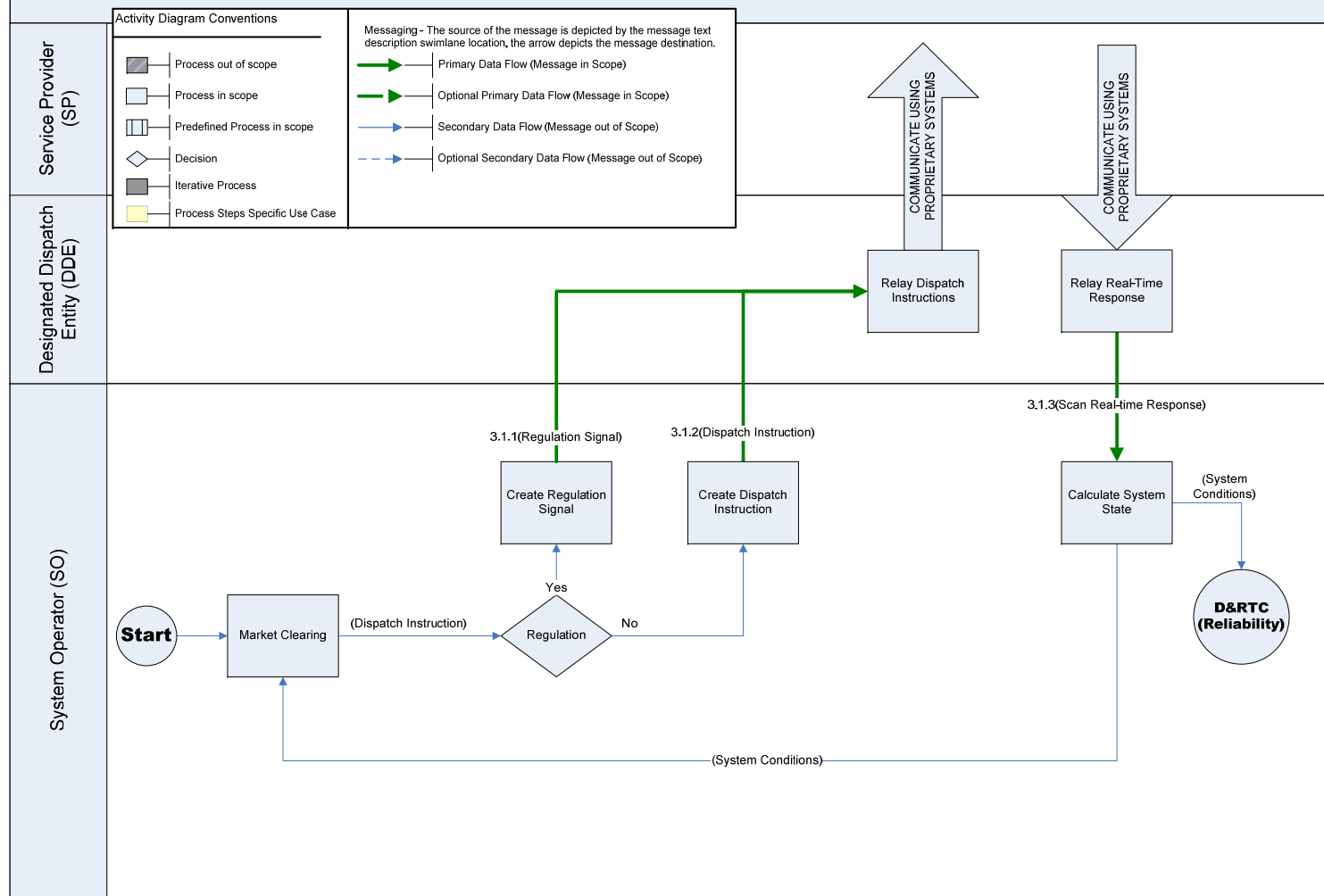
Demand Response – Deployment & Real-time Communications - Economic



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Deployment & Real-time Communications - Economic



Note: Data elements for Deployment & Real-Time Communications-Economic are listed with Deployment & Real-Time Communications-Reliability in Table 11.



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ca)(ii)
Request Title: Phase Two Requirements Specifications for
 Wholesale Standard DR Signals - for NIST PAP09

018-1.4.5 Deployment and Real-Time Communications – Reliability

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The process flow/business activity diagrams and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

Table 7 – Use Cases for Figure 6
Table 10. Use Cases for Figure 6

Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-3	Capacity	Bulk	MBL
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO

- The SO performs the Load Forecast and Supplemental Commitment process after the interval has been dispatched. Reliability is reassessed by the SO to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
 - If SO determines that the system is secure, no demand response deployment is required and reliability is assessed by the SO at the next interval.



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Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
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- o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
 - If demand response will not be needed, the process ends.
 - If the SO determines that demand response will be deployed, the reliability event parameters are prepared by the SO to create a reliability event notification.
 - The deployment instruction is sent to the DDE.
 - The DDE identifies the demand resources to notify and relays the message to SPs through the proprietary communication system of the DDE.
 - Real-time or near real-time response data is collected by DDE using the proprietary communication system of the DDE.
 - The DDE sends the event response information to the SO.



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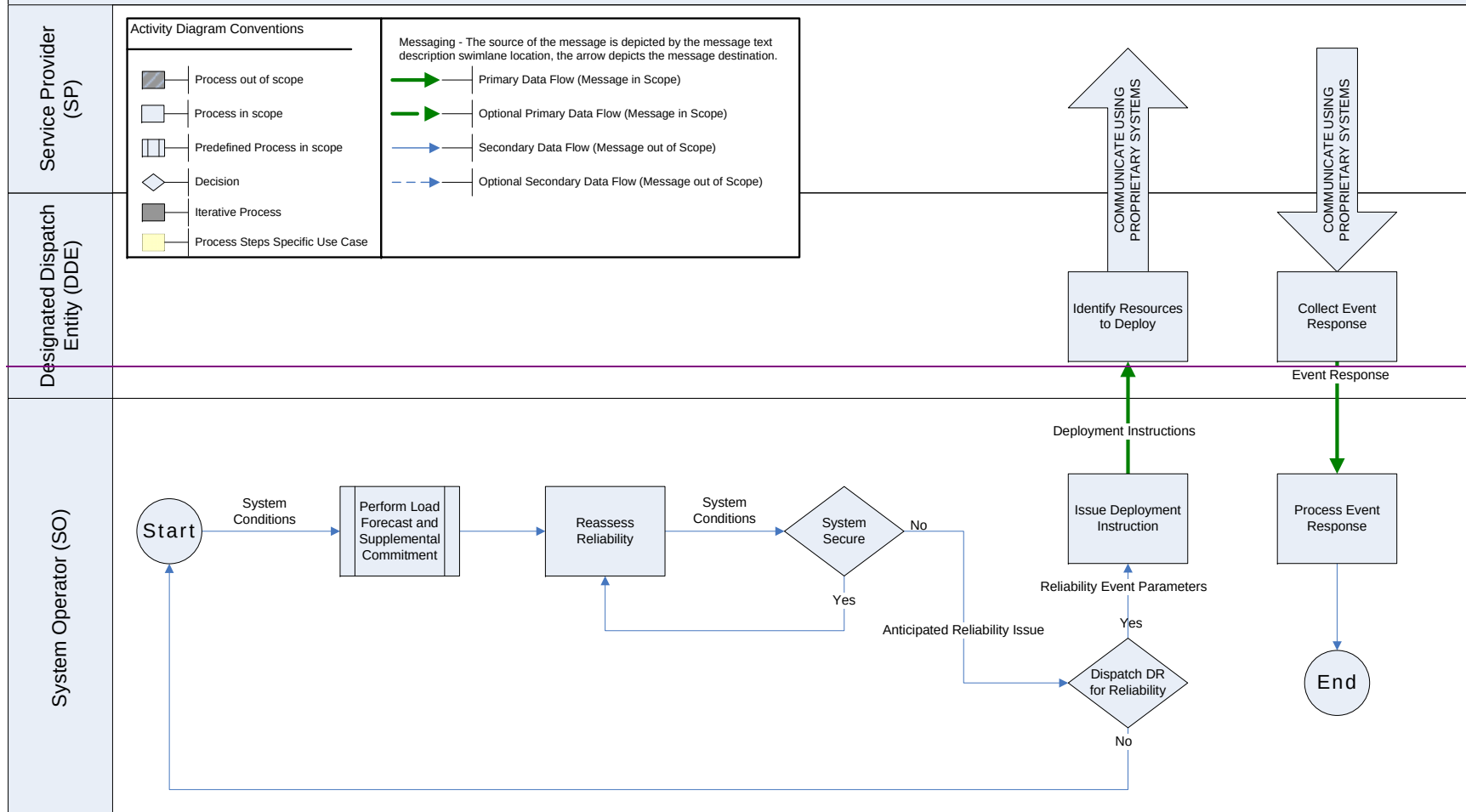
Activity Diagram and Data Flow:

Figure 6 - Deployment and Real-Time Communications - Reliability

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THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Demand Response – Deployment & Real-time Communications - Reliability



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES AS REVISED BY
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Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

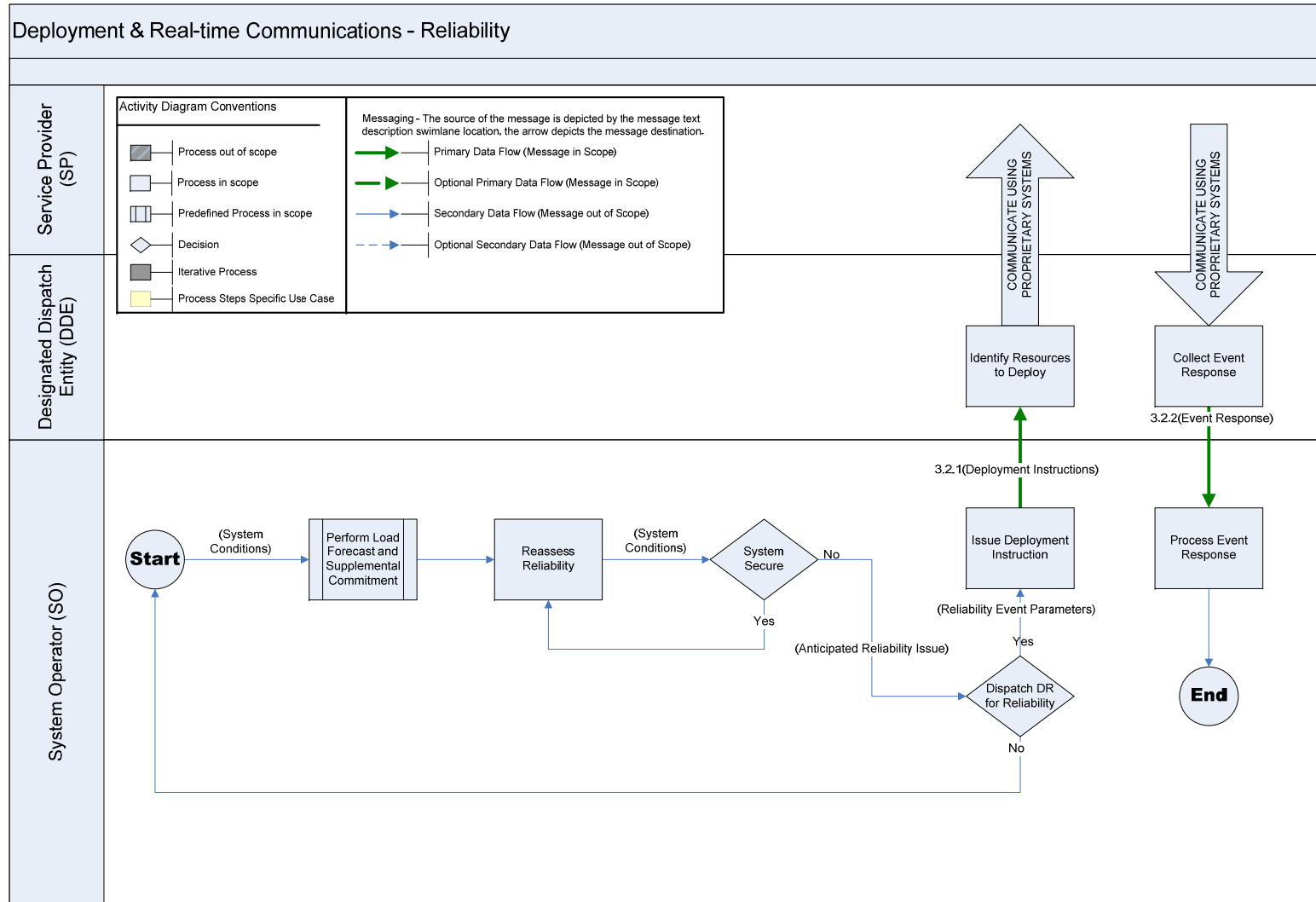


Table 11. Data Requirement Elements by Interaction Number: Deployment & Real-Time Communications



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Interaction				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
0	Common			-	-	-	-	-
0	10	Submittal Date	Timestamp for the sender's use	O	-	-	O	O
0	11	Submitted By	User ID of submitter	O	-	-	O	O
0	12	Submitted Error	ID of submission error detected	O	-	-	O	O



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				-	-	-	-	-
From				<u>SO</u>	-	<u>DDE</u>	<u>SO</u>	<u>DDE</u>
To				<u>DDE</u>	<u>DDE</u>	<u>SO</u>	<u>DDE</u>	<u>SO</u>
Interaction				<u>3.1.1</u>	<u>3.1.2</u>	<u>3.1.3</u>	<u>3.2.1</u>	<u>3.2.2</u>
				<u>Regulation Signal</u>	<u>Dispatch Instruction</u>	<u>Real-Time Response</u>	<u>Deployment Instructions</u>	<u>Event Response</u>
Element				Short Description				
<u>0</u>	<u>20</u>	<u>NERC CIP Security - Availability</u>	<u>CIP Security Classification for Availability</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>21</u>	<u>NERC CIP Security - Confidentiality</u>	<u>CIP Security Classification for Confidentiality</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>0</u>	<u>22</u>	<u>NERC CIP Security - Integrity</u>	<u>CIP Security Classification for Integrity</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	-	<u>General Asset/Resource</u>	-	-	-	-	-	-
<u>1</u>	<u>10</u>	<u>Service Location ID</u>	<u>Identifier assigned to the Service Location</u>	<u>M</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				-	-	-	-	-
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u>	<u>11</u>	<u>Service Location Name</u>	<u>Name of the Service Location</u>	O	O	O	M	M
<u>1</u>	<u>12</u>	<u>Asset ID</u>	<u>The unique identifier of the asset</u>	O	O	O	O	O
<u>1</u>	<u>13</u>	<u>Asset Name</u>	<u>The name of the asset</u>	O	O	O	O	O
<u>1</u>	<u>20</u>	<u>Resource ID</u>	<u>Identifier assigned to the Resource</u>	M	M	M	M	M



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
				From	SO		DDE	SO	DDE
				To	DDE	DDE	SO	DDE	SO
				Interaction	3.1.1 Regulation Signal	3.1.2 Dispatch Instruction	3.1.3 Real-Time Response	3.2.1 Deployment Instructions	3.2.2 Event Response
Element			Short Description						
1	21	Resource Name	Name of the Resource	O	O	O	M	M	
1	30	Asset Group ID	The identifier of a group of assets	-	-	O	-	O	
1	31	Asset Group Name	Name of the aggregated group of assets	-	-	O	-	O	
1	40	Gen EMS ID	Alias or point Identifier assigned to the Resource	M	M	M	-	-	



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
1	41	Gen Billing ID	Billing Identifier assigned to the Resource	M	M	M	-	-
2	-	Location	-	-	-	-	-	-
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	-	-	-	M	M
2	31	Zone	Name of the Zone in which the Service Location is located	-	-	-	O	O



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
2	32	Zone Type	Type of Zone	-	-	-	-	-
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected	O	O	O	O	O
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O	-	-



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
2	43	PNode	Name of the Price Node associated with the Service Location	-	O	-	-	-
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location	-	M	-	-	-
2	71	Connection Type	Additional type of connection associated with the Service Location/Resource	O	O	-	O	-



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO	-	DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
2	72	Connection Address	Address associated with the Connection Type		O	O	-	O	-
5 Business Entity Relationships					-	-	-	-	-
5	11	Service Provider ID	Identifier assigned to the Service Provider		-	-	-	M	M
5	12	Service Provider Name	Name of the Service Provider		-	-	-	O	O

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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Element				Short Description				
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	O	O	O	-	-
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider	O	O	O	-	-
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	M	M	M	M



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O	O	O
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	M	M	M	M
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O
6	-	Device and Qualification	-	-	-	-	-	-
6	20	Meter ID	Identifier assigned to the Meter	O	O	O		



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
				From	SO		DDE	SO	DDE
				To	DDE	DDE	SO	DDE	SO
				Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions		Event Response				
Element			Short Description						
6	44	Normal Breaker Status	Status of the Breaker for the Service Location under Normal operating conditions					M	
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event				M	M	M
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level				M	M	M

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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Element				Short Description				
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid	-	-	M	M	M
6	51	UFR Settings	Setting of the Under-Frequency Relay	-	-	M	M	M
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method	-	-	M	M	M
7	-	Market/Program Enrollment		-	-	-	-	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				-	-	-	-	-
From				<u>SO</u>	-	<u>DDE</u>	<u>SO</u>	<u>DDE</u>
To				<u>DDE</u>	<u>DDE</u>	<u>SO</u>	<u>DDE</u>	<u>SO</u>
Interaction				<u>3.1.1</u>	<u>3.1.2</u>	<u>3.1.3</u>	<u>3.2.1</u>	<u>3.2.2</u>
				<u>Regulation Signal</u>	<u>Dispatch Instruction</u>	<u>Real-Time Response</u>	<u>Deployment Instructions</u>	<u>Event Response</u>
Element				Short Description				
<u>7</u>	<u>10</u>	<u>Program ID</u>	<u>Program Identifier</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>7</u>	<u>11</u>	<u>Program Name</u>	<u>Name of the Program</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>M</u>	<u>M</u>
<u>7</u>	<u>12</u>	<u>Market</u>	<u>Type of wholesale market</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>7</u>	<u>13</u>	<u>Market Product</u>	<u>Market Product</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>7</u>	<u>30</u>	<u>Lead Time</u>	<u>Time between the advanced notification and deployment</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-

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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
7	31	Day Ahead Flag	Flag set if the Resource will be participating in the Day-Ahead market	O	O	O		
7	32	Real Time Flag	Flag set if the Resource will be participating in the Real-Time market	O	O	O		
7	33	Self-Schedule Flag	Flag set if the Resource is Self-Deploying		O	O		
8		Offer Parameters						



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
8	10	Offer Limit Value	Offer Limit Value	O	O	-	-	-
8	11	Offer Limit Type	Type of Offer Limit	O	O	-	-	-
8	12	Offer Limit Interval	Offer Limit Interval	O	O	-	-	-
8	21	Min Gen MW	Minimum MW available for dispatch	O	O	-	-	-
8	22	Min Gen Cost	The cost per hour for each Min Gen MW value.	O	O	-	-	-



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
8	40	Market Clearing Day	Market Clearing Day of the Offer	M	M	M	M	M
8	41	Schedule Name	Name or tag of the Offer	O	O	O	O	O
8	42	Schedule Description	Description of the Offer	O	O	O	O	O
8	43	Schedule Status	Status of the Offer	O	O	O	O	O
8	50	Portfolio Name	Name of an aggregation of Resources for market participation	O	O	O	O	O

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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
				From	SO		DDE	SO	DDE
				To	DDE	DDE	SO	DDE	SO
				Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
9			Energy Market						
9	0	Instruction ID	Unique identifier assigned to each instruction.		0	0			
9	10	Energy Schedule - Start Time	Start Time of the Energy Schedule		0	0			
9	11	Energy Schedule - End Time	End Time of the Energy Schedule		0	0			
9	12	Energy Schedule - Interval Start Time	Start Time of the Energy Interval within the Energy Schedule		0	0			



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
9	13	Energy Schedule - Cleared MW Interval Value	The Energy Value of cleared MW for the Time Interval within the Energy Schedule		0	0			
9	14	Energy Schedule - Cleared Price	Awarded Price		0				
9	15	Schedule ID	Unique identifier assigned to each schedule.		0	0			



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Element				Short Description				
9	20	Base Point	Per-interval dispatch instruction	M	M	O	M	
9	21	Breaker Status	Status of the Breaker for the Resource	M	M	O	M	O
9	22	Output MW	Real Power Output of the Generation Device	M	M	M	M	O
9	23	Output MVAR	Reactive Power Output of the Generation Device	M	M	O	M	O



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
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Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				-	-	-	-	-
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
9	24	DR Bus Load MW	Instantaneous Bus Load of a Demand Resource providing Ancillary Services	O	O	O	O	O
9	27	Set Point	Final dispatch target level	M	M	O	M	-
10	-	Ancillary Service Market	-	-	-	-	-	-
10	0	Ancillary Service Instruction ID	Unique identifier assigned to each ancillary service instruction.	O	O	-	-	-



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process								
From				SO		DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>10</u>	<u>10</u>	<u>Ancillary Service Product Type</u>		Type of Ancillary Service product(s) the Resource is enrolling to provide				
				M	M	O		
<u>10</u>	<u>12</u>	<u>Ancillary Service Award - Start Time</u>		Start Time of the ancillary service Award				
					M			
<u>10</u>	<u>13</u>	<u>Ancillary Service Award - End Time</u>		End Time of the ancillary service Award				
					M			



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
Process				-	-	-	-	-
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u> <u>0</u>	<u>14</u>	<u>Ancillary Service Award - Interval Start Time</u>	<u>Start Time of the ancillary service Interval within the ancillary service Award and the ancillary service Value of the Time Interval</u>	-	M	-	-	-
<u>1</u> <u>0</u>	<u>15</u>	<u>Ancillary Service Award - Interval Value</u>	<u>The awarded Value for the Time Interval within the ancillary service Award</u>	-	M	-	-	-
<u>1</u> <u>0</u>	<u>17</u>	<u>Ancillary Service Schedule ID</u>	<u>Unique identifier assigned to each ancillary service schedule.</u>	O	O	-	-	-



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u> <u>0</u>	<u>31</u>	<u>Reserve Pickup Flag</u>	<u>Flag set if this is a Reserve Pickup schedule</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	-
<u>1</u> <u>0</u>	<u>32</u>	<u>Regulation Base Point</u>	<u>Per-interval Regulation dispatch instruction</u>	<u>M</u>	<u>M</u>	<u>O</u>	-	-
<u>1</u> <u>0</u>	<u>33</u>	<u>Base Load MW</u>	<u>Level of Load at time of dispatch</u>	<u>O</u>	<u>O</u>	<u>O</u>	-	<u>M</u>
<u>1</u> <u>2</u>	-	<u>Event and Performance</u>	-	-	-	-	-	-



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
			From	SO		DDE	SO	DDE	
			To	DDE	DDE	SO	DDE	SO	
			Interaction	3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
Element			Short Description						
<u>1</u> <u>2</u>	<u>10</u>	<u>Event ID</u>	<u>Identifier assigned to the Event</u>					<u>O</u>	<u>M</u>
<u>1</u> <u>2</u>	<u>11</u>	<u>Deployment Type</u>	<u>Type of Deployment</u>					<u>M</u>	
<u>1</u> <u>2</u>	<u>12</u>	<u>Event Day</u>	<u>Operating Date of Start of Event</u>					<u>M</u>	<u>M</u>
<u>1</u> <u>2</u>	<u>13</u>	<u>Event Description</u>	<u>Description of the Event</u>					<u>M</u>	<u>O</u>

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			Process	3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO		DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
			Interaction	Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element			Short Description	-	-	-	-	-
<u>1</u> <u>2</u>	<u>14</u>	<u>Event Start Time</u>	<u>Time of Start of deployment period for Event</u>	-	-	-	<u>M</u>	<u>M</u>
<u>1</u> <u>2</u>	<u>15</u>	<u>Operator Comment</u>	<u>Additional Event information provided by the Operator</u>	-	-	-	<u>O</u>	<u>O</u>
<u>1</u> <u>2</u>	<u>16</u>	<u>Deployment MW</u>	<u>Absolute or relative Deployment quantity</u>	-	-	-	<u>M</u>	-
<u>1</u> <u>2</u>	<u>17</u>	<u>Event Status</u>	<u>Status of the Event</u>	-	-	-	<u>O</u>	<u>O</u>



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
				SO	-	DDE	SO	DDE	
				DDE	DDE	SO	DDE	SO	
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
			Interaction	-	-	-	-	-	
				-	-	-	M	M	
				-	-	-	O	O	
				-	-	-	O	O	
				-	-	-	O	O	
				-	-	-	O	O	
Element			Short Description						
12	18	Event End Time	Time of End of deployment period		-	-	-	M	M
12	19	Event Modification Number	A modification number for the event.		-	-	-	O	O
12	111	Notification Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.		-	-	-	O	O



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			Process	3.0 Deployment & Real-Time Communications					
				3.1 Economic			3.2 Reliability		
				SO		DDE	SO	DDE	
				DDE	DDE	SO	DDE	SO	
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2	
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response	
			Interaction						
Element			Short Description						
12	112	Event Modification Reason Code	The reason the event is being cancelled or modified.					O	O
12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline						O
12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline						O



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				3.0 Deployment & Real-Time Communications				
Process				3.1 Economic			3.2 Reliability	
From				SO	-	DDE	SO	DDE
To				DDE	DDE	SO	DDE	SO
Interaction				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
Element				Short Description				
<u>1</u> <u>2</u>	<u>23</u>	<u>Energy Baseline Value</u>	<u>Calculated Energy Baseline</u>	-	-	-	-	O
<u>1</u> <u>2</u>	<u>24</u>	<u>Energy Baseline Timestamp</u>	<u>Timestamp of Energy Baseline</u>	-	-	-	-	O
<u>1</u> <u>2</u>	<u>30</u>	<u>Reporting Interval</u>	<u>Interval size required for Reporting</u>	-	-	-	-	O
<u>1</u> <u>2</u>	<u>31</u>	<u>Measurement Value Timestamp (CIM)</u>	<u>The time when the value was last updated</u>	O	O	M	-	M
<u>1</u>	<u>32</u>	<u>Measurement Value (CIM)</u>	<u>Value of the interval reading</u>	O	O	M	-	M



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				3.0 Deployment & Real-Time Communications				
				3.1 Economic			3.2 Reliability	
				SO	-	DDE	SO	DDE
				DDE	DDE	SO	DDE	SO
				3.1.1	3.1.2	3.1.3	3.2.1	3.2.2
Process				Regulation Signal	Dispatch Instruction	Real-Time Response	Deployment Instructions	Event Response
From								
To								
Interaction								
Element				Short Description				
2								
1 2	33	Response Value	Response	O	O	O		O
1 2	991	Event & Performance Comments	Comments associated with Event and Performance data				O	O



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST PAP09

018-1.4.6 Measurement and Performance – Baseline

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

Use Cases: All use cases where Baseline applies (see Figure 7).

- The process begins when the SP requests event meter data from the MA.
- The MA sends the event meter data to the SP.
- If the SP is required to calculate the baseline, the SP uses the event meter data to calculate the baseline.
 - o The SP uses the baseline and event meter data to calculate the event reduction or response amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates the baseline, the SP sends the event meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate the baseline.
 - The SO uses the baseline and event meter data to calculate the event reduction or response amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.



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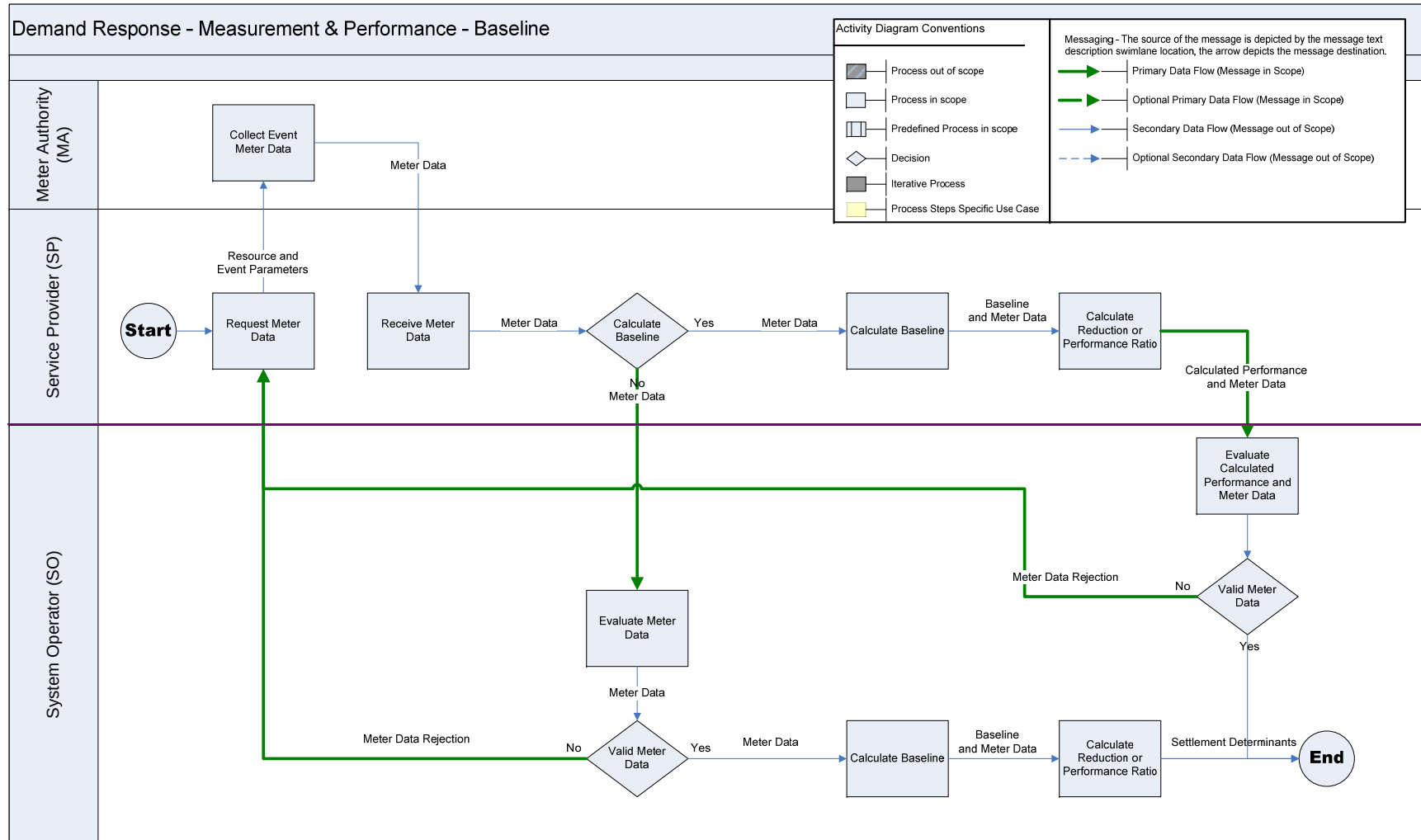
Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Activity Diagram and Data Flow:

Figure 7 - Measurement and Performance – Baseline

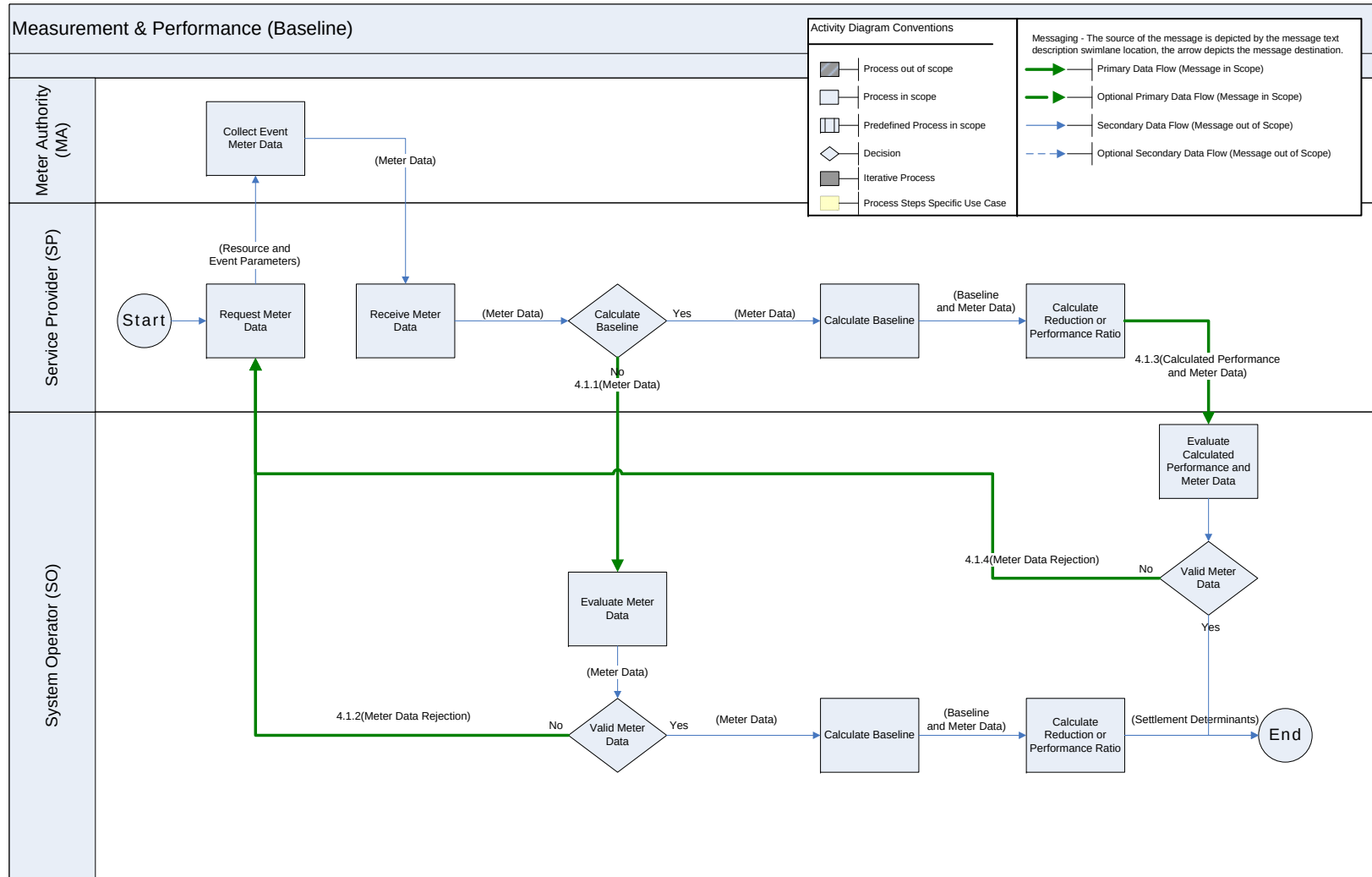


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Note: Data elements for Measurement and Performance-Baseline are listed with Measurement and Performance-All Others in Table 12.



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For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
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018-1.4.7 Measurement and Performance - All Others

Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

Use Cases: All use cases where Meter Before/Meter After, Maximum Base Load, or Meter Generator Output applies (see Figure 8).

- The process begins when the SP collects event meter data from the MA for the specified performance evaluation method.
 - o If the performance evaluation method is Meter Before/Meter After or Maximum Base Load, the MA sends the event meter data to the SP.
 - o If the performance evaluation method is Meter Generator Output, the SP uses the data from the meter on the generator.
- If the SP is required to calculate performance, the SP uses the event meter data to calculate performance.
 - o The SP uses the meter data to calculate the event reduction or response amount or event performance ratio.
 - o The SP sends the calculated event performance and meter data to the SO.
 - o The SO evaluates the calculated event performance and meter data.
 - If the calculated event performance data are complete, the SO uses the settlement determinants in the Settlements process.
 - If the calculated event performance data are incomplete, the SO sends an event data rejection to the SP.
- If the SO calculates performance, the SP sends the meter data to the SO.
 - o If the event meter data are complete, the SO uses the event meter data to calculate performance.
 - The SO uses the event meter data to calculate the event reduction or response amount or event performance ratio.
 - The SO uses the settlement determinants in the Settlements process.
 - o If the event meter data are incomplete, the SO sends an event data rejection to the SP.



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Activity Diagram and Data Flow:

Figure 8 - Measurement and Performance – All Others

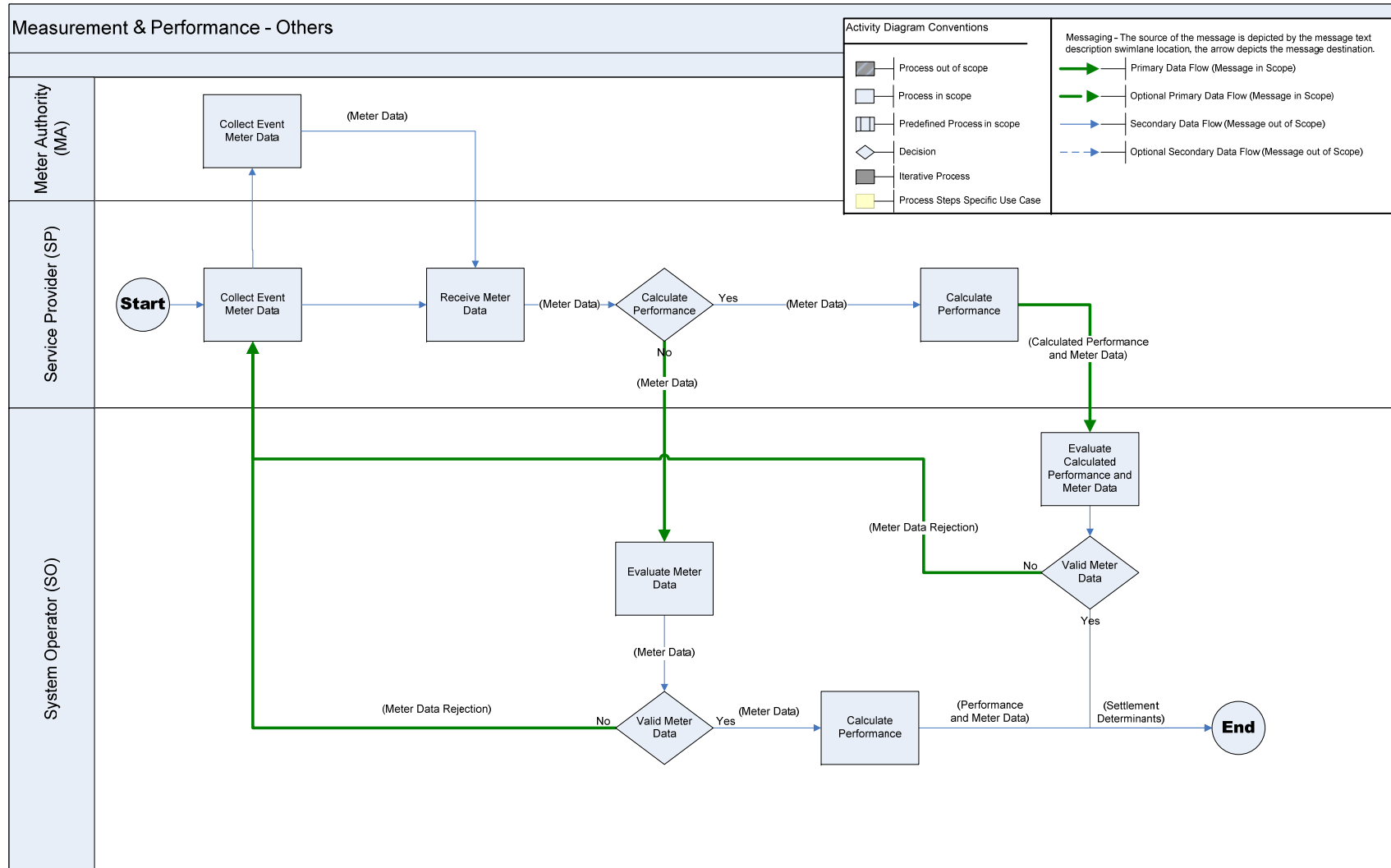


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Table 12. Data Requirement Elements by Interaction Number: Measurement and Performance

Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	
			Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>	
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	
Element			Short Description									
0	Common											
0	10	Submittal Date	Timestamp for the sender's use		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>



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			Process	4.0 Measurement & Performance								
			4.1 Baseline								4.2 Other	
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
0	11	Submitted By	User ID of submitter	0	0	0	0	0	0	0	0	
0	12	Submitted Error	ID of submission error detected	0	0	0	0	0	0	0	0	



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Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data		Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			

Element			Short Description								
0	13	Rejection Code Type	Type of rejection message		M	O	M		M	O	M
0	14	Rejection Code Value	Code referring to the reason for a rejection message		M	O	M		M	O	M



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
0	20	NERC CIP Security - Availability	CIP Security Classification for Availability	M	M	M	M	M	M	M	M
0	21	NERC CIP Security - Confidentiality	CIP Security Classification for Confidentiality	M	M	M	M	M	M	M	M



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
			From		SP	SO	SP	SO	SP	SO	SP	SO
			To		SO	SP	SO	SP	SO	SP	SO	SP
Interaction		4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
		Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description									
0	22	NERC CIP Security - Integrity	CIP Security Classification for Integrity	M	M	M	M	M	M	M	M	
1	General Asset/Resource											



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				4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
Process				-	-	-	-	-	-	-	-
From				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
To				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
Interaction				<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
Element				Short Description							
<u>1</u>	<u>10</u>	<u>Service Location ID</u>	<u>Identifier assigned to the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
<u>1</u>	<u>11</u>	<u>Service Location Name</u>	<u>Name of the Service Location</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
To	SO	SP	SO	SP	SO	SP	SO	SP			
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
1	12	Asset ID	The unique identifier of the asset	O	O	O	O	O	O	O	O
1	13	Asset Name	The name of the asset	O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance								
				4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
			Element			Short Description						
1	20	Resource ID	Identifier assigned to the Resource			M	M	M	M	M	M	M
1	21	Resource Name	Name of the Resource			M	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance													
				4.1 Baseline				4.2 Other									
				From				To									
				To				To									
				Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4		
								Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		
				Element			Short Description										
				1	30	Asset Group ID	The identifier of a group of assets			M	M	M	M	M	M	M	M
				1	31	Asset Group Name	Name of the aggregated group of assets			O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
From	SP	SO	SP	SO	SP	SO	SP	SO			
To	SO	SP	SO	SP	SO	SP	SO	SP			
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
2	Location										
2	30	Zone ID	Identifier assigned to the Zone in which the Service Location is located	M	M	M	M	M	M	M	M



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
2	31	Zone	Name of the Zone in which the Service Location is located	O	O	O	O	O	O	O	O
2	32	Zone Type	Type of Zone	O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
Element			Short Description									
2	40	Electrical Node ID	Identifier assigned to the Electrical Node at which the Service Location is connected		O	M	M	M	O	M	M	M



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
2	41	Electrical Node Name	Name of the Electrical Node at which the Service Location is connected	O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance											
				4.1 Baseline				4.2 Other							
			From	SP	SO	SP	SO	SP	SO	SP	SO				
			To	SO	SP	SO	SP	SO	SP	SO	SP				
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description												
2	42	Electrical Node Type	Type of Electrical Node at which the Service Location is attached			O					O				



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			Process	4.0 Measurement & Performance							
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
			Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
				-	-	-	-	-	-	-	-
<u>Element</u>			<u>Short Description</u>								
<u>2</u>	<u>43</u>	<u>PNode</u>	<u>Name of the Price Node associated with the Service Location</u>	<u>O</u>	-	-	-	<u>O</u>	-	-	-



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			Process	4.0 Measurement & Performance									
			4.1 Baseline				4.2 Other						
From	SP	SO	SP	SO	SP	SO	SP	SO					
To	SO	SP	SO	SP	SO	SP	SO	SP					
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4					
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection					
Element			Short Description										
2	44	PNode ID	Identifier assigned to the Price Node associated with the Service Location		0					0			
4	Grid Connection												



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			

Element			Short Description								
4	10	Loss Factor Type	Type of Loss Factor			M				M	
4	11	Loss Factor Value	Loss Factor			M				M	
5	Business Entity Relationships										



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				Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other				
From				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	
To				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>		
Interaction				<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>	
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	
Element				Short Description								
<u>5</u>	<u>11</u>	<u>Service Provider ID</u>	<u>Identifier assigned to the Service Provider</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>5</u>	<u>12</u>	<u>Service Provider Name</u>	<u>Name of the Service Provider</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
From	SP	SO	SP	SO	SP	SO	SP	SO			
To	SO	SP	SO	SP	SO	SP	SO	SP			
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
5	20	Transmission/Distribution Service Provider ID	Identifier assigned to the Transmission/Distribution Service Provider	O	O			O	O		



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
			From				<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
			To				<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
			Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>	
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	
Element			Short Description									
5	21	Transmission/Distribution Service Provider Name	Name of the Transmission/Distribution Service Provider	<u>O</u>	<u>O</u>			<u>O</u>	<u>O</u>			



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
5	22	Transmission/Distribution Service Provider Account Number	Transmission/Distribution Service Provider's account number for the Resource	O	O			O	O		
5	44	Retail Rate	Retail Rate			O				O	



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
5	60	Meter Authority ID	Identifier assigned to the Metering Authority	O	O	O	O	O	O	O	O
5	61	Meter Authority Name	Name of the Metering Authority	O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
5	70	Scheduling Entity ID	Identifier assigned to the Scheduling Entity	M	O	O	O	O	O	O	O
5	71	Scheduling Entity Name	Name of the Scheduling Entity	O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element			Short Description								
5	80	Designated Dispatch Entity ID	Identifier assigned to the Designated Dispatch Entity	M	O	O	O	O	O	O	O
5	81	Designated Dispatch Entity Name	Name of the Designated Dispatch Entity	O	O	O	O	O	O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010

Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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			Process	4.0 Measurement & Performance							
From	SP	SO	SP	SO	SP	SO	SP	SO			
To	SO	SP	SO	SP	SO	SP	SO	SP			
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
6	Device and Qualification										
6	20	Meter ID	Identifier assigned to the Meter	M	M	M	M	M	M	M	M



Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

[illegible]



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
			Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4	
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	
Element			Short Description									
6	45	Breaker Status During Event	Status of the Breaker for the Service Location during an Emergency Event			O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance								
			4.1 Baseline								4.2 Other	
			From	SP	SO	SP	SO	SP	SO	SP	SO	
			To	SO	SP	SO	SP	SO	SP	SO	SP	
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
6	46	Wholesale Delivery Point Status	Flag set if the Service Location is metered at the Wholesale level	O	O	O	O	O	O	O	O	



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			Process	4.0 Measurement & Performance								
			4.1 Baseline								4.2 Other	
From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>				
To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>				
Interaction			<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>		
			<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>		
Element			Short Description									
6	47	Private Use Network	Flag set if the Resource is an Electric Network connected to the transmission grid		<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>
6	51	UFR Settings	Setting of the Under-Frequency Relay		<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>	<u>Q</u>



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
From	SP	SO	SP	SO	SP	SO	SP	SO				
To	SO	SP	SO	SP	SO	SP	SO	SP				
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
6	52	Load Resource Control Device	Type of Control Device at a Service Location or deployed by a Response Method		O	O	O	O	O	O	O	O
7	Market/Program Enrollment											



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>			
Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>			
	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>			
Element			Short Description								
<u>7</u>	<u>10</u>	<u>Program ID</u>	<u>Program Identifier</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>7</u>	<u>11</u>	<u>Program Name</u>	<u>Name of the Program</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	
<u>7</u>	<u>12</u>	<u>Market</u>	<u>Type of wholesale market</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	



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				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
7	13	Market Product	Market Product	O	O	O	O	O	O	O	O
7	40	Response Method Type	Type of Response Method	-	-	O	-	-	-	O	-
7	41	Response Method ID	Identifier assigned to the Response Method	-	-	O	-	-	-	O	-



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			Process	4.0 Measurement & Performance								
			4.1 Baseline								4.2 Other	
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	
Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>				
	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>				
Element			Short Description									
<u>7</u>	<u>42</u>	<u>Response Method Name</u>	<u>Name of the Response Method</u>				<u>O</u>				<u>O</u>	
<u>7</u>	<u>51</u>	<u>Performance Evaluation Method</u>	<u>Method used to Evaluate the Performance of a Resource</u>				<u>O</u>				<u>O</u>	



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				4.0 Measurement & Performance							
			Process	-							
				-							
				-							
				-							
			4.1 Baseline				4.2 Other				
			-				-				
<u>From</u>			<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	
<u>To</u>			<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>		
<u>Interaction</u>			<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>	
			<u>Meter Data Rejection</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data Rejection</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	
Element			Short Description		-	-	-	-	-	-	-
<u>7</u>	<u>991</u>	<u>Market Enrollment Comments</u>	<u>Comments associated with the Enrollment</u>		-	0	-	0	-	0	-
11	Capacity Market				-	0	-	0	-	0	-



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
From	SP	SO	SP	SO	SP	SO	SP	SO				
To	SO	SP	SO	SP	SO	SP	SO	SP				
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
11	30	Capacity Obligation Period Type	Type of Capacity Obligation Time Period within which the Resource is obligated		O	O	O	O	O	O	O	O



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
From	SP	SO	SP	SO	SP	SO	SP	SO				
To	SO	SP	SO	SP	SO	SP	SO	SP				
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element			Short Description									
11	40	Minimum Payment Nomination	Strike price for the economic dispatch of the energy component of the capacity program				O				O	



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			Process	4.0 Measurement & Performance									
			4.1 Baseline								4.2 Other		
			From	SP	SO	SP	SO	SP	SO	SP	SO		
			To	SO	SP	SO	SP	SO	SP	SO	SP		
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4					
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection					
Element			Short Description										
11	41	Capacity Supply Obligation	Capacity Obligation					O				O	
11	50	Capacity Reference ID	Identifier assigned to the External System award					O				O	

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				Process	4.0 Measurement & Performance										
								4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO				
To				SO	SP	SO	SP	SO	SP	SO	SP				
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4				
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection				
Element				Short Description											
11	991	Capacity Comments		Comments associated with the Capacity market						O				O	
12		Event and Performance													
12	10	Event ID		Identifier assigned to the Event				M	M	O	M	M	M	O	M



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			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
			From	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>
			To	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>	<u>SO</u>	<u>SP</u>
			Interaction	<u>4.1.1</u>	<u>4.1.2</u>	<u>4.1.3</u>	<u>4.1.4</u>	<u>4.2.1</u>	<u>4.2.2</u>	<u>4.2.3</u>	<u>4.2.4</u>
				<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>	<u>Meter Data</u>	<u>Meter Data Rejection</u>	<u>Calc. Perf. and Meter Data</u>	<u>Meter Data Rejection</u>
Element			Short Description								
<u>12</u>	<u>11</u>	<u>Deployment Type</u>	<u>Type of Deployment</u>			<u>O</u>				<u>O</u>	
<u>12</u>	<u>12</u>	<u>Event Day</u>	<u>Operating Date of Start of Event</u>			<u>M</u>				<u>M</u>	



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			Process	4.0 Measurement & Performance									
			4.1 Baseline					4.2 Other					
			From	SP	SO	SP	SO	SP	SO	SP	SO		
To	SO	SP	SO	SP	SO	SP	SO	SP					
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4					
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection					
Element			Short Description										
12	14	Event Start Time	Time of Start of deployment period for Event	O	O	M	O	O	O	M	O		
12	16	Deployment MW	Absolute or relative Deployment quantity	-	-	O	-	-	-	O	-		



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			Process	4.0 Measurement & Performance								
			4.1 Baseline				4.2 Other					
From			SP	SO	SP	SO	SP	SO	SP	SO		
To			SO	SP	SO	SP	SO	SP	SO	SP		
Interaction			4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4		
			Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection		
Element			Short Description									
12	17	Event Status	Status of the Event				O				O	
12	18	Event End Time	Time of End of deployment period		O	O	M	O	O	O	M	O



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			4.0 Measurement & Performance							
Process										
			4.1 Baseline				4.2 Other			
From			SP	SO	SP	SO	SP	SO	SP	SO
To			SO	SP	SO	SP	SO	SP	SO	SP
Interaction			4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
			Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element			Short Description							
12	21	Baseline Dates	Dates of days used to calculate the Energy Baseline							



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			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
12	22	Baseline Exclusion Dates	Dates of days Excluded from the calculation of the Energy Baseline	0	0	0	0	0	0	0	0



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

Request Title: **Phase Two** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
			From	SP	SO	SP	SO	SP	SO	SP	SO
			To	SO	SP	SO	SP	SO	SP	SO	SP
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
12	23	Energy Baseline Value	Calculated Energy Baseline	O	O	O	O	O	O	O	O
12	24	Energy Baseline Timestamp	Timestamp of Energy Baseline	O	O	O	O	O	O	O	O



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE AS REVISED BY
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Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

			Process	4.0 Measurement & Performance							
			4.1 Baseline				4.2 Other				
From	SP	SO	SP	SO	SP	SO	SP	SO			
To	SO	SP	SO	SP	SO	SP	SO	SP			
Interaction	4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4			
	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection			
Element			Short Description								
12	30	Reporting Interval	Interval size required for Reporting	O	O	O	O	O	O	O	O
12	31	Measurement Value Timestamp (CIM)	The time when the value was last updated	M	M	M	O	M	O	M	O



Request Title: Phase Two Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

			Process	4.0 Measurement & Performance							
				4.1 Baseline				4.2 Other			
				SP	SO	SP	SO	SP	SO	SP	SO
				SO	SP	SO	SP	SO	SP	SO	SP
				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data Rejection	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element			Short Description								
12	32	Measurement Value (CIM)	Value of the interval reading	M	M	M	O	M	O	M	O
12	33	Response Value	Response	O	O	O	O	O	O	O	O



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Legend: Cells showing an "M" (mandatory) are data elements that must contain some value when included in the interaction message. Cells showing an "O" (optional) are data elements that may be left blank if not used in a given interaction.

				4.0 Measurement & Performance							
Process											
				4.1 Baseline				4.2 Other			
From				SP	SO	SP	SO	SP	SO	SP	SO
To				SO	SP	SO	SP	SO	SP	SO	SP
Interaction				4.1.1	4.1.2	4.1.3	4.1.4	4.2.1	4.2.2	4.2.3	4.2.4
				Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection	Meter Data	Meter Data Rejection	Calc. Perf. and Meter Data	Meter Data Rejection
Element				Short Description							
12	34	Measurement Value Type	The type of measurement value.	O		O		O		O	
12	991	Event & Performance Comments	Comments associated with Event and Performance data		O	O	O		O	O	O



RECOMMENDATION ~~TO NAESB EXECUTIVE COMMITTEE~~ AS REVISED BY
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**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES AS REVISED BY
THE NAESB WEQ EXECUTIVE COMMITTEE on July 7, 2010**

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(ca)(ii)
Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST
PAP09

018-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor and objects within the overall information model for demand response. Figure 1A contains a data model used to illustrate the entity-relationships within the model. Abbreviations/Acronyms correspond to the IDs shown in the figure.

Proper (and Improper) Usage of the Entity-Relationship Model. The entity-relationship model is used to show cardinality among objects in the model, for example every Resource belongs to one and only one Service Provider and a Premise-Service Location contains one or more End-DevicesService Delivery Points. The entity-relationship model does not provide use case information; actors are objects in the model and do not “act” in the model. The entity-relationship model does not imply process. For example, a Service Provider is associated with many Resources; however the enrollment of those Resources may be managed by a System Operators or a Utility Distribution Operator. Both use cases and process maps are separate components of the Business Practice Standards.

Reading Crow’s Foot Notation. Objects in the model which share a relationship are connected with a cardinality line. Each end of the cardinality line contains a Crow’s Foot notation, as documented in the legend of the figure. The four notations utilized are “exactly-one”, “one-or-more”, “zero-or-one”, and “zero-or-more”. The cardinality line is bi-directional; meaning it can be read in two directions. For example: a Premise-Service Location is related to one-or-more End-DevicesService Delivery Points (reading top to bottom) and every End-DeviceService Delivery Point is related to exactly-one Premise-Service Location (reading bottom to top).

Optional Entities, Roles and -Objects. The entity-relationship model is designed to support multiple business models and not every business model will require all entities, roles and/or objects to function. Therefore, all entities, roles and objects in the model are considered optional. For example, a Utility Distribution Operator may design a Demand Response program which requires the definition of Resources and PremisesService Locations, but does not require Response—Method AggregationsAsset Groups and Response-MethodsAssets. In this example, the relationship between Resource and Premise is transitive: a Resource is comprised of one-or-more Premises and each Premise is associated with zero-or-more Resources.

Applicability to Retail and Wholesale. The entity-relationship model is applicable to both wholesale and retail. When using the model for wholesale, the typical applicable business entities are 2.1 (System Operator) and 2.3 (Market Participant), while in



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Request No.: 2010 WEQ Annual Plan Item 6(~~ca~~)(ii)
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Wholesale Standard DR Signals - for NIST
PAP09

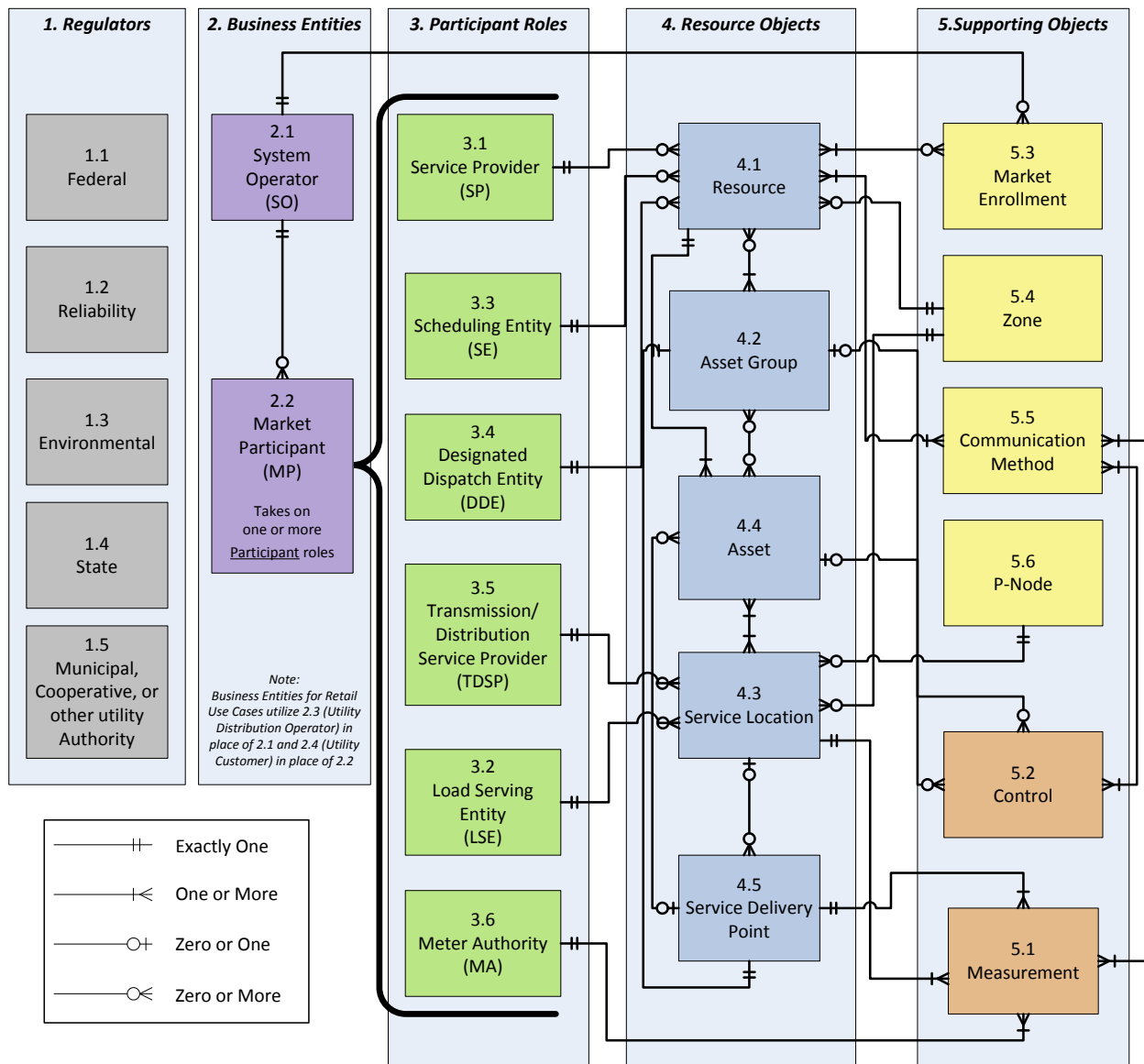
retail markets, the parallel business entities are 2.3 (Utility Distribution Operator) and 2.4 (Utility Customers). Other than the swapping of the two pairs of terms, the models are identical, including the names of and relationships among objects.



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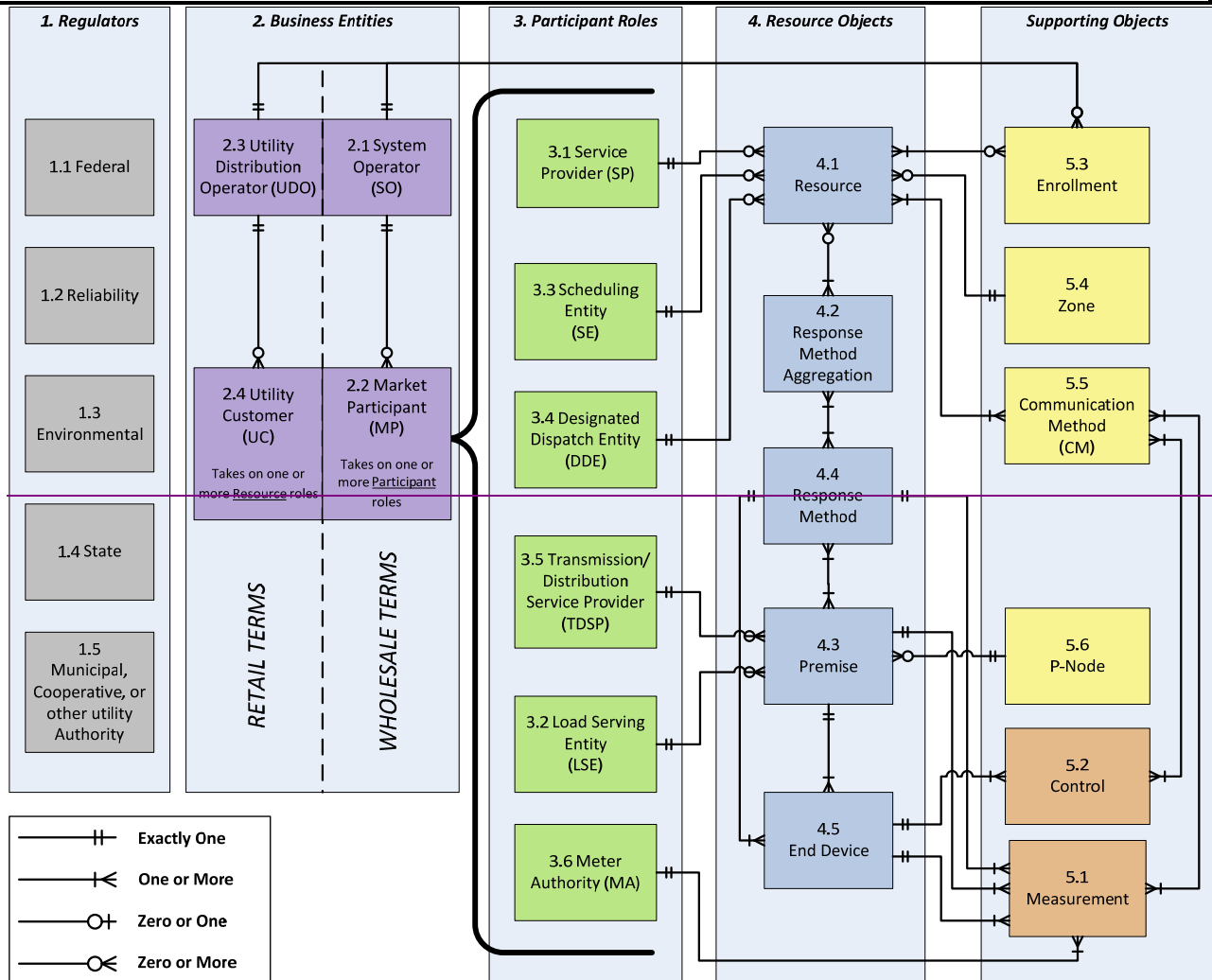
Figure 1A. Sample Entity-Relationship Model for Smart Grid Use Cases





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018-B Appendix B – Use Case Combinations

The following table is a complete list of use case combinations included
referenced in these Business Practice Standards.

Use Case	Product	Deployment	Performance Evaluation
E-B-1	Energy (Economic)	Bulk	Baseline
E-B-2	Energy (Economic)	Bulk	MB/MA
E-B-3	Energy (Economic)	Bulk	MBL
E-B-4	Energy (Economic)	Bulk	MGO
E-R-1	Energy (Economic)	Resource	Baseline
E-R-2	Energy (Economic)	Resource	MB/MA
E-R-3	Energy (Economic)	Resource	MBL
E-R-4	Energy (Economic)	Resource	MGO
E-S-1	Energy (Economic)	Self	Baseline
E-S-2	Energy (Economic)	Self	MB/MA
E-S-3	Energy (Economic)	Self	MBL
E-S-4	Energy (Economic)	Self	MGO
R-B-1	Energy (Reliability)	Bulk	Baseline
R-B-2	Energy (Reliability)	Bulk	MB/MA
R-B-3	Energy (Reliability)	Bulk	MBL
R-B-4	Energy (Reliability)	Bulk	MGO
R-R-1	Energy (Reliability)	Resource	Baseline
R-R-2	Energy (Reliability)	Resource	MB/MA
R-R-3	Energy (Reliability)	Resource	MBL
R-R-4	Energy (Reliability)	Resource	MGO
R-S-1	Energy (Reliability)	Self	Baseline
R-S-2	Energy (Reliability)	Self	MB/MA
R-S-3	Energy (Reliability)	Self	MBL
R-S-4	Energy (Reliability)	Self	MGO



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Use Case	Product	Deployment	Performance Evaluation
C-B-1	Capacity	Bulk	Baseline
C-B-2	Capacity	Bulk	MB/MA
C-B-3	Capacity	Bulk	MBL
C-B-4	Capacity	Bulk	MGO
C-R-1	Capacity	Resource	Baseline
C-R-2	Capacity	Resource	MB/MA
C-R-3	Capacity	Resource	MBL
C-R-4	Capacity	Resource	MGO
C-S-1	Capacity	Self	Baseline
C-S-2	Capacity	Self	MB/MA
C-S-3	Capacity	Self	MBL
C-S-4	Capacity	Self	MGO
G-B-1	Regulation	Bulk	Baseline
G-B-2	Regulation	Bulk	MB/MA
G-B-3	Regulation	Bulk	MBL
G-B-4	Regulation	Bulk	MGO
G-R-1	Regulation	Resource	Baseline
G-R-2	Regulation	Resource	MB/MA
G-R-3	Regulation	Resource	MBL
G-R-4	Regulation	Resource	MGO
G-S-1	Regulation	Self	Baseline
G-S-2	Regulation	Self	MB/MA
G-S-3	Regulation	Self	MBL
G-S-4	Regulation	Self	MGO
V-B-1	Reserve	Bulk	Baseline
V-B-2	Reserve	Bulk	MB/MA
V-B-3	Reserve	Bulk	MBL
V-B-4	Reserve	Bulk	MGO
V-R-1	Reserve	Resource	Baseline
V-R-2	Reserve	Resource	MB/MA
V-R-3	Reserve	Resource	MBL
V-R-4	Reserve	Resource	MGO
V-S-1	Reserve	Self	Baseline
V-S-2	Reserve	Self	MB/MA
V-S-3	Reserve	Self	MBL
V-S-4	Reserve	Self	MGO



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Request Title: Phase Two Requirements Specifications for
Wholesale Standard DR Signals - for NIST
PAP09

4. Supporting Documentation

a. Description of Request:

WEQ Annual Plan Item 6(c) (ii) – “Develop Requirements and Use Cases for PAP 09 – Demand Response/Distributed Energy Resources” – Phase Two.

b. Description of Recommendation:

This recommendation provides associates the data requirements elements related to the use cases developed as part of the during the phase Phase one One effort.

c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide to include a Phase two effort for PAP-09 to associate data elements with the use cases and requirements germane to the development of developed in Phase 1 for standard DR and DER signals. Additionally, the recommendation addresses the directive from the WEQ Executive Committee for “the Smart Grid Standards Subcommittee to review the Executive Summary and Introduction to reconsider language that may not be appropriate for business practices long-term in their Phase 2 work.”

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

NAESB Smart Grid Standards Subcommittee Meeting Notes/Documents:

- ~~March 11, 2010 Meeting Notes – To be posted~~
- ~~March 18, 2010 Meeting Notes – To be posted~~
- ~~March 25, 2010 Meeting Notes – To be posted~~
- ~~April 1, 2010 Meeting Notes – To be posted~~
- ~~April 8, 2010 Meeting Notes – To be posted~~
- ~~April 29, 2010 Meeting Notes – To be posted~~
- ~~May 13, 2010 Meeting Notes – To be posted~~
- ~~May 20, 2010 Meeting Notes – To be posted~~
- June 10, 2010 Meeting Notes – To be posted
- June 17, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd061710notes.doc
- July 1, 2010 Meeting Notes – To be posted
- July 13-14, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEES AS REVISED BY
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- July 22, 2010 Meeting Notes – To be posted
- August 5, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd080510notes.doc
- August 12, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd081210notes.doc
- August 26, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd082610notes.doc
- September 9, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd090910notes.doc
- September 16, 2010 Meeting Notes –
http://www.naesb.org/pdf4/smart_grid_ssd091610notes.doc
- September 23, 2010 Meeting Notes – To be posted
- October 7, 2010 Meeting Notes – To be posted



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The recommended Business Practice sStandards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Energy Efficiency products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this document is not intended to replace applicable Governing Documents for wholesale Energy Efficiency, and in the event of a conflict, the latter documents shall have precedence.

Contact information: Eric Winkler, Ph.D., ISO New England, 413-540-4513, ewinkler@iso-ne.com

WEQ-020 Business Practices Standards for Measurement and Verification of Energy Efficiency Products - Please see attached documentation.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 4(g)

WEQ.000-1 ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
<u>ANSI</u>	<u>American National Standard Institute</u>
<u>ASHREA</u>	<u>American Society of Heating, Refrigeration and Air Conditioning Engineers</u>
<u>c.v.</u>	<u>Coefficient of Variation</u>
<u>EE</u>	<u>Energy Efficiency</u>
EERP	Energy Efficiency Resource Provider
<u>FEMP</u>	<u>Federal Energy Management Program (US)</u>
<u>HVAC</u>	<u>Heating, ventilating, and air conditioning</u>
<u>IEEE</u>	<u>Institute of Electrical and Electronics Engineers</u>
IPMVP	International Performance Measurement and Verification Protocol
<u>kHz</u>	<u>Kilohertz</u>
<u>M&V</u>	<u>Measurement and Verification</u>
<u>RMS</u>	<u>Root-Mean Square</u>
VEE	Validation Editing and Estimation

WEQ.000-2 DEFINITION OF TERMS

Term	Definition
<u>Demand Reduction Value</u>	<u>The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW.</u>
<u>Energy Efficiency</u>	<u>Installed measures on Retail Customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.</u>



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Term	Definition
Energy Efficiency Baseline	Energy usage that would have occurred without implementation of the subject measure or project
Energy Efficiency Capacity Resource	<u>A type of Demand Resource used in capacity markets in which usage demand is reduced over a defined period of time measured in MW.</u>
~~Demand Reduction Value~~	<u>Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours.</u>
~~Energy Efficiency~~	<u>Installed measures on Retail Customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.</u>
Energy Efficiency Resource Provider	<u>An entity that is responsible for delivering Energy Efficiency.</u>
~~Governing Documents~~	<u>Documents that determine the interactions among parties in a wholesale electric market, including but not limited to: applicable law, regulatory documents (e.g. tariffs, rules, regulations), contractual agreements, manuals, and operational procedures.</u>
Measurement and Verification	The process of determining reductions in usage <u>and/or demand</u> resulting from Demand Response or Energy Efficiency.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020 Measurement and Verification of Energy Efficiency Products

WEQ.020.1. Introduction and Principles

WEQ.020.1.1. Introduction and Principles

Energy Efficiency Resource Providers ("EERP") that offer Energy Efficiency Resources resources into wholesale electricity markets must provide consistent and reliable evidence of -reductions in electrical usage for qualification and performance. Methodologies for Measurement and Verification ("M&V") of demand reduction shall be established by the System Operator and compliance with said requirements shall be the responsibility of the EERP. Compliance with the standards are intended to ensure that Energy Efficiency Resources are qualified for participation in the market and the Demand Reduction Values, in performance reporting, accurately reflect the demand reduction delivered to the electrical system.

A Business Practice Standard for M&V of Energy Efficiency has the potential to broaden implementation and acceptance of energy reduction measures and practices. The standards are not designed ed to establish or support any regulatory policy.

WEQ.020.2. Applicability

WEQ.020.2.1.1.

This document contains information on standards for M&V of wholesale electricity Energy Efficiency products and services in markets administered by Independent System Operators ISOs and Regional Transmission Organizations RTOs (hereinafter referred to as "System Operator"). The information contained within this standard is not intended to replace applicable Governing Documents applicable to wholesale Energy Efficiency, and in the event of a conflict between these standards with the Governing Documents, the Governing Documents shall have precedence over these standards.

WEQ.020.2.1.2.

These standards establish Energy Efficiency M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Energy Efficiency services. These standards do not require the System Operator to offer services including Energy Efficiency. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section of the WEQ-000 Business Practice sStandards.

WEQ.020.2.1.3.

These Standards include the requirements on EERPs for the Measurement and Verification M&V of eEnergy eEfficiency offered into wholesale markets. References not limited to submission of materials, use of equipment,



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

measurement, sampling and calculations refer to materials submitted to the System Operator by the EERPs and actions taken by the EERP.

WEQ.020.3. Business Practice Standards

WEQ.020.3.1. Energy Efficiency Use Criteria in Wholesale Markets~~Requirements~~

The following criteria comprise elements of how ~~energy~~ Energy efficiency ~~Efficiency~~ may participate in wholesale markets but are not requirements for M&V of ~~energy~~ Energy efficiency ~~Efficiency~~ products in wholesale markets. Detailed criteria in standards WEQ.020.3.3. to WEQ.020.3.12 shall constitute the required elements of M&V for EERPs participating in ~~W~~wholesale ~~E~~electric markets.

WEQ.020.3.1.1. Installation and Eligibility

Verified permanent load reduction behind the distribution meter resulting from installation of Energy Efficiency ~~(EE)~~ equipment, processes, or systems that exceed ~~EE~~Energy Efficiency codes and standards at the time of commitment, installation or permanent load shifting.

WEQ.020.3.1.2. Modeling Energy Efficiency

An Energy Efficiency Capacity Resource may be modeled in the system equivalent to other supply side resources in accordance with the relevant applicable Governing Documents.

WEQ.020.3.1.3. Increase in Energy Efficiency Value

Energy Efficiency Capacity Resource may be augmented via incremental or reconfiguration auctions, provided such resource is qualified in advance of the applicable auction in accordance with the applicable Governing Documents.

WEQ.020.3.1.4. Early Completion

Energy Efficiency Capacity Resource that is deliverable in a period in advance of the commitment period, for which it originally cleared, may participate in prior commitment periods subject to qualification requirements specified in the applicable Governing Documents.

WEQ.020.3.2. General Measurement and Verification Plan Requirements

A document that defines specific M&V methods for verifying the Demand Reduction Value is required of EERPs for qualification and participation in the program, market, product class or auction. The following general elements of M&V plans are not required or exhaustive. Detailed criteria in standards WEQ.020.3.3 to WEQ.020.3.12 shall constitute the ~~required~~ elements of an M&V plan as specified in the regional Governing Documents.

WEQ.020.3.2.1. Project Description

Plan should include a~~The Project-project~~ description, not limited to: ~~includes a~~



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

general description of the project location, facility types, measure types, estimated Demand Reduction Value, estimated cost of project (capital, operation and M&V) and savings.

WEQ.020.3.2.2.

Schedule

Plan should include Project-project schedule describes the timeline of a project ~~buildout~~build out to be used for establishing qualification eligibility. Plans shall specify a schedule of M&V activity during project buildout and during delivery period.

WEQ.020.3.2.3.

Measure Description

Plan should include Measure-measure level characteristics, including but not limited to: Demand Reduction Values based on metering, engineering estimates, or model simulation.

WEQ.020.3.2.4.

Equipment/Process Specification and Documentation

Plan should include a Detailed-detailed description of existing and new equipment and process characteristics sufficient to establish Energy Efficiency Baseline calculations.

WEQ.020.3.2.5.

Measurement and Verification Approach

Require-Plan should include justification of appropriate measurement methodology, not limited to the four International Performance M&V Protocol (IPMVP) methodologies at the measure level.

WEQ.020.3.2.6.

Methodological Assumptions

Plan should include aA detailed description of underlying assumptions for Energy Efficiency Baseline and post installation energy use.

WEQ.020.3.2.7.

M&V Activities: Energy Efficiency Baseline Period

Plan should include aA description of the period of time under which the Energy Efficiency Baseline will be quantified.

WEQ.020.3.2.8.

M&V Activities: Post Installation Period

Plan should include a Description-description of activities conducted post installation to document actual Demand Reduction Values.

WEQ.020.3.2.9.

Calculation and Adjustments

Plan should include a Detailed-detailed description of calculations used to establish Energy Efficiency Baseline and actual Demand Reduction Value.

WEQ.020.3.2.10.

Metering Plan

Plan should include a Detailed-detailed description of meter management, not limited to maintenance, meter data collection and processing.

WEQ.020.3.2.11.

Updated M&V Plan Components

Plan should include a Description-description of process by which M&V plan updates are made and documented.

WEQ.020.3.3. Post installation M&V Report Components



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Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020.3.3.1. Initial Post-Installation M&V Report:

During the course of project buildout, a post-installation report shall be submitted by the EERP to the ISO/RTO to document the verified reductions resulting from installed measures. The report shall be required at least annually.

~~WEQ.020.3.3.1.1. Report shall be required at least annually.~~

WEQ.020.3.3.2. Updated Post-Installation M&V Report

An updated performance report shall be submitted by the EERP to the ISO/RTO to document achieved reductions for the purposes of establishing reduction values carried into subsequent delivery periods. The report shall be required at least annually

~~Report shall be required monthly or at least annually.~~

WEQ.020.3.4. Performance Reporting

WEQ.020.3.4.1. Minimum Requirements

Performance reports shall be submitted by the EERP to the ISO/RTO to document achieved reductions during the delivery period. Report shall be required at least annually.

~~WEQ.020.3.4.1.1. Report shall be required at least annually.~~

WEQ.020.3.5. M&V Supporting Documents

WEQ.020.3.5.1. Minimum Requirements

All reports, studies, specifications and other documents referenced by the EERP in the M&V Plan- shall be current and applicable to the measures.

~~Reports provided by the EERP shall be current and applicable to the measures.~~

WEQ.020.3.6. M&V Methodologies

WEQ.020.3.6.1. Acceptable Methodologies

Measurement and Verification methodologies used by the EERP shall be appropriate to the measure type and sensitivity requirements of the measurement techniques. Acceptable methods shall include:



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WEQ.020.3.6.1.1. ~~IPMVP International Performance Measurement and Verification Protocol~~¹
Option A: Partially Measured Retrofit Isolation/Stipulated Measurement.

IPMVP Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable can, in combination with well-established algorithms and/or stipulated factors, can provide an accurate estimate of the Demand Reduction Value.

WEQ.020.3.6.1.2. ~~IPMVP International Performance Measurement and Verification Protocol~~
Option B: Retrofit Isolation/Metered Equipment.

IPMVP Option B involves a retrofit or system-level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the component or system level using interval electrical demand meters installed on the affected end-use.

WEQ.020.3.6.1.3. ~~IPMVP International Performance Measurement and Verification Protocol~~
Option C: Whole facility/Regression.

IPMVP Option C estimates Demand Reduction Values by analyzing the overall energy use in a facility and identifying the impact of the implemented measure on the total building or facility energy use patterns. The evaluation of whole-building or facility level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis.

WEQ.020.3.6.1.4. ~~IPMVP International Performance Measurement and Verification Protocol~~
Option D: Calibrated Simulation.

IPMVP Option D involves calibrated computer simulation models of component or whole building demand and energy usage to determine measure demand and energy savings. Engineering simulation models (such as DOE-2) can model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings.

¹ "The International Performance Measurement and Verification Protocol (IPMVP) provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities." Efficiency Valuation Organization, 2010. <http://www.evo-world.org>. The IPMVP (EVO 10000 – 1:2010, © Efficiency Valuation Organization 2010), may be obtained from EVO-world.org and may be periodically updated.



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Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions. Both engineering and operational simulations are made more powerful by calibrating these methods to actual MW and MWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building energy use data may be used to calibrate the simulations.

WEQ.020.3.6.1.5. Alternative ~~acceptable~~ Acceptable Measurement and Verification M&V ~~MM~~ methodologies.

The EERP may propose alternative methodologies not listed in the Section above. EERPs proposing alternative methodologies shall demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described above, and demonstrate justifiable need for deviation from the acceptable methodologies described in the Section above based on unique Project requirements.

WEQ.020.3.7. Energy Efficiency Baseline Conditions

WEQ.020.3.7.1. Energy Efficiency Baseline Criteria for all Energy Efficiency

Energy Efficiency Baseline conditions used by the EERP shall reflect the conditions under which new energy efficient equipment or processes are installed to provide a service function. The four conditions shall include:

- WEQ.020.3.7.1.1. ~~1) replacement~~ Replacement of functional equipment still within its current useful life.
- WEQ.020.3.7.1.2. ~~2) replacement~~ Replacement of functional equipment beyond its current useful life.
- WEQ.020.3.7.1.3. ~~3) unplanned~~ Unplanned replacement or failed equipment, ~~and~~
- WEQ.020.3.7.1.4. ~~4) new~~ New construction.

WEQ.020.3.7.2. The standard Energy Efficiency Baseline used by the EERP shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice.



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whichever is most stringent. The standard Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. The standard Energy Efficiency Baseline shall be applied to criteria under 020.3.7.1.3, 020.3.7.1.4, unless otherwise specified by the Governing Documents, may be applied at the time of commitment in the case of a forward commitment or at the time of installation. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.2, unless otherwise specified by the Governing Documents. at the time of commitment in the case of a forward commitment or at the time of installation.

~~WEQ.020.3.7.2.~~

WEQ.020.3.7.3.

The current load Energy Efficiency Baseline used by the EERP shall be the existing load of operating equipment across the performance hours. The current load Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. Use of current load Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.1. Use of current load Energy Efficiency Baseline may be applied to criteria 020.3.7.1.2, unless otherwise specified by the Governing Documents. may be applied to measures installed as a planned replacement or upgrade, subject to regional market rules the Governing Documents.

WEQ.020.3.8. Statistical Significance

WEQ.020.3.8.1. General Requirements

No description of the General Criteria Measurement and Verification-M&V of Energy Efficiency may include measurement methodologies requiring statistical estimation techniques for Demand Reduction Values. In the event that statistical methods are required, the following requirements for statistical significance shall be met.

~~WEQ.020.3.8.2.~~ Sample Size

Specification for statistical error and precision in sampling. The use of a bi-directional t-test (two-tailed) may be required of the EERP where performance reporting may result in both performance bonuses and or penalties.

WEQ.020.3.8.2.

Sample Error and Precision used by the EERP shall be 80/10 using a two-tailed test or 90/10 using a one-tailed test subject to the Governing Documents. Compliance with this criterion shall be applicable to the overall Demand Reduction Value of the Energy Efficiency Capacity Resource. Sample Error and Precision used by the EERP shall be 80/10 using a two-tailed test or 90/10 using a one-tailed test subject to regional market rules.

~~WEQ.020.3.8.4.~~ Sample Size Calculation

The Sample sample size used by the EERP requires the use of a population coefficient of variation (c.v.) which may not be known at the time of sample



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design. The sample size may be established using an estimate of the Coefficient of Variation (c.v.) based on the following criteria. T:

WEQ.020.3.8.3. The estimated c.v. for homogeneous populations used by the EERP shall be 0.5 and 1.0 for heterogeneous populations.

~~WEQ.020.3.8.6.~~ Sample Size Recalibration

Population sampling error and precision used by the EERP shall be recalibrated using a measured c.v.

WEQ.020.3.8.4. The sample c.v. coefficient of variation used by the EERP shall be calculated from the measured sample population and applied to the reported estimate of sampling error and precision.

~~WEQ.020.3.8.8.~~ Sampling Over Zones

Sampling used by the EERP over larger geographic areas/multiple heterogeneous zones shall be permitted such that s:

WEQ.020.3.8.5. Sampling over larger geographic areas used by the EERP shall control for bias and meet the overall error and precision requirements, and must demonstrate control for sample bias.

~~WEQ.020.3.8.10.~~ Sample Bias Control

Types of potential sampling bias control to be used by the EERP include, but are not limited to: (a) construct validity; (b) sampling frame versus population; (c) selection bias (for a sample and for a census attempt where not all sites within the census received usable data); (d) non-response bias; (e) error in measuring variables; (f) sample homogeneity relative to project (external validity); (g) outlier data points; and (h) missing data.

WEQ.020.3.8.6. Sampling plans submitted by the EERP shall demonstrate and document that population sampling bias is minimized.

WEQ.020.3.9. Nominated Energy Efficiency Value Calculations/Demand Reduction Value Calculations

~~WEQ.020.3.9.1.~~ Nominated Energy Efficiency Values for Weather Sensitive Loads

Calculation of Demand Reduction Values for equipment, measures and practices, including weather sensitive loads, may include estimated modifiers or variables.

WEQ.020.3.9.1.

Estimated modifiers and variables used by the EERP in the calculation of the Demand Reduction Value shall include but are not limited to: coincidence factor, realization rate, equipment failure rate, and normalization method for weather sensitive loads.

~~WEQ.020.3.9.2.1.~~ Reduction in the Final Nominated Value

If the reported Demand Reduction Value does not meet the precision standard, the final performance value may be reduced.



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WEQ.020.3.9.2.

~~Regional market rules~~ Governing Documents shall dictate the calculation of further reductions to reported Demand Reduction Values.

WEQ.020.3.10. Measurement and Monitoring

WEQ.020.3.10.1. Measurement and Monitoring Requirements

Measurement and monitoring involve the collection of data of various types from equipment, measures and practices. Monitoring parameters and variables shall be used in the calculation of the Demand Reduction Value. ~~Categories of equipment, measures, or practices include but are not limited to: HVAC equipment, HVAC controls, building envelopes, interior/exterior lighting, major electric consuming equipment and weather sensitive loads.~~

The EERP shall document all mMonitoring parameters and variables ~~used measured for use in calculation of the~~ shall be documented by EERP and applicable to the equipment measure or practice for which a Demand Reduction Value will be measured.

All monitoring parameters used in the calculation of the Demand Reduction Value shall be applicable to the category of equipment, measure or practice, including but not limited to: heating ventilating and air conditioning (HVAC) equipment, HVAC controls, building envelopes, interior/exterior lighting, major electric consuming equipment and weather sensitive loads

WEQ.020.3.10.2. Monitoring Frequency and Duration

Monitoring frequency and duration of sampling must be controlled by the EERP so as to reduce measurement error.

The frequency and duration of measurement and monitoring used by the EERP shall be sufficient to ensure ~~an~~ accurate representation of the Demand Reduction Value during the performance hours or minimum reporting interval, whichever is less, consistent with statistical significance requirements in section WEQ.020.3.8.

WEQ.020.3.11. Measurement Equipment Specification

WEQ.020.3.11.1. Measurement Equipment Requirements

Measurement ~~E~~equipment devices used by the EERP shall have the following technical requirements:

WEQ.020.3.11.1.1. All solid-state measurement, monitoring and data recording equipment shall meet or exceed the relevant standards set by the American National Standard Institute ("ANSI") or equivalent standard for the equipment.

WEQ.020.3.11.1.2. Measurement, monitoring and data recording equipment that is directly measuring watt-hour, volt-hour, volt-ampere-hours, reactive volt-ampere-



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hour, and the associated demand components should conform to ANSI or equivalent standards for the equipment.

- WEQ.020.3.11.1.3.** Instruments or transducers for the analog or digital measurement of volt, volts-squared, amperes, amperes-squared, phase angle, volt-amperes, watts, and reactive volt-amperes should conform to ANSI or equivalent standards for the equipment.
- WEQ.020.3.11.1.4.** Data recorders that are recording pulses from measurement and monitoring devices shall use a pulse rate within the resolution capabilities of the recorder.
- WEQ.020.3.11.1.5.** All measurement, monitoring and data recording equipment installed on electric circuits with significant harmonics shall meet the relevant standards provided by the Institute of Electrical and Electronics Engineers ("IEEE").
- WEQ.020.3.11.1.6.** Any measurement or monitoring equipment that directly measures electrical demand ~~in (MW)~~ shall be a true Root-Mean Square ("RMS") measurement device with an accuracy of no less than $\pm 2\%$.
- WEQ.020.3.11.1.7.** Any measurement or monitoring equipment that directly measures electrical demand from three-phase devices shall be installed such that measurements are taken on all three-phases to account for any phase imbalance or an equivalent method that can measure electrical demand using two phases.
- WEQ.020.3.11.1.8.** Any measurement or monitoring equipment that directly measures electrical demand on circuits with significant harmonics shall have a digital sampling rate of at least 2.6 kilohertz (kHz) as defined in the relevant IEEE Standards.
- WEQ.020.3.11.1.9.** Any measurement or monitoring equipment for proxy variables that do not directly measure electrical demand, including but not limited to voltage, current, temperature, flow rates and operating hours, shall have an accuracy of $\pm 2\%$ rating such that the overall accuracy of the calculated demand in (MW) using the proxy variables is not less than $\pm 2\%$, unless otherwise provided in the Governing Documents.
- WEQ.020.3.11.1.10.** Any measurement or monitoring equipment of current ~~(amps)~~ and nominal voltage used to calculate electrical demand shall include the power factor of the end-uses in the demand ~~(MW)~~ calculations.
- WEQ.020.3.11.1.11.** Data recorders shall be synchronized in time, within an accuracy of ± 2 minutes per month, with the National Institute of Standards and Technology ("NIST").
- WEQ.020.3.11.1.12.** All measurement, monitoring and data recording equipment shall be calibrated by the ~~Project Sponsor~~ EEREP, independent calibration contractor, or designee, -to meet or exceed the International Measurement and Verification Protocol (IMVP), the US DOE Federal Energy Management Program ("FEMP") Measurement and Verification M&V



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~~Guidelines~~² applicable American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE") standards, NIST, or equivalent standard for the equipment.

WEQ.020.3.11.1.13. All measurement, monitoring and data logging equipment shall be maintained in such a way as to meet or exceed industry and manufacturer maintenance standards.

WEQ.020.3.11.1.14. Documentation on all measurement, monitoring and data recording equipment maintenance and calibration activities shall be maintained in accordance with applicable regional record retention policies as specified in: -Governing Documents-.

WEQ.020.3.11.1.15. Interval metering devices that sample continuously and integrate values shall collect data at a frequency of one hour or less. Interval meter devices that sample using "snapshots" shall collect electricity usage data at a frequency of 15 minutes or less.

WEQ.020.3.12. Data Validation

~~WEQ.020.3.12.1.~~ All measured data used in the Demand Reduction Value calculations shall be validated using standard Validation, Editing, and Estimation (VEE) procedures.

WEQ.020.3.12.1. ~~±~~ ~~FF~~ For Projects involving an individual facility or energy consuming equipment, the following validation checks on any interval data from an individual facility shall be made by the EERP:

WEQ.020.3.12.1.1. Time Check: validate that the measurement devices time clock is within ± two minutes of the true time as defined by ~~the National Institute of Standards and Technology~~ NIST.

WEQ.020.3.12.1.2. Sum Check: validate that the difference between the sum of the values recorded over the intervals and the value recorded by the meter over the same time-period is within ~~± 2%~~ plus or minus two percent. This check may be performed on either usage or pulse data, provided the data scaling is consistent throughout the period.

WEQ.020.3.12.1.3. High/Low Check: establish minimum and maximum expected values for each Demand Asset, facility, or measure. The minimum and maximum values shall be based on equipment ratings or historical equipment and/or facility usage data. All interval data that is greater than the maximum expected value or less than the minimum expected value shall be identified. Any such interval data shall be deemed to fail validation.

² M&V Guidelines: Measurement & Verification for Federal Energy Projects Version 3.0, US DOE Federal Energy Management Program, April 2008



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WEQ.020.3.12.1.4. Zero Value Check: identify any interval data with a value equal to zero. Verification of whether the zero value is the correct value for that interval shall be made. If it is determined that the zero value is incorrect, substitution of a corrected or estimated non-zero value for the zero value may be allowed. Under no circumstances shall a zero value be substituted for missing interval data.

WEQ.020.3.12.1.5. The EERP shall identify all estimated data used in the Demand Reduction Value calculations, as well as the methodology used to develop the estimate.

WEQ.020.3.12.1.6. The EERP shall classify all data that have passed validation and used in the Demand Reduction Value calculations as either: (i) actual data, (ii) estimated data or (iii) missing data. The data classification shall be stored along with the data values in the data retention and management system prescribed by the System Operator.



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For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(gd)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ 2010 Annual Plan Item 4 (d)

Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.

b. Description of Recommendation:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

c. Business Purpose:

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

Standards for M&V of energy efficiency should consider a balance in rigor, which effects measurement investment cost. M&V activities are commonly decided by the entity making the efficiency investment and are guided by the cost benefit, product specification and business model. As such, methodologies for M&V have varying degrees of rigor or quantitative precision and accuracy. A standard that can result in accurate valuation of implemented measures and practices, which is flexible, consistent, and cost effective, will be most useful to the industry and the public. The standards reflecting the minimum requirement for M&V of Energy Efficiency should build on industry and public experience as well as accommodate evolutionary changes to the application of engineering, science and economics that are the basis of energy efficiency efforts.



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For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

1. RECOMMENDED ACTION:

- ☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

- ☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

- ☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal
- ☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

- ☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal
- ☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Energy Efficiency products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this document is not intended to replace applicable Governing Documents for wholesale Energy Efficiency, and in the event of a conflict, the latter documents shall have precedence.

Contact information: Eric Winkler, Ph.D., ISO New England, 413-540-4513, ewinkler@iso-ne.com

WEQ-020 Business Practices Standards for Measurement and Verification of Energy Efficiency Products - Please see attached documentation.



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For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 4(g)

WEQ.000-1 ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
ANSI	American National Standard Institute
ASHREA	American Society of Heating, Refrigeration and Air Conditioning Engineers
c.v.	Coefficient of Variation
EERP	Energy Efficiency Resource Provider
FEMP	Federal Energy Management Program (US)
HVAC	Heating, ventilating, and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
IPMVP	International Performance Measurement and Verification Protocol
kHz	Kilohertz
M&V	Measurement and Verification
RMS	Root-Mean Square
VEE	Validation Editing and Estimation

WEQ.000-2 DEFINITION OF TERMS

Term	Definition
Demand Reduction Value	The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW.
Energy Efficiency	Installed measures on Retail Customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.
Energy Efficiency Baseline	Energy usage that would have occurred without implementation of the subject measure or project



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Term	Definition
Energy Efficiency Capacity Resource	<u>A type of Demand Resource used in capacity markets in which demand is reduced over a defined period of time measured in MW.</u>
Energy Efficiency Resource Provider	<u>An entity that is responsible for delivering Energy Efficiency.</u>
Measurement and Verification	The process of determining reductions in usage and/or demand resulting from Demand Response or Energy Efficiency.

DRAFT



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020 Measurement and Verification of Energy Efficiency Products

WEQ.020.1. Introduction and Principles

WEQ.020.1.1. Introduction and Principles

Energy Efficiency Resource Providers (“EERP”) that offer Energy Efficiency resources into wholesale electricity markets must provide consistent and reliable evidence of reductions in electrical usage for qualification and performance. Methodologies for Measurement and Verification (“M&V”) of demand reduction shall be established by the System Operator and compliance with said requirements shall be the responsibility of the EERP. Compliance with the standards are intended to ensure that Energy Efficiency Resources are qualified for participation in the market and the Demand Reduction Values, in performance reporting, accurately reflect the demand reduction delivered to the electrical system.

A Business Practice Standard for M&V of Energy Efficiency has the potential to broaden implementation and acceptance of energy reduction measures and practices. The standards are not designed to establish or support any regulatory policy.

WEQ.020.2. Applicability

WEQ.020.2.1.1. This document contains information on standards for M&V of wholesale electricity Energy Efficiency products and services in markets administered by ISOs and RTOs (hereinafter referred to as “System Operator”). The information contained within this standard is not intended to replace applicable Governing Documents applicable to wholesale Energy Efficiency. In the event of a conflict between these standards with the Governing Documents, the Governing Documents shall have precedence over these standards.

WEQ.020.2.1.2. These standards establish Energy Efficiency M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Energy Efficiency services. These standards do not require the System Operator to offer services including Energy Efficiency. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section of the WEQ-000 Business Practice Standards.

WEQ.020.2.1.3. These Standards include the requirements on EERPs for the M&V of Energy Efficiency offered into wholesale markets. References not limited to submission of materials, use of equipment, measurement, sampling and calculations refer to materials submitted to the System Operator by the EERPs and actions taken by the EERP.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020.3. Business Practice Standards

WEQ.020.3.1. Energy Efficiency Use Criteria in Wholesale Markets

The following criteria comprise elements of how Energy Efficiency may participate in wholesale markets but are not requirements for M&V of Energy Efficiency products in wholesale markets. Detailed criteria in standards WEQ.020.3.3. to WEQ.020.3.12 shall constitute the required elements of M&V for EERPs participating in wholesale electric markets.

WEQ.020.3.1.1. Installation and Eligibility

Verified permanent load reduction behind the distribution meter resulting from installation of Energy Efficiency equipment, processes, or systems that exceed Energy Efficiency codes and standards at the time of commitment, installation or permanent load shifting.

WEQ.020.3.1.2. Modeling Energy Efficiency

An Energy Efficiency Capacity Resource may be modeled in the system equivalent to other supply side resources in accordance with the applicable Governing Documents.

WEQ.020.3.1.3. Increase in Energy Efficiency Value

Energy Efficiency Capacity Resource may be augmented via incremental or reconfiguration auctions, provided such resource is qualified in advance of the applicable auction in accordance with the applicable Governing Documents.

WEQ.020.3.1.4. Early Completion

Energy Efficiency Capacity Resource that is deliverable in a period in advance of the commitment period, for which it originally cleared, may participate in prior commitment periods subject to qualification requirements specified in the applicable Governing Documents.

WEQ.020.3.2. General Measurement and Verification Plan Requirements

A document that defines specific M&V methods for verifying the Demand Reduction Value is required of EERPs for qualification and participation in the program, market, product class or auction. The following general elements of M&V plans are not required or exhaustive. Detailed criteria in standards WEQ.020.3.3 to WEQ.020.3.12 shall constitute the required elements of an M&V plan as specified in the regional Governing Documents.

WEQ.020.3.2.1. Project Description

Plan should include a project description, not limited to: a general description of the project location, facility types, measure types, estimated Demand Reduction Value, estimated cost of project (capital, operation and M&V) and savings.

WEQ.020.3.2.2. Schedule

Plan should include project schedule describes the timeline of a project build out for establishing qualification eligibility. Plans shall specify a schedule of M&V activity during project buildout and during delivery period.



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- WEQ.020.3.2.3. Measure Description**
Plan should include measure level characteristics, including but not limited to: Demand Reduction Values based on metering, engineering estimates, or model simulation.
- WEQ.020.3.2.4. Equipment/Process Specification and Documentation**
Plan should include a detailed description of existing and new equipment and process characteristics sufficient to establish Energy Efficiency Baseline calculations.
- WEQ.020.3.2.5. Measurement and Verification Approach**
Plan should include justification of appropriate measurement methodology, not limited to the four International Performance M&V Protocol (IPMVP) methodologies at the measure level.
- WEQ.020.3.2.6. Methodological Assumptions**
Plan should include a detailed description of underlying assumptions for Energy Efficiency Baseline and post installation energy use.
- WEQ.020.3.2.7. M&V Activities: Energy Efficiency Baseline Period**
Plan should include a description of the period of time under which the Energy Efficiency Baseline will be quantified.
- WEQ.020.3.2.8. M&V Activities: Post Installation Period**
Plan should include a description of activities conducted post installation to document actual Demand Reduction Values.
- WEQ.020.3.2.9. Calculation and Adjustments**
Plan should include a detailed description of calculations used to establish Energy Efficiency Baseline and actual Demand Reduction Value.
- WEQ.020.3.2.10. Metering Plan**
Plan should include a detailed description of meter management, not limited to maintenance, meter data collection and processing.
- WEQ.020.3.2.11. Updated M&V Plan Components**
Plan should include a description of process by which M&V plan updates are made and documented.
- WEQ.020.3.3. Post installation M&V Report Components**
- WEQ.020.3.3.1. Initial Post-Installation M&V Report:**
During the course of project buildout, a post-installation report shall be submitted by the EERP to the ISO/RTO to document the verified reductions resulting from installed measures. The report shall be required at least annually.
- WEQ.020.3.3.2. Updated Post-Installation M&V Report**
An updated performance report shall be submitted by the EERP to the ISO/RTO to document achieved reductions for the purposes of establishing reduction



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values carried into subsequent delivery periods. The report shall be required at least annually

WEQ.020.3.4. Performance Reporting

WEQ.020.3.4.1. Minimum Requirements

Performance reports shall be submitted by the EERP to the ISO/RTO to document achieved reductions during the delivery period. Report shall be required at least annually.

WEQ.020.3.5. M&V Supporting Documents

WEQ.020.3.5.1. Minimum Requirements

All reports, studies, specifications and other documents referenced by the EERP in the M&V Plan shall be current and applicable to the measures.

WEQ.020.3.6. M&V Methodologies

WEQ.020.3.6.1. Acceptable Methodologies

Measurement and Verification methodologies used by the EERP shall be appropriate to the measure type and sensitivity requirements of the measurement techniques. Acceptable methods shall include:

WEQ.020.3.6.1.1. IPMVP¹ Option A: Partially Measured Retrofit Isolation/Stipulated Measurement.

IPMVP Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable can, in combination with well-established algorithms and/or stipulated factors, can provide an accurate estimate of the Demand Reduction Value.

WEQ.020.3.6.1.2. IPMVP Option B: Retrofit Isolation/Metered Equipment.

IPMVP Option B involves a retrofit or system-level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the

¹ "The International Performance Measurement and Verification Protocol (IPMVP) provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities." Efficiency Valuation Organization, 2010. <http://www.evo-world.org>. The IPMVP (EVO 10000 – 1:2010, © Efficiency Valuation Organization 2010), may be obtained from EVO-world.org and may be periodically updated.



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component or system level using interval electrical demand meters installed on the affected end-use.

WEQ.020.3.6.1.3. IPMVP Option C: Whole facility/Regression.

IPMVP Option C estimates Demand Reduction Values by analyzing the overall energy use in a facility and identifying the impact of the implemented measure on the total building or facility energy use patterns. The evaluation of whole-building or facility level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis.

WEQ.020.3.6.1.4. IPMVP Option D: Calibrated Simulation.

IPMVP Option D involves calibrated computer simulation models of component or whole building demand and energy usage to determine measure demand and energy savings. Engineering simulation models (such as DOE-2) can model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings. Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions. Both engineering and operational simulations are made more powerful by calibrating these methods to actual MW and MWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building energy use data may be used to calibrate the simulations.

WEQ.020.3.6.1.5. Alternative Acceptable M&V Methodologies.

The EERP may propose alternative methodologies not listed in the Section above. EERPs proposing alternative methodologies shall demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described above, and demonstrate justifiable need for deviation from the acceptable methodologies described in the Section above based on unique Project requirements.

WEQ.020.3.7. Energy Efficiency Baseline Conditions



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- WEQ.020.3.7.1. Energy Efficiency Baseline Criteria for all Energy Efficiency**
Energy Efficiency Baseline conditions used by the EERP shall reflect the conditions under which new energy efficient equipment or processes are installed to provide a service function. The four conditions shall include:
- WEQ.020.3.7.1.1.** Replacement of functional equipment still within its current useful life.
 - WEQ.020.3.7.1.2.** Replacement of functional equipment beyond its current useful life.
 - WEQ.020.3.7.1.3.** Unplanned replacement or failed equipment.
 - WEQ.020.3.7.1.4.** New construction.
- WEQ.020.3.7.2.** The standard Energy Efficiency Baseline used by the EERP shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice, whichever is most stringent. The standard Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.3, 020.3.7.1.4. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.2, unless otherwise specified by the Governing Documents.
- WEQ.020.3.7.3.** The current load Energy Efficiency Baseline used by the EERP shall be the existing load of operating equipment across the performance hours. The current load Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. Use of current load Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.1. Use of current load Energy Efficiency Baseline may be applied to criteria 020.3.7.1.2, if specified by the Governing Documents.
- WEQ.020.3.8. Statistical Significance**
- WEQ.020.3.8.1. General Requirements**
M&V of Energy Efficiency may include measurement methodologies requiring statistical estimation techniques for Demand Reduction Values. In the event that statistical methods are required, the following requirements for statistical significance shall be met.
 - WEQ.020.3.8.2. Sample Size**
Specification for statistical error and precision in sampling. The use of a bi-directional t-test (two-tailed) may be required of the EERP where performance reporting may result in both performance bonuses and or penalties. Sample Error and Precision used by the EERP shall be 80/10 using a two-tailed test or 90/10 using a one-tailed test subject to the Governing Documents. Compliance with this criterion shall be applicable to the overall Demand Reduction Value of the Energy Efficiency Capacity Resource.



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- WEQ.020.3.8.3. Sample Size Calculation**
The sample size used by the EERP requires the use of a population coefficient of variation (c.v.) which may not be known at the time of sample design. The sample size may be established using an estimate of the c.v. based on the following criteria. The estimated c.v. for homogeneous populations used by the EERP shall be 0.5 and 1.0 for heterogeneous populations.
- WEQ.020.3.8.4. Sample Size Recalibration**
Population sampling error and precision used by the EERP shall be recalibrated using a measured c.v.. The sample c.v. used by the EERP shall be calculated from the measured sample population and applied to the reported estimate of sampling error and precision.
- WEQ.020.3.8.5. Sampling Over Zones**
Sampling used by the EERP over heterogeneous zones shall control for bias and meet the overall error and precision requirements.
- WEQ.020.3.8.6. Sample Bias Control**
Types of potential sampling bias control to be used by the EERP include, but are not limited to: (a) construct validity; (b) sampling frame versus population; (c) selection bias (for a sample and for a census attempt where not all sites within the census received usable data); (d) non-response bias; (e) error in measuring variables; (f) sample homogeneity relative to project (external validity); (g) outlier data points; and (h) missing data. Sampling plans submitted by the EERP shall demonstrate and document that population sampling bias is minimized.
- WEQ.020.3.9. Nominated Energy Efficiency Value Calculations/Demand Reduction Value Calculations**
- WEQ.020.3.9.1. Nominated Energy Efficiency Values**
Calculation of Demand Reduction Values for equipment, measures and practices, including weather sensitive loads, may include estimated modifiers or variables.

Estimated modifiers and variables used by the EERP in the calculation of the Demand Reduction Value shall include but are not limited to: coincidence factor, realization rate, equipment failure rate, and normalization method for weather sensitive loads.
- WEQ.020.3.9.2. Reduction in the Final Nominated Value**
If the reported Demand Reduction Value does not meet the precision standard, the final performance value may be reduced.

Governing Documents shall dictate the calculation of further reductions to reported Demand Reduction Values.
- WEQ.020.3.10. Measurement and Monitoring**



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WEQ.020.3.10.1. Measurement and Monitoring Requirements

Measurement and monitoring involve the collection of data of various types from equipment, measures and practices. Monitoring parameters and variables shall be used in the calculation of the Demand Reduction Value.

The EERP shall document all monitoring parameters and variables measured for use in calculation of the Demand Reduction Value.

All monitoring parameters used in the calculation of the Demand Reduction Value shall be applicable to the category of equipment, measure or practice, including but not limited to: heating ventilating and air conditioning (HVAC) equipment, HVAC controls, building envelopes, interior/exterior lighting, major electric consuming equipment and weather sensitive loads

WEQ.020.3.10.2. Monitoring Frequency and Duration

Monitoring frequency and duration of sampling must be controlled by the EERP so as to reduce measurement error.

The frequency and duration of measurement and monitoring used by the EERP shall be sufficient to ensure accurate representation of the Demand Reduction Value during the performance hours or minimum reporting interval, whichever is less, consistent with statistical significance requirements in section WEQ.020.3.8.

WEQ.020.3.11. Measurement Equipment Specification

WEQ.020.3.11.1. Measurement Equipment Requirements

Measurement equipment devices used by the EERP shall have the following technical requirements:

WEQ.020.3.11.1.1. All solid-state measurement, monitoring and data recording equipment shall meet or exceed the relevant standards set by the American National Standard Institute ("ANSI") or equivalent standard for the equipment.

WEQ.020.3.11.1.2. Measurement, monitoring and data recording equipment that is directly measuring watt-hour, volt-hour, volt-ampere-hours, reactive volt-ampere-hour, and the associated demand components should conform to ANSI or equivalent standards for the equipment.

WEQ.020.3.11.1.3. Instruments or transducers for the analog or digital measurement of volt, volts-squared, amperes, amperes-squared, phase angle, volt-amperes, watts, and reactive volt-amperes should conform to ANSI or equivalent standards for the equipment.

WEQ.020.3.11.1.4. Data recorders that are recording pulses from measurement and monitoring devices shall use a pulse rate within the resolution capabilities of the recorder.

WEQ.020.3.11.1.5. All measurement, monitoring and data recording equipment installed on electric circuits with significant harmonics shall meet the relevant standards provided by the Institute of Electrical and Electronics Engineers ("IEEE").



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- WEQ.020.3.11.1.6.** Any measurement or monitoring equipment that directly measures electrical demand in MW shall be a true Root-Mean Square (“RMS”) measurement device with an accuracy of no less than $\pm 2\%$.
- WEQ.020.3.11.1.7.** Any measurement or monitoring equipment that directly measures electrical demand from three-phase devices shall be installed such that measurements are taken on all three-phases to account for any phase imbalance or an equivalent method that can measure electrical demand using two phases.
- WEQ.020.3.11.1.8.** Any measurement or monitoring equipment that directly measures electrical demand on circuits with significant harmonics shall have a digital sampling rate of at least 2.6 kilohertz (kHz) as defined in the relevant IEEE Standards.
- WEQ.020.3.11.1.9.** Any measurement or monitoring equipment for proxy variables that do not directly measure electrical demand, including but not limited to voltage, current, temperature, flow rates and operating hours, shall have an accuracy of $\pm 2\%$, unless otherwise provided in the Governing Documents.
- WEQ.020.3.11.1.10.** Any measurement or monitoring equipment of current amps and nominal voltage used to calculate electrical demand shall include the power factor of the end-uses in the demand MW calculations.
- WEQ.020.3.11.1.11.** Data recorders shall be synchronized in time, within an accuracy of ± 2 minutes per month, with the National Institute of Standards and Technology (“NIST”).
- WEQ.020.3.11.1.12.** All measurement, monitoring and data recording equipment shall be calibrated by the EERP, independent calibration contractor, or designee, to meet or exceed the IPMVP, the US DOE Federal Energy Management Program (“FEMP”) M&V guidelines,² applicable American Society of Heating, Refrigeration and Air Conditioning Engineers (“ASHRAE”) standards, NIST, or equivalent standard for the equipment.
- WEQ.020.3.11.1.13.** All measurement, monitoring and data logging equipment shall be maintained in such a way as to meet or exceed industry and manufacturer maintenance standards.
- WEQ.020.3.11.1.14.** Documentation on all measurement, monitoring and data recording equipment maintenance and calibration activities shall be maintained in accordance with applicable regional record retention policies as specified in Governing Documents.
- WEQ.020.3.11.1.15.** Interval metering devices that sample continuously and integrate values shall collect data at a frequency of one hour or less. Interval meter devices that sample using snapshots shall collect electricity usage data at a frequency of 15 minutes or less.

² M&V Guidelines: Measurement & Verification for Federal Energy Projects Version 3.0, US DOE Federal Energy Management Program, April 2008



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WEQ.020.3.12. Data Validation

WEQ.020.3.12.1. All measured data used in the Demand Reduction Value calculations shall be validated using standard Validation, Editing, and Estimation (VEE) procedures. For Projects involving an individual facility or energy consuming equipment, the following validation checks on any interval data from an individual facility shall be made by the EERP:

WEQ.020.3.12.1.1. Time Check: validate that the measurement devices time clock is within $\pm$ two minutes of the true time as defined by NIST.

WEQ.020.3.12.1.2. Sum Check: validate that the difference between the sum of the values recorded over the intervals and the value recorded by the meter over the same time-period is within $\pm$ 2%. This check may be performed on either usage or pulse data, provided the data scaling is consistent throughout the period.

WEQ.020.3.12.1.3. High/Low Check: establish minimum and maximum expected values for each Demand Asset, facility, or measure. The minimum and maximum values shall be based on equipment ratings or historical equipment and/or facility usage data. All interval data that is greater than the maximum expected value or less than the minimum expected value shall be identified. Any such interval data shall be deemed to fail validation.

WEQ.020.3.12.1.4. Zero Value Check: identify any interval data with a value equal to zero. Verification of whether the zero value is the correct value for that interval shall be made. If it is determined that the zero value is incorrect, substitution of a corrected or estimated non-zero value for the zero value may be allowed. Under no circumstances shall a zero value be substituted for missing interval data.

WEQ.020.3.12.1.5. The EERP shall identify all estimated data used in the Demand Reduction Value calculations, as well as the methodology used to develop the estimate.

WEQ.020.3.12.1.6. The EERP shall classify all data that have passed validation and used in the Demand Reduction Value calculations as either: (i) actual data, (ii) estimated data or (iii) missing data. The data classification shall be stored along with the data values in the data retention and management system prescribed by the System Operator.



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Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ 2010 Annual Plan Item 4 (d)

Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.

b. Description of Recommendation:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

c. Business Purpose:

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

Standards for M&V of energy efficiency should consider a balance in rigor, which effects measurement investment cost. M&V activities are commonly decided by the entity making the efficiency investment and are guided by the cost benefit, product specification and business model. As such, methodologies for M&V have varying degrees of rigor or quantitative precision and accuracy. A standard that can result in accurate valuation of implemented measures and practices, which is flexible, consistent, and cost effective, will be most useful to the industry and the public. The standards reflecting the minimum requirement for M&V of Energy Efficiency should build on industry and public experience as well as accommodate evolutionary changes to the application of engineering, science and economics that are the basis of energy efficiency efforts.

Formal Comments Submitted by the Standard Review Subcommittee

Quadrant: Wholesale Electric Quadrant
Recommendations: 2010 - WEQ AP Item 4(d) - Business Practice Standards for Measurement and Verification of Energy Efficiency Products
Submitted By: WEQ Standards Review Subcommittee
Date: January 14, 2011

Under the Standards Review Subcommittee (SRS) Scope of Work, which was approved by the SRS on May 18, 2010, the SRS agreed to review recommendations and if subcommittee deemed appropriate, they would submit advisory comments to the Executive Committee (EC) for consideration. As stated in the Scope of Work these comments are “not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices.”

- Both the Demand Response Phase 2 recommendation and this recommendation have definitions for Demand Reduction Value. Each definition is to be included in WEQ-000 and were approved by the DSM/EE Subcommittee on December 1, 2010. Which definition should the Executive Committee approve?
- The SRS is also attaching redlines editorial changes to the clean version of the recommendation posted for formal comments.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

1. RECOMMENDED ACTION:

- ☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

- ☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

- ☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal
- ☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

- ☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal
- ☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Energy Efficiency products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this document is not intended to replace applicable Governing Documents for wholesale Energy Efficiency, and in the event of a conflict, the latter documents shall have precedence.

Contact information: Eric Winkler, Ph.D., ISO New England, 413-540-4513, ewinkler@iso-ne.com

WEQ-020 Business Practices Standards for Measurement and Verification of Energy Efficiency Products - Please see attached documentation.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 4(g)

WEQ.000-1 ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
ANSI	American National Standard Institute
ASHREA	American Society of Heating, Refrigeration and Air Conditioning Engineers
c.v.	Coefficient of Variation
EERP	Energy Efficiency Resource Provider
FEMP	Federal Energy Management Program (US)
HVAC	Heating, ventilating, and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
IPMVP	International Performance Measurement and Verification Protocol
kHz	Kilohertz
M&V	Measurement and Verification
RMS	Root-Mean Square
VEE	Validation Editing and Estimation

WEQ.000-2 DEFINITION OF TERMS

Term	Definition
Demand Reduction Value	The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW.
Energy Efficiency	Installed measures on Retail Customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.
Energy Efficiency Baseline	Energy usage that would have occurred without implementation of the subject measure or project



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Term	Definition
Energy Efficiency Capacity Resource	<u>A type of Demand Resource used in capacity markets in which demand is reduced over a defined period of time measured in MW.</u>
Energy Efficiency Resource Provider	<u>An entity that is responsible for delivering Energy Efficiency.</u>
Measurement and Verification	The process of determining reductions in usage and/or demand resulting from Demand Response or Energy Efficiency.

DRAFT



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020 Measurement and Verification of Energy Efficiency Products

WEQ.020.1. Introduction and Principles

WEQ.020.1.1. Introduction and Principles

Energy Efficiency Resource Providers (“EERP”) that offer Energy Efficiency resources into wholesale electricity markets must provide consistent and reliable evidence of reductions in electrical usage for qualification and performance. Methodologies for Measurement and Verification (“M&V”) of demand reduction shall be established by the System Operator and compliance with said requirements shall be the responsibility of the EERP. Compliance with the standards are intended to ensure that Energy Efficiency Resources are qualified for participation in the market and the Demand Reduction Values, in performance reporting, accurately reflect the demand reduction delivered to the electrical system.

A Business Practice Standard for M&V of Energy Efficiency has the potential to broaden implementation and acceptance of energy reduction measures and practices. The standards are not designed to establish or support any regulatory policy.

WEQ.020.2. Applicability

WEQ.020.2.1.1. This ~~document~~ Business Practice Standards contains information on standards for M&V of wholesale electricity Energy Efficiency products and services in markets administered by ISOs and RTOs (hereinafter referred to as “System Operator”). The information contained within this standard is not intended to replace applicable Governing Documents applicable to wholesale Energy Efficiency. In the event of a conflict between these standards with the Governing Documents, the Governing Documents shall have precedence over these ~~standards~~ Business Practice Standards.

WEQ.020.2.1.2. These standards establish Energy Efficiency M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Energy Efficiency services. These standards do not require the System Operator to offer services including Energy Efficiency. Terms that are capitalized in these standards have the meanings ascribed to them in ~~the Definitions of Terms section of the WEQ-000-2 Definition of Terms~~ Business Practice Standards.

WEQ.020.2.1.3. These Business Practice Standards include the requirements on EERPs for the M&V of Energy Efficiency offered into wholesale markets. References not limited to submission of materials, use of equipment, measurement, sampling



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and calculations refer to materials submitted to the System Operator by the EERPs and actions taken by the EERP.

WEQ.020.3. Business Practice Standards

WEQ.020.3.1. Energy Efficiency Use Criteria in Wholesale Markets

The following criteria comprise elements of how Energy Efficiency may participate in wholesale markets but are not requirements for M&V of Energy Efficiency products in wholesale markets. Detailed criteria in standards WEQ.020.3.3 to WEQ.020.3.12 shall constitute the required elements of M&V for EERPs participating in wholesale electric markets.

WEQ.020.3.1.1. Installation and Eligibility

Verified permanent load reduction behind the distribution meter resulting from installation of Energy Efficiency equipment, processes, or systems that exceed Energy Efficiency codes and standards at the time of commitment, installation or permanent load shifting.

WEQ.020.3.1.2. Modeling Energy Efficiency

An Energy Efficiency Capacity Resource may be modeled in the system equivalent to other supply side resources in accordance with the applicable Governing Documents.

WEQ.020.3.1.3. Increase in Energy Efficiency Value

Energy Efficiency Capacity Resource may be augmented via incremental or reconfiguration auctions, provided such resource is qualified in advance of the applicable auction in accordance with the applicable Governing Documents.

WEQ.020.3.1.4. Early Completion

Energy Efficiency Capacity Resource that is deliverable in a period in advance of the commitment period, for which it originally cleared, may participate in prior commitment periods subject to qualification requirements specified in the applicable Governing Documents.

WEQ.020.3.2. General Measurement and Verification Plan Requirements

A document that defines specific M&V methods for verifying the Demand Reduction Value is required of EERPs for qualification and participation in the program, market, product class or auction. The following general elements of M&V plans are not required or exhaustive. Detailed criteria in standards WEQ.020.3.3 to WEQ.020.3.12 shall constitute the required elements of an M&V plan as specified in the regional Governing Documents.

WEQ.020.3.2.1. Project Description

Plan should include a project description, not limited to: a general description of the project location, facility types, measure types, estimated Demand Reduction Value, estimated cost of project (capital, operation and M&V) and savings.



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- WEQ.020.3.2.2. Schedule**
Plan should include project schedule describes the timeline of a project build out for establishing qualification eligibility. Plans shall specify a schedule of M&V activity during project buildout and during delivery period.
- WEQ.020.3.2.3. Measure Description**
Plan should include measure level characteristics, including but not limited to: Demand Reduction Values based on metering, engineering estimates, or model simulation.
- WEQ.020.3.2.4. Equipment/Process Specification and Documentation**
Plan should include a detailed description of existing and new equipment and process characteristics sufficient to establish Energy Efficiency Baseline calculations.
- WEQ.020.3.2.5. Measurement and Verification Approach**
Plan should include justification of appropriate measurement methodology, not limited to the four International Performance M&V Protocol (IPMVP) methodologies at the measure level.
- WEQ.020.3.2.6. Methodological Assumptions**
Plan should include a detailed description of underlying assumptions for Energy Efficiency Baseline and post installation energy use.
- WEQ.020.3.2.7. M&V Activities: Energy Efficiency Baseline Period**
Plan should include a description of the period of time under which the Energy Efficiency Baseline will be quantified.
- WEQ.020.3.2.8. M&V Activities: Post Installation Period**
Plan should include a description of activities conducted post installation to document actual Demand Reduction Values.
- WEQ.020.3.2.9. Calculation and Adjustments**
Plan should include a detailed description of calculations used to establish Energy Efficiency Baseline and actual Demand Reduction Value.
- WEQ.020.3.2.10. Metering Plan**
Plan should include a detailed description of meter management, not limited to maintenance, meter data collection and processing.
- WEQ.020.3.2.11. Updated M&V Plan Components**
Plan should include a description of process by which M&V plan updates are made and documented.
- WEQ.020.3.3. Post installation M&V Report Components**
- WEQ.020.3.3.1. Initial Post-Installation M&V Report:**
During the course of project buildout, a post-installation report shall be submitted by the EERP to the ISO/RTO to document the verified reductions resulting from installed measures. The report shall be required at least annually.



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WEQ.020.3.3.2. Updated Post-Installation M&V Report

An updated performance report shall be submitted by the EERP to the ISO/RTO to document achieved reductions for the purposes of establishing reduction values carried into subsequent delivery periods. The report shall be required at least annually

WEQ.020.3.4. Performance Reporting

WEQ.020.3.4.1. Minimum Requirements

Performance reports shall be submitted by the EERP to the ISO/RTO to document achieved reductions during the delivery period. Report shall be required at least annually.

WEQ.020.3.5. M&V Supporting Documents

WEQ.020.3.5.1. Minimum Requirements

All reports, studies, specifications and other documents referenced by the EERP in the M&V Plan shall be current and applicable to the measures.

WEQ.020.3.6. M&V Methodologies

WEQ.020.3.6.1. Acceptable Methodologies

Measurement and Verification methodologies used by the EERP shall be appropriate to the measure type and sensitivity requirements of the measurement techniques. Acceptable methods shall include:

WEQ.020.3.6.1.1. IPMVP¹ Option A: Partially Measured Retrofit Isolation/Stipulated Measurement.

IPMVP Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable can, in combination with well-established algorithms and/or stipulated factors, can provide an accurate estimate of the Demand Reduction Value.

¹ "The International Performance Measurement and Verification Protocol (IPMVP) provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities." Efficiency Valuation Organization, 2010. <http://www.evo-world.org>. The IPMVP (EVO 10000 – 1:2010, © Efficiency Valuation Organization 2010), may be obtained from EVO-world.org and may be periodically updated.



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WEQ.020.3.6.1.2. IPMVP Option B: Retrofit Isolation/Metered Equipment.

IPMVP Option B involves a retrofit or system-level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the component or system level using interval electrical demand meters installed on the affected end-use.

WEQ.020.3.6.1.3. IPMVP Option C: Whole facility/Regression.

IPMVP Option C estimates Demand Reduction Values by analyzing the overall energy use in a facility and identifying the impact of the implemented measure on the total building or facility energy use patterns. The evaluation of whole-building or facility level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis.

WEQ.020.3.6.1.4. IPMVP Option D: Calibrated Simulation.

IPMVP Option D involves calibrated computer simulation models of component or whole building demand and energy usage to determine measure demand and energy savings. Engineering simulation models (such as DOE-2) can model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings. Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions. Both engineering and operational simulations are made more powerful by calibrating these methods to actual MW and MWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building energy use data may be used to calibrate the simulations.

WEQ.020.3.6.1.5. Alternative Acceptable M&V Methodologies.

The EERP may propose alternative methodologies not listed in the Section above. EERPs proposing alternative methodologies shall demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described above, and demonstrate justifiable need for



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deviation from the acceptable methodologies described in the Section above based on unique Project requirements.

WEQ.020.3.7. Energy Efficiency Baseline Conditions

WEQ.020.3.7.1. Energy Efficiency Baseline Criteria for all Energy Efficiency

Energy Efficiency Baseline conditions used by the EERP shall reflect the conditions under which new energy efficient equipment or processes are installed to provide a service function. The four conditions shall include:

- WEQ.020.3.7.1.1. Replacement of functional equipment still within its current useful life.
- WEQ.020.3.7.1.2. Replacement of functional equipment beyond its current useful life.
- WEQ.020.3.7.1.3. Unplanned replacement or failed equipment.
- WEQ.020.3.7.1.4. New construction.

WEQ.020.3.7.2. The standard Energy Efficiency Baseline used by the EERP shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice, whichever is most stringent. The standard Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.3, 020.3.7.1.4. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.2, unless otherwise specified by the Governing Documents.

WEQ.020.3.7.3. The current load Energy Efficiency Baseline used by the EERP shall be the existing load of operating equipment across the performance hours. The current load Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. Use of current load Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.1. Use of current load Energy Efficiency Baseline may be applied to criteria 020.3.7.1.2, if specified by the Governing Documents.

WEQ.020.3.8. Statistical Significance

WEQ.020.3.8.1. General Requirements

M&V of Energy Efficiency may include measurement methodologies requiring statistical estimation techniques for Demand Reduction Values. In the event that statistical methods are required, the following requirements for statistical significance shall be met.

WEQ.020.3.8.2. Sample Size

Specification for statistical error and precision in sampling. The use of a bi-directional t-test (two-tailed) may be required of the EERP where performance



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reporting may result in both performance bonuses and or penalties. Sample Error and Precision used by the EERP shall be 80/10 using a two-tailed test or 90/10 using a one-tailed test subject to the Governing Documents. Compliance with this criterion shall be applicable to the overall Demand Reduction Value of the Energy Efficiency Capacity Resource.

WEQ.020.3.8.3.

Sample Size Calculation

The sample size used by the EERP requires the use of a population coefficient of variation (c.v.) which may not be known at the time of sample design. The sample size may be established using an estimate of the c.v. based on the following criteria. The estimated c.v. for homogeneous populations used by the EERP shall be 0.5 and 1.0 for heterogeneous populations.

WEQ.020.3.8.4.

Sample Size Recalibration

Population sampling error and precision used by the EERP shall be recalibrated using a measured c.v.. The sample c.v. used by the EERP shall be calculated from the measured sample population and applied to the reported estimate of sampling error and precision.

WEQ.020.3.8.5.

Sampling Over Zones

Sampling used by the EERP over heterogeneous zones shall control for bias and meet the overall error and precision requirements.

WEQ.020.3.8.6.

Sample Bias Control

Types of potential sampling bias control to be used by the EERP include, but are not limited to: (a) construct validity; (b) sampling frame versus population; (c) selection bias (for a sample and for a census attempt where not all sites within the census received usable data); (d) non-response bias; (e) error in measuring variables; (f) sample homogeneity relative to project (external validity); (g) outlier data points; and (h) missing data. Sampling plans submitted by the EERP shall demonstrate and document that population sampling bias is minimized.

WEQ.020.3.9. Nominated Energy Efficiency Value Calculations/Demand Reduction Value Calculations

WEQ.020.3.9.1.

Nominated Energy Efficiency Values

Calculation of Demand Reduction Values for equipment, measures and practices, including weather sensitive loads, may include estimated modifiers or variables.

Estimated modifiers and variables used by the EERP in the calculation of the Demand Reduction Value shall include but are not limited to: coincidence factor, realization rate, equipment failure rate, and normalization method for weather sensitive loads.

WEQ.020.3.9.2.

Reduction in the Final Nominated Value

If the reported Demand Reduction Value does not meet the precision standard, the final performance value may be reduced.



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Governing Documents shall dictate the calculation of further reductions to reported Demand Reduction Values.

WEQ.020.3.10. Measurement and Monitoring

WEQ.020.3.10.1. Measurement and Monitoring Requirements

Measurement and monitoring involve the collection of data of various types from equipment, measures and practices. Monitoring parameters and variables shall be used in the calculation of the Demand Reduction Value.

The EERP shall document all monitoring parameters and variables measured for use in calculation of the Demand Reduction Value.

All monitoring parameters used in the calculation of the Demand Reduction Value shall be applicable to the category of equipment, measure or practice, including but not limited to: heating ventilating and air conditioning (HVAC) equipment, HVAC controls, building envelopes, interior/exterior lighting, major electric consuming equipment and weather sensitive loads

WEQ.020.3.10.2. Monitoring Frequency and Duration

Monitoring frequency and duration of sampling must be controlled by the EERP so as to reduce measurement error.

The frequency and duration of measurement and monitoring used by the EERP shall be sufficient to ensure accurate representation of the Demand Reduction Value during the performance hours or minimum reporting interval, whichever is less, consistent with statistical significance requirements in section WEQ.020.3.8.

WEQ.020.3.11. Measurement Equipment Specification

WEQ.020.3.11.1. Measurement Equipment Requirements

Measurement equipment devices used by the EERP shall have the following technical requirements:

WEQ.020.3.11.1.1. All solid-state measurement, monitoring and data recording equipment shall meet or exceed the relevant standards set by the American National Standard Institute ("ANSI") or equivalent standard for the equipment.

WEQ.020.3.11.1.2. Measurement, monitoring and data recording equipment that is directly measuring watt-hour, volt-hour, volt-ampere-hours, reactive volt-ampere-hour, and the associated demand components should conform to ANSI or equivalent standards for the equipment.

WEQ.020.3.11.1.3. Instruments or transducers for the analog or digital measurement of volt, volts-squared, amperes, amperes-squared, phase angle, volt-amperes, watts, and reactive volt-amperes should conform to ANSI or equivalent standards for the equipment.



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- WEQ.020.3.11.1.4.** Data recorders that are recording pulses from measurement and monitoring devices shall use a pulse rate within the resolution capabilities of the recorder.
- WEQ.020.3.11.1.5.** All measurement, monitoring and data recording equipment installed on electric circuits with significant harmonics shall meet the relevant standards provided by the Institute of Electrical and Electronics Engineers ("IEEE").
- WEQ.020.3.11.1.6.** Any measurement or monitoring equipment that directly measures electrical demand in MW shall be a true Root-Mean Square ("RMS") measurement device with an accuracy of no less than $\pm 2\%$.
- WEQ.020.3.11.1.7.** Any measurement or monitoring equipment that directly measures electrical demand from three-phase devices shall be installed such that measurements are taken on all three-phases to account for any phase imbalance or an equivalent method that can measure electrical demand using two phases.
- WEQ.020.3.11.1.8.** Any measurement or monitoring equipment that directly measures electrical demand on circuits with significant harmonics shall have a digital sampling rate of at least 2.6 kilohertz (kHz) as defined in the relevant IEEE Standards.
- WEQ.020.3.11.1.9.** Any measurement or monitoring equipment for proxy variables that do not directly measure electrical demand, including but not limited to voltage, current, temperature, flow rates and operating hours, shall have an accuracy of $\pm 2\%$, unless otherwise provided in the Governing Documents.
- WEQ.020.3.11.1.10.** Any measurement or monitoring equipment of current amps and nominal voltage used to calculate electrical demand shall include the power factor of the end-uses in the demand MW calculations.
- WEQ.020.3.11.1.11.** Data recorders shall be synchronized in time, within an accuracy of ± 2 minutes per month, with the National Institute of Standards and Technology ("NIST").
- WEQ.020.3.11.1.12.** All measurement, monitoring and data recording equipment shall be calibrated by the EERP, independent calibration contractor, or designee, to meet or exceed the IPMVP, the US DOE Federal Energy Management Program ("FEMP") M&V guidelines,² applicable American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE") standards, NIST, or equivalent standard for the equipment.
- WEQ.020.3.11.1.13.** All measurement, monitoring and data logging equipment shall be maintained in such a way as to meet or exceed industry and manufacturer maintenance standards.
- WEQ.020.3.11.1.14.** Documentation on all measurement, monitoring and data recording equipment maintenance and calibration activities shall be maintained in accordance with applicable regional record retention policies as specified in Governing Documents.

² M&V Guidelines: Measurement & Verification for Federal Energy Projects Version 3.0, US DOE Federal Energy Management Program, April 2008



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WEQ.020.3.11.1.15. Interval metering devices that sample continuously and integrate values shall collect data at a frequency of one hour or less. Interval meter devices that sample using snapshots shall collect electricity usage data at a frequency of 15 minutes or less.

WEQ.020.3.12. Data Validation

WEQ.020.3.12.1. All measured data used in the Demand Reduction Value calculations shall be validated using standard Validation, Editing, and Estimation (VEE) procedures. For Projects involving an individual facility or energy consuming equipment, the following validation checks on any interval data from an individual facility shall be made by the EERP:

WEQ.020.3.12.1.1. Time Check: validate that the measurement devices time clock is within $\pm$ two minutes of the true time as defined by NIST.

WEQ.020.3.12.1.2. Sum Check: validate that the difference between the sum of the values recorded over the intervals and the value recorded by the meter over the same time-period is within $\pm$ 2%. This check may be performed on either usage or pulse data, provided the data scaling is consistent throughout the period.

WEQ.020.3.12.1.3. High/Low Check: establish minimum and maximum expected values for each Demand Asset, facility, or measure. The minimum and maximum values shall be based on equipment ratings or historical equipment and/or facility usage data. All interval data that is greater than the maximum expected value or less than the minimum expected value shall be identified. Any such interval data shall be deemed to fail validation.

WEQ.020.3.12.1.4. Zero Value Check: identify any interval data with a value equal to zero. Verification of whether the zero value is the correct value for that interval shall be made. If it is determined that the zero value is incorrect, substitution of a corrected or estimated non-zero value for the zero value may be allowed. Under no circumstances shall a zero value be substituted for missing interval data.

WEQ.020.3.12.1.5. The EERP shall identify all estimated data used in the Demand Reduction Value calculations, as well as the methodology used to develop the estimate.

WEQ.020.3.12.1.6. The EERP shall classify all data that have passed validation and used in the Demand Reduction Value calculations as ~~either~~: (i) actual data, (ii) estimated data or (iii) missing data. The data classification shall be stored along with the data values in the data retention and management system prescribed by the System Operator.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ 2010 Annual Plan Item 4 (d)

Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.

b. Description of Recommendation:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

c. Business Purpose:

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

Standards for M&V of energy efficiency should consider a balance in rigor, which effects measurement investment cost. M&V activities are commonly decided by the entity making the efficiency investment and are guided by the cost benefit, product specification and business model. As such, methodologies for M&V have varying degrees of rigor or quantitative precision and accuracy. A standard that can result in accurate valuation of implemented measures and practices, which is flexible, consistent, and cost effective, will be most useful to the industry and the public. The standards reflecting the minimum requirement for M&V of Energy Efficiency should build on industry and public experience as well as accommodate evolutionary changes to the application of engineering, science and economics that are the basis of energy efficiency efforts.

Formal Comments Submitted by the ISO/RTO's

Quadrant: Wholesale Electric Quadrant

Recommendations: 2010 - WEQ AP Item 4(d) - Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Submitted By: ERCOT, IESO, ISO-NE, Midwest ISO, NYISO, PJM, SPP

Date: January 14, 2011

These comments are in response to the recommendations 2010 - WEQ AP Item 4(d) - Business Practice Standards for Measurement and Verification of Energy Efficiency Products.

Comments Specific to 2010 WEQ AP Item 4(d)

- We support the standards developed by the committee and provide the attached redlined and clean version edits to reflect areas to improve grammar style and clarity. We have not suggested any substantial changes to the intent of the recommendation but made identified use of terms and phrases which could be improved with editorial changes.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

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Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

☒ Initiation
☐ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Energy Efficiency products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this document is not intended to replace applicable Governing Documents for wholesale Energy Efficiency, and in the event of a conflict, the latter documents shall have precedence.

Contact information: Eric Winkler, Ph.D., ISO New England, 413-540-4513, ewinkler@iso-ne.com

WEQ-020 Business Practices Standards for Measurement and Verification of Energy Efficiency Products - Please see attached documentation.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

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WEQ.000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 4(gd)

WEQ.000-1 ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
ANSI	American National Standard Institute
ASHREA	American Society of Heating, Refrigeration and Air Conditioning Engineers
c.v.	Coefficient of Variation
EERP	Energy Efficiency Resource Provider
FEMP	Federal Energy Management Program (US)
HVAC	Heating, ventilating, and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
IPMVP	International Performance Measurement and Verification Protocol
kHz	Kilohertz
M&V	Measurement and Verification
RMS	Root-Mean Square
VEE	Validation Editing and Estimation

WEQ.000-2 DEFINITION OF TERMS

Term	Definition
Demand Reduction Value	The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW.
Energy Efficiency	Installed measures on Retail Customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.
Energy Efficiency Baseline	Energy usage that would have occurred without implementation of the subject measure or project.



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For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Term	Definition
Energy Efficiency Capacity Resource	A type of Demand Resource used in capacity markets in which demand is reduced over a defined period of time measured in MW.
Energy Efficiency Resource Provider	An entity that is responsible for delivering Energy Efficiency.
Measurement and Verification	The process of determining- reductions in usage and/or demand resulting from Demand Response or Energy Efficiency.

DRAFT



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020 Measurement and Verification of Energy Efficiency Products

WEQ.020.1. Introduction and Principles

WEQ.020.1.1. Introduction and Principles

Energy Efficiency Resource Providers (“EERP”) that offer Energy Efficiency resources into wholesale electricity markets must provide consistent and reliable evidence of ~~reductions~~ Energy Efficiency reductions in electrical usage for qualification and performance. Methodologies for Measurement and Verification (“M&V”) of demand reduction shall be established by the System Operator and compliance with said requirements shall be the responsibility of the EERP. Compliance with the standards are intended to ensure that Energy Efficiency ~~Resources-resources~~ are qualified for participation in the market and the Demand Reduction Values, in performance reporting, accurately reflect the demand reduction delivered to the electrical system.

A Business Practice Standard for M&V of Energy Efficiency has the potential to broaden implementation and acceptance of energy reduction measures and practices. These standards are not designed to establish or support any regulatory policy.

WEQ.020.2. Applicability

WEQ.020.2.1.1. ~~These is document~~ Business Practice Standards contains information on standards for M&V of wholesale electricity Energy Efficiency products and services in markets administered by ISOs and RTOs (hereinafter referred to as “System Operator”). The information contained within this standard is not intended to replace ~~applicable~~ Governing Documents applicable to wholesale Energy Efficiency. In the event of a conflict between these standards with the Governing Documents, the Governing Documents shall have precedence over these ~~standards~~ Business Practice Standards.

WEQ.020.2.1.2. These Business Practice Standards establish Energy Efficiency M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Energy Efficiency products and services. These Business Practice Standards do not require the System Operator ~~-to offer~~ products and services including Energy Efficiency. Terms that are capitalized in these standards have the meanings ascribed to them in ~~the Definitions of Terms section of the WEQ-000-2 Definition of Terms-Business Practice Standards~~.

WEQ.020.2.1.3. These Business Practice Standards include the requirements on EERPs for the M&V of Energy Efficiency products and services offered into wholesale markets. References, not limited to: submission of materials, use of equipment,



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measurement, sampling and calculations refer to materials submitted to the System Operator by the EERPs and actions taken by the EERP.

WEQ.020.3. Business Practice Standards

WEQ.020.3.1. Energy Efficiency Resource Use Criteria in Wholesale Markets

The following criteria comprise elements of how Energy Efficiency resources may participate in wholesale markets but are not requirements for M&V of Energy Efficiency products and services in wholesale markets. Detailed criteria in standards WEQ.020.3.3- to WEQ.020.3.12 shall constitute the required elements of Energy Efficiency M&V for EERPs participating in wholesale electric markets.

WEQ.020.3.1.1. Installation and Eligibility

An Energy Efficiency Resource may participate in wholesale markets where there is a verified permanent load reduction behind the distribution meter resulting from installation of Energy Efficiency equipment, processes, or systems that exceed Energy Efficiency codes and standards at the time of commitment, installation or permanent load shifting.

WEQ.020.3.1.2. Modeling Energy Efficiency

An Energy Efficiency Capacity Resource may be modeled in the system equivalent to other supply side resources in accordance with the applicable Governing Documents.

WEQ.020.3.1.3. Increase in Energy Efficiency Value

An Energy Efficiency Capacity Resource may be augmented via incremental or reconfiguration auctions, provided such resource is qualified in advance of the applicable auction in accordance with the applicable Governing Documents.

WEQ.020.3.1.4. Early Completion

An Energy Efficiency Capacity Resource that is deliverable in a period in advance of the commitment period, for which it originally cleared, may participate in prior commitment periods subject to qualification requirements specified in the applicable Governing Documents.

WEQ.020.3.2. General Measurement and Verification Plan Requirements

A document that defines specific M&V methods for verifying the Demand Reduction Value is required of EERPs for qualification and participation as a product or service in the wholesale market in the program, market, product class or auction. ~~The following general elements of M&V plans are not required or exhaustive.~~ Detailed criteria in standards WEQ.020.3.3 to WEQ.020.3.12 shall constitute the required elements of an M&V activity plan as specified in the regional Governing Documents.

WEQ.020.3.2.1. Project Description

Plan should include a project description, not limited to: a general description of the project location, facility types, measure types, estimated Demand Reduction Value, estimated cost of project (capital, operation and M&V) and savings.



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WEQ.020.3.2.2. Schedule

Plan should include a project schedule describing the timeline of a project build-out for establishing qualification eligibility. Plans shall specify a schedule of M&V activity during the project build-out and during the delivery period.

WEQ.020.3.2.3. Measure Description

Plan should include measure level characteristics, including but not limited to: Demand Reduction Values based on metering, engineering estimates, or model simulation.

WEQ.020.3.2.4. Equipment/Process Specification and Documentation

Plan should include a detailed description of existing and new equipment and process characteristics sufficient to establish Energy Efficiency Baseline calculations.

WEQ.020.3.2.5. Measurement and Verification Approach

Plan should include justification of appropriate measurement methodology, not limited to: the four International Performance M&V Protocol (IPMVP) methodologies, at the measure level.

WEQ.020.3.2.6. Methodological Assumptions

Plan should include a detailed description of underlying assumptions for Energy Efficiency Baseline and post installation energy use.

WEQ.020.3.2.7. M&V Activities: Energy Efficiency Baseline Period

Plan should include a description of the period of time under which the Energy Efficiency Baseline will be quantified.

WEQ.020.3.2.8. M&V Activities: Post Installation Period

Plan should include a description of activities conducted post installation to document actual Demand Reduction Values.

WEQ.020.3.2.9. Calculation and Adjustments

Plan should include a detailed description of calculations used to establish Energy Efficiency Baseline and actual Demand Reduction Value.

WEQ.020.3.2.10. Metering Plan

Plan should include a detailed description of meter management, not limited to: maintenance, meter data collection and processing.

WEQ.020.3.2.11. Updated M&V Plan Components

Plan should include a description of process by which M&V plan updates are made and documented.

WEQ.020.3.3. Post installation M&V Report Components

WEQ.020.3.3.1. Initial Post-Installation M&V Report:

During the course of project build-out, a post-installation report shall be submitted by the EERP to the ISO/RTS System Operator to document the



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verified ~~reductions~~ Energy Efficiency reductions resulting from installed measures. The report shall be required at least annually.

WEQ.020.3.3.2. Updated Post-Installation M&V Report

An updated performance report shall be submitted by the EERP to the ISO/RTO System Operator to document achieved ~~reductions~~ Energy Efficiency reductions for the purposes of establishing ~~qualified Demand Reduction~~ V values carried into subsequent delivery periods. The report shall be required at least annually

WEQ.020.3.4. Performance Reporting

WEQ.020.3.4.1. Minimum Requirements

Performance reports shall be submitted by the EERP to the ISO/RTO System Operator to document achieved ~~reductions~~ Energy Efficiency reductions during the delivery period. Report shall be required at least annually.

WEQ.020.3.5. M&V Supporting Documents

WEQ.020.3.5.1. Minimum Requirements

All reports, studies, specifications and other documents referenced by the EERP in the M&V ~~p~~Plan shall be current and applicable to the measures.

WEQ.020.3.6. M&V Methodologies

WEQ.020.3.6.1. Acceptable Methodologies

Measurement and Verification methodologies used by the EERP shall be appropriate to the measure type and sensitivity requirements of the measurement techniques. Acceptable methods shall include:

WEQ.020.3.6.1.1. IPMVP¹ Option A: Partially Measured Retrofit Isolation/Stipulated Measurement.

IPMVP Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable ~~can~~, in combination with well-established algorithms and/or stipulated factors, can provide an accurate estimate of the Demand Reduction Value.

¹ "The International Performance Measurement and Verification Protocol (IPMVP) provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities." Efficiency Valuation Organization, 2010. <http://www.evo-world.org>. The IPMVP (EVO 10000 – 1:2010, © Efficiency Valuation Organization 2010), may be obtained from EVO-world.org and may be periodically updated.



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WEQ.020.3.6.1.2. IPMVP Option B: Retrofit Isolation/Metered Equipment.

IPMVP Option B involves a retrofit or system-level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the component or system level using interval electrical demand meters installed on the affected end-use.

WEQ.020.3.6.1.3. IPMVP Option C: Whole facility/Regression.

IPMVP Option C estimates Demand Reduction Values by analyzing the overall energy use in a facility and identifying the impact of the implemented measures on the total building or facility energy use patterns. The evaluation of whole-building or facility level metered data ~~is~~ may be completed using techniques ranging from ~~simple~~ simple billing comparisons to multivariate regression analysis.

WEQ.020.3.6.1.4. IPMVP Option D: Calibrated Simulation.

IPMVP Option D involves calibrated computer simulation models of component or whole-building demand and energy usage to determine measure demand and energy savings. Engineering simulation models (such as DOE-2) can be used to model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings. Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions. Both engineering and operational simulations are made more powerful by calibrating these methods to actual MW and MWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building energy use data may be used to calibrate the simulations.

WEQ.020.3.6.2. Alternative Acceptable M&V Methodologies.

The EERP may propose alternative methodologies not listed in the ~~s~~Section WEQ.020.3.6.1.-above. EERPs proposing alternative methodologies shall



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demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described [in section WEQ.020.3.6.1-above](#), and demonstrate justifiable need for deviation from the acceptable methodologies described in the Section above based on unique Project requirements.

WEQ.020.3.7. Energy Efficiency Baseline Conditions

WEQ.020.3.7.1. Energy Efficiency Baseline Criteria for all Energy Efficiency

Energy Efficiency Baseline conditions used by the EERP shall reflect the conditions under which new energy efficient equipment or processes are installed to provide a service function. The four conditions shall include:

- WEQ.020.3.7.1.1. Replacement of functional equipment still within its current useful life.
- WEQ.020.3.7.1.2. Replacement of functional equipment beyond its current useful life.
- WEQ.020.3.7.1.3. Unplanned replacement or failed equipment.
- WEQ.020.3.7.1.4. New construction.

WEQ.020.3.7.2. Standard Energy Efficiency Baseline

The standard Energy Efficiency Baseline used by the EERP shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice, whichever is most stringent. The standard Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. The standard Energy Efficiency Baseline shall be applied to criteria [WEQ.020.3.7.1.3](#), [WEQ.020.3.7.1.4](#). The standard Energy Efficiency Baseline shall be applied to criteria [WEQ.020.3.7.1.2](#), unless otherwise specified by the Governing Documents.

WEQ.020.3.7.3. The Current Load Energy Efficiency Baseline

The current load Energy Efficiency Baseline used by the EERP shall be the existing load of operating equipment across the performance hours. The current load Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. Use of current load Energy Efficiency Baseline shall be applied to criteria [WEQ.020.3.7.1.1](#). Use of current load Energy Efficiency Baseline may be applied to criteria [WEQ.020.3.7.1.2](#), if specified by the Governing Documents.

WEQ.020.3.8. Statistical Significance

WEQ.020.3.8.1. General Requirements

M&V of Energy Efficiency may include measurement methodologies requiring statistical estimation techniques for Demand Reduction Values. In the event



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that statistical methods are required, the following requirements for statistical significance shall be met.

WEQ.020.3.8.2. Specification for Statistical Error and Precision when in Sampling is Used sample Size

~~Specification for statistical error and precision in sampling.~~ The use of a bi-directional t-test (two-tailed) may be required of the EERP where performance reporting may result in both performance bonuses and or penalties. Sample ~~e~~Error and ~~p~~Precision used by the EERP shall be 80/10 using a two-tailed test or 90/10 using a one-tailed test subject to the Governing Documents. Compliance with this criterion shall be applicable to the overall Demand Reduction Value of the Energy Efficiency Capacity Resource.

WEQ.020.3.8.3. Sample Size Calculation

The sample size used by the EERP requires the use of a population coefficient of variation ("c.v.") which may not be known at the time of sample design. The and the desired error and precision level are also inputs into sample size calculation. The sample size may be established using an estimate of the c.v. based on the following criteria. The estimated c.v. shall be not less than 0.5 for homogeneous populations ~~used by the EERP shall be 0.5~~ and not less than 1.0 for heterogeneous populations.

WEQ.020.3.8.4. Sample Size Recalibration

Population sampling error and precision used by the EERP shall be recalibrated using a measured c.v. The sample c.v. used by the EERP shall be calculated from the measured sample population and applied to the reported estimate of sampling error and precision.

WEQ.020.3.8.5. Sampling Over Zones

Sampling used by the EERP over heterogeneous zones and/or application of sampling studies from one zone to another shall control for bias and meet the overall error and precision requirements.

WEQ.020.3.8.6. Sample Bias Control

Types of potential sampling bias control to be used by the EERP include, but are not limited to: (a) construct validity; (b) sampling frame versus population; (c) selection bias (for a sample and for a census attempt where not all sites within the census received usable data); (d) non-response bias; (e) error in measuring variables; (f) sample homogeneity relative to project (external validity); (g) outlier data points; and (h) missing data. Sampling plans submitted by the EERP shall demonstrate and document that population sampling bias is minimized.

WEQ.020.3.9. Nominated Energy Efficiency Value Calculations/Demand Reduction Value Calculations

WEQ.020.3.9.1. Energy Efficiency Value Nominated Calculation Variables Energy Efficiency Values

Calculation of Demand Reduction Values for equipment, measures and practices shall be performed using measured energy (kWh) or demand (kW). Calculation



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of Demand Reduction Values for equipment, measures and practices, including weather sensitive loads, may include estimated modifiers or proxy variables.

Estimated modifiers and proxy variables used by the EERP in the calculation of the Demand Reduction Value shall include, but are not limited to: coincidence factor, realization rate, equipment failure rate, ~~and weather~~ normalization ~~method~~ for weather sensitive loads, temperature, humidity, flow, concentration, volts, amps, lumens, and quantity.

~~WEQ.020.3.9.1.~~ **Reduction in the Final Nominated Value**

If the reported Demand Reduction Value does not meet the precision standard, the final performance value may be reduced. Governing Documents shall dictate the calculation of further Energy Efficiency reductions to reported Demand Reduction Values.

~~WEQ.020.3.9.2.~~ **Reduction in the Final Nominated Value**

If the reported Demand Reduction Value does not meet the precision standard, the final performance value may be reduced.

Governing Documents shall dictate the calculation of further reductions to reported Demand Reduction Values.

WEQ.020.3.10. Measurement and Monitoring

WEQ.020.3.10.1. **Measurement and Monitoring Parameters and Variables Requirements**

Measurement and monitoring involve the collection of data of various types from equipment, measures and practices. Monitoring parameters and variables shall be used in the calculation of the Demand Reduction Value.

The EERP shall document all measurement monitoring parameters and variables measured for use in calculation of the Demand Reduction Value.

All measurement monitoring parameters and variables used in the calculation of the Demand Reduction Value shall be applicable to the category of equipment, measure or practice, including but not limited to: heating ventilating and air conditioning (HVAC) equipment, HVAC controls, building envelopes, interior/exterior lighting, major electric consuming equipment and weather sensitive loads

WEQ.020.3.10.2. **Monitoring Frequency and Duration**

Monitoring frequency and duration of sampling must be controlled by the EERP so as to reduce measurement error.

The frequency and duration of measurement and monitoring used by the EERP shall be sufficient to ensure accurate representation of the Demand Reduction Value during the performance hours or minimum reporting interval, whichever is less, consistent with statistical significance requirements in section WEQ.020.3.8.

WEQ.020.3.11. Measurement Equipment Specification



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WEQ.020.3.11.1. Measurement Equipment Requirements

Measurement equipment devices used by the EERP shall have the following technical requirements:

- WEQ.020.3.11.1.1. All solid-state measurement, monitoring and data recording equipment shall meet or exceed the relevant standards set by the American National Standard Institute ("ANSI") or equivalent standard for the equipment.
- WEQ.020.3.11.1.2. Measurement, monitoring and data recording equipment that is directly measuring watt-hour, volt-hour, volt-ampere-hours, reactive volt-ampere-hour, and the associated demand components should conform to ANSI or equivalent standards for the equipment.
- WEQ.020.3.11.1.3. Instruments or transducers for the analog or digital measurement of volt, volts-squared, amperes, amperes-squared, phase angle, volt-amperes, watts, and reactive volt-amperes should conform to ANSI or equivalent standards for the equipment.
- WEQ.020.3.11.1.4. Data recorders that are recording pulses from measurement and monitoring devices shall use a pulse rate within the resolution capabilities of the recorder.
- WEQ.020.3.11.1.5. All measurement, monitoring and data recording equipment installed on electric circuits with significant harmonics shall meet the relevant standards provided by the Institute of Electrical and Electronics Engineers ("IEEE").
- WEQ.020.3.11.1.6. Any measurement or monitoring equipment that directly measures electrical demand in MW shall be a true Root-Mean Square ("RMS") measurement device with an accuracy of no less than $\pm 2\%$.
- WEQ.020.3.11.1.7. Any measurement or monitoring equipment that directly measures electrical demand from three-phase devices shall be installed such that measurements are taken on all three-phases to account for any phase imbalance or an equivalent method that can measure electrical demand using two phases.
- WEQ.020.3.11.1.8. Any measurement or monitoring equipment that directly measures electrical demand on circuits with significant harmonics shall have a digital sampling rate of at least 2.6 kilohertz (kHz) as defined in the relevant IEEE Standards.
- WEQ.020.3.11.1.9. Any measurement or monitoring equipment for proxy variables that do not directly measure electrical demand, including but not limited to: voltage, current, temperature, flow rates and operating hours, shall have an accuracy of $\pm 2\%$, unless otherwise provided in the Governing Documents.
- WEQ.020.3.11.1.10. Any measurement or monitoring equipment of current amps and nominal voltage used to calculate electrical demand shall include the power factor of the end-uses in the demand MW calculations.
- WEQ.020.3.11.1.11. Data recorders shall be synchronized in time, within an accuracy of ± 2 minutes per month, with the National Institute of Standards and Technology ("NIST").



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- WEQ.020.3.11.1.12.** All measurement, monitoring and data recording equipment shall be calibrated by the EERP, independent calibration contractor, or designee, to meet or exceed the IPMVP, the US DOE Federal Energy Management Program ("FEMP") M&V guidelines,² applicable American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE") standards, NIST, or equivalent standard for the equipment.
- WEQ.020.3.11.1.13.** All measurement, monitoring and data logging equipment shall be maintained in such a way as to meet or exceed industry and manufacturer maintenance standards.
- WEQ.020.3.11.1.14.** Documentation on all measurement, monitoring and data recording equipment maintenance and calibration activities shall be maintained in accordance with applicable regional record retention policies as specified in Governing Documents.
- WEQ.020.3.11.1.15.** Interval metering devices that sample continuously and integrate values shall ~~collect~~record data at a frequency of one hour or less. ~~Other i~~Interval meter devices that sample using snapshots shall ~~collect~~record electricity usage data at a frequency of 15 minutes or less.

WEQ.020.3.12. Data Validation

- WEQ.020.3.12.1.** All measured data used in the Demand Reduction Value calculations shall be validated using standard Validation, Editing, and Estimation (VEE) procedures. ~~For Projects involving an individual facility or energy consuming equipment, T~~ the following validation checks on any ~~interval~~ data from an individual facility ~~or energy consuming equipment~~ shall be made by the EERP:

- WEQ.020.3.12.1.1. Time Check:**
~~V~~validate that the measurement devices time clock is within $\pm$ two minutes of the true time as defined by NIST.
- WEQ.020.3.12.1.2. Sum Check:**
~~V~~validate that the difference between the sum of the values recorded over the intervals and the value recorded by the meter over the same time-period is within $\pm$ 2%. This check may be performed on either usage or pulse data, provided the data scaling is consistent throughout the period.
- WEQ.020.3.12.1.3. High/Low Check:**
~~E~~establish minimum and maximum expected values for each ~~d~~Demand ~~a~~Asset, facility, or measure. The minimum and maximum values shall be based on equipment ratings or historical equipment and/or facility usage data. All interval data that is greater than the maximum expected value or less than the minimum expected value shall be identified. Any such interval data shall be deemed to fail validation.

² M&V Guidelines: Measurement & Verification for Federal Energy Projects Version 3.0, US DOE Federal Energy Management Program, April 2008



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WEQ.020.3.12.1.4. Zero Value Check:

Identify any interval data with a value equal to zero. Verification of whether the zero value is the correct value for that interval shall be made. If it is determined that the zero value is incorrect, substitution of a corrected or estimated non-zero value for the zero value may be allowed. Under no circumstances shall a zero value be substituted for missing interval data.

WEQ.020.3.12.1.5. Identification of Missing Data

The EERP shall identify all estimated data used in the Demand Reduction Value calculations, as well as the methodology used to develop the estimate.

WEQ.020.3.12.1.6. Identification of Data Classifications

The EERP shall classify all data that have passed validation and used in the Demand Reduction Value calculations as ~~either~~ (i) actual data, (ii) estimated data or (iii) missing data. The data classification shall be stored along with the data values in the data retention and management system prescribed by the System Operator.



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4. SUPPORTING DOCUMENTATION

a. Description of Request:

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Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.

b. Description of Recommendation:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

c. Business Purpose:

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

Standards for M&V of Energy Efficiency should consider a balance in rigor, which effects measurement investment cost. M&V activities are commonly decided by the entity making the efficiency investment and are guided by the cost benefit, product specification and business model. As such, methodologies for M&V have varying degrees of rigor or quantitative precision and accuracy. A standard that can result in accurate valuation of implemented measures and practices, which is flexible, consistent, and cost effective, will be most useful to the industry and the public. The standards reflecting the minimum requirement for M&V of Energy Efficiency should build on industry and public experience as well as accommodate evolutionary changes to the application of engineering, science and economics that are the basis of energy efficiency efforts.

January 14, 2011

Ms. Rae McQuade, President
North American Energy Standards Board
801 Travis, Suite 1675
Houston, TX 77002

Dear Ms. McQuade,

Pursuant to your December 8, 2010 request, EnerNOC, Inc. hereby submits its formal comments regarding the proposed Phase II measurement and verification business practice standards for Wholesale Electric Market Demand Response (DR) Programs.

EnerNOC the largest demand response resources and energy management services provider in the world. EnerNOC currently manages over 5,100 of demand response resources capability across over 8,000 sites nationwide and in the United Kingdom. We actively participate in a range of reliability-based demand response programs, economic price response programs, and ancillary services programs.

EnerNOC is been an active direct participant in the demand response programs three Independent System Operators ("ISOs") or Regional Transmission Organizations ("RTOs"), including New York ISO, ISO New England, and the PJM Interconnection. We are also direct participants in ERCOT, and via utility contracts, indirect participants in the California ISO programs. We have contracts with a variety of utilities to provide demand response services, including Southern California Edison, Pacific Gas & Electric, San Diego Gas & Electric, National Grid, NSTAR, the Tennessee Valley Authority, Tampa Electric Company, and Public Service of New Mexico.

EnerNOC's demand response activities are implemented via automated, aggregated, and intelligent management of end-user lighting, HVAC, distributed generation, and industrial process equipment. This breadth of experience with different DR programs across the country uniquely qualifies EnerNOC to comment upon M&V standards for DR.

EnerNOC has been involved throughout the NAESB and FERC processes that gave rise to the instant proposal. That involvement was initially characterized by optimism, optimism that NAESB might be the forum in which the wealth of experience held by its members would be consolidated and distilled into a set of proposed "best practices" for the measurement and verification of demand response. Such best practices would allow a new utility or ISO/RTO to build upon the hard-won experience of its predecessors and avoid the mistakes made by others.

Sadly, that optimism has turned into profound skepticism that the entity charged with developing standards for DR measurement and verification is capable of doing so.

After presenting to FERC a set of Phase I recommendations that FERC itself characterized as a "framework" for standards, a "starting point" from which "much work needs to be done," and after being charged by FERC to seek "standardization of measurement and verification methods¹" for DR, NAESB has produced a set of "standards" that fall lamentably short of their goals.

In Order 676-F, FERC made clear its expectations, or at least its hopes for the Phase II effort:

28. Improvement in measurement and verification standards will work to ensure that the performance of demand response resources can be accurately quantified. Standardization of measurement and verification methods also will help to reduce costs for customers participating in multiple markets. Without

¹ / 131 FERC 61,022, Order 676-F Para. 28.

consistent standards, customers and demand response providers that participate in more than one RTO or ISO would then have to incur the costs of developing different business processes to adapt to the differing RTO/ISO requirements, increasing the cost and complexity of their business. Furthermore, the Phase II M&V Standards should help achieve greater efficiency in the operation and evaluation of the performance of demand response products and services².

After more than eighteen months of effort following an appeal for guidance to the WEQ Executive Committee, the replacement of the responsible co-chairs, and the issuance of Order 676-F with its specific direction, the NAESB process has resulted in three principle modifications to the Phase I standards³. The Glossary has been revised to accommodate the laudable efforts of that sub group, and several of the numerical values have been revised to “bracket” the values currently in use by the ISOs/RTOs. Finally, the most significant substantive change has been to replace approximately 175 uses of the term “system operator” with the words “Governing Documents.”

This last change came in response to charges by EnerNOC and others that the “standards” mostly amounted to whatever the system operators in every region said they were. ISOs/RTOs were anxious to clarify that these “standards,” most of which they characterized during discussions as “market rules,” were really the product of various stakeholder processes and FERC-approved tariff filings, not the unilateral dictates that the Phase I language suggested they were. This is understandable, and we concede the change does add a scintilla of incremental accuracy to the Phase II effort. What it does not add is any substantive progress toward the development of actual standards.

Similarly, the “bracketing” exercise was initially intended to look at various numerical values applied to certain Performance Evaluation or Business Practice criteria to determine how far apart the various ISOs/RTOs were in their approaches.

² Id. at para. 28

³ There were also numerous formatting and numbering changes, as well as the elimination of a voluminous section regarding the history of the workgroup meetings that led up to the final standards, however, these were not substantive.

This was, as EnerNOC understood the process at the time, to have been the first step in a process to narrow those differences. Unfortunately, it became clear that the ISO/RTO participants, who dominated the participation in the NAESB subcommittee meetings, had no intention of going beyond enumerating the differences or highlighting the use of a single number in the case where there were no differences. So, this effort too, led to no greater consistency in the final standards or “market rules” across ISOs/RTOs than did the other efforts.

EnerNOC and ELCON foresaw this possibility but FERC admonished the parties to be open-minded:

34. ELCON expresses concern that the views of RTOs and ISOs will be given greater consideration than those of other participants in the NAESB process. As discussed earlier, the NAESB process requires consensus agreement from all seven segments of the industry and no segment, therefore, can dominate the development of a standard. We expect the participants in the NAESB process actively to consider and be open to proposals and concerns from any source and to try to reconcile differences so that the standards promote accurate measurement and verification of the performance of demand resources⁴.

Unfortunately, there was no such openness. The parties that dominated the discussions steadfastly refused any and all attempts to “reconcile differences.” Instead, they termed these differences “market rules,” holding that they should be inviolate. While NAESB’s super-majority process ensured that no parties could dominate the process to make sure any change did take place, it also made equally sure that significant change did not take place.

Unable or unwilling to follow FERC’s direction, the WEQ DSM/EE Subcommittee was equally unable or unwilling to follow the explicit direction it was given by the WEQ Executive Committee. Largely at EnerNOC’s insistence, the Subcommittee sought direction from the WEQ Executive Committee in late 2009. The WEQ EC chartered a

⁴ Id at para 34 (emphasis added)

Task Force to consider the request and that Task Force issued the attached guidance on December 1, 2009.

While the Subcommittee appears to have made a good faith effort to be responsive to Recommendation 1, specifying a number of minimums, maximums or specific metrics, the same cannot be said for the other recommendations. For example, Recommendation 2 was not followed.

The Task Force recognizes that a specific performance evaluation type may not be appropriate for use with a given service type. The Task Force recommends that the subcommittee investigate and develop additional information specific to performance evaluation type and associated service type. Specifically, the additional information should include identification of the characteristics for each performance evaluation type/service type combination. Regional differences should be identified where appropriate. This does not mean the subcommittee should strive to develop a single performance evaluation method or baseline scheme. Rather, the overall goal is to craft consensus standards to aid all participants in the use measurement and verification methods for demand response programs in wholesale electric markets.

No consideration was given to determining whether some Performance Evaluation types might not be appropriate for some products. The characteristics for each performance type/service combination were not identified. Regional differences, in the sense that each ISO/RTO's rules should be sacrosanct were assumed to be the universal rule, and "consensus standards" were never the goal and no attempt was ever made to craft them.

With respect to the EC's "Additional Observations," despite FERC staff's confirmation that the group "should seek to standardize performance evaluation criteria for demand response programs across all of the ISO/RTOs," the Subcommittee utterly ignored the EC's direction that it "should work to create general principles that apply to all ISO/RTOs while also allowing for regional differences." Instead, it took the position that all there were or should be were "regional differences."

In the end, the Phase II standards still amount to a lengthy recitation of the principal that there are no standards. Instead, the rules are what the “Governing Documents” of the ISOs/RTOs say they are and the patchwork quilt of M&V approaches across the country continues to stand as a barrier to those CSPs who would extend their operations nationwide.

As FERC noted in Order 676-F “demand response providers that participate in more than one RTO or ISO should not have to incur the costs of developing different business processes to adapt to the differing RTO/ISO requirements, increasing the cost and complexity of their business.”⁵

EnerNOC opposes adoption of the proposed standards insofar as they claim to be responsive either to FERC’s charge in Order 676-F or to the mandate of the NAESB WEQ Executive Committee. While we acknowledge that the Phase II standards do provide some incremental improvement over Phase I, they fall so far short of expectations that we cannot support them, lest we give credence to any suggestion that they have accomplished their goals.

Respectfully Submitted,



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⁵ Id at para. 33.



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via email

TO: NAESB WEQ Executive Committee
FROM: NAESB WEQ DR/DSM EC Task Force
RE: Guidance for NAESB WEQ DR/DSM Subcommittee
DATE: December 1, 2009

During the October 27, 2009, meeting of the WEQ Executive Committee, a Task Force was established to give guidance to the WEQ EC regarding the scope of work to be performed by the WEQ DSM/EE Subcommittee Work Group 3. A member from each segment was selected to provide balance to the Task Force. The Task Force met via teleconference on the following dates: Monday, November 2; Thursday, November 5; Tuesday, November 10, 2009; Thursday, November 12, 2009. Minutes from each meeting are attached for your review.

Based upon its review of background information, consultation with each of the subcommittee chairs and its deliberations, the Task Force has observed that confusion exists within the subcommittee concerning the meaning of the phrase “program design” that has hindered its efforts. The Task Force believes that program design encompasses the plan for branding, marketing, incentive, implementation strategies, customer relationship management, verification, performance targets, and budgets. Program design, in this context, is viewed by the Task Force as policy making, which is outside NAESB’s purview. The current scope of the subcommittee’s work is limited to measurement and verification of demand response. However, this does not preclude submittal of a new standards request for development of additional business practices outside this scope.

As a result of this review, the Task Force makes the following recommendations to the EC:

1. Direct the subcommittee to review the Business Practices for Measurement and Verification of Wholesale Electricity Demand Response (the “Phase I Standards”) and identify standards that could be enhanced.
2. The Task Force recommends that the subcommittee investigate and develop additional information specific to performance evaluation type and associated service type.

Recommendation 1

The Task Force recommends that the subcommittee be directed to review the Phase I Standards (WEQ-015, Business Practice Requirements: Provision of Wholesale Electric Demand Response Energy Products) in conjunction with the ISO/RTO Council’s (“IRC”) Demand Response Matrix to determine whether improvements, in the form of additional technical detail and/or clarity, can be made to any of the Phase I Standards. For example, the phrase “the System Operator shall specify” is used repeatedly within the standards. The subcommittee should enhance the standards by replacing this phrase with language that establishes minimums, maximums or specific metrics, where appropriate.



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The Task Force is of the belief that this recommendation is consistent with Annual Plan item 4(b) as currently written. However, the Task Force proposes that the EC consider modifying item 4(b) as follows to provide additional clarity (item 4(a) on the 2010 WEQ Annual Plan):

Review the NAESB Business Practices for Measurement and Verification of Wholesale Electricity Demand Response (WEQ-015) in conjunction with the IRC developed Demand Response Matrix and identify business practice requirements that could be improved or made clearer through the addition of specific technical detail. The wholesale and retail demand response work groups and the Smart Grid task force should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other.

Recommendation 2

The Task Force recognizes that a specific performance evaluation type may not be appropriate for use with a given service type. The Task Force recommends that the subcommittee investigate and develop additional information specific to performance evaluation type and associated service type. Specifically, the additional information should include identification of the characteristics for each performance evaluation type/service type combination. Regional differences should be identified where appropriate. This does not mean the subcommittee should strive to develop a single performance evaluation method or baseline scheme. Rather, the overall goal is to craft consensus standards to aid all participants in the use measurement and verification methods for demand response programs in wholesale electric markets.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	



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Metering Generator Output	✓	✓	✓	✓

The Task Force believes this evaluation could result in greater detail or insight into the Phase I Standards. The Task Force does not believe that such information should be considered as part of a NAESB business practice or standard that could be imposed upon any entity. It is for this reason that the development of an appendix may be appropriate. (For further discussion on December 3, 2009).

The Task Force recommends adding the following as item 4(b) on the WEQ 2010 Annual Plan to implement this recommendation:

4(b) For each performance evaluation type/service type combination identified in WEQ-015, using the IRC matrix as a starting point, assess and determine what standards or guidelines, if any, should be developed to aid all participants in the use of measurement and verification methods for demand response programs in organized wholesale electric markets. If the determination is made that standards or guidelines will be developed, those items will be added as sub-items to 4(b).

Additional Observations

Based upon the deliberations leading to the passage of the Phase I Standards, text contained within the FERC NOPR¹ and the Commission's comments contained in its order on CAISO's Order No. 719 compliance filing², it appears to the Task Force that there is an expectation among some NAESB participants³ and FERC⁴ that NAESB will continue its efforts beyond Phase I to develop more DR standards. Additionally, during a conference call with FERC staff on November 19th, the task force interpreted Staff comments that the phase II effort should seek to standardize performance evaluation criteria for demand response programs across all of the ISO/RTOs. Rather than focusing on the development of a set of standards, NAESB should work to create general principles that apply to all ISO/RTOs while also allowing for regional differences.

¹ Docket No. RM05-5-017, Standards for Business Practices and Communication Protocols for Public Utilities, Notice of Proposed Rulemaking, September 17, 2009

² "However, we note that the North American Energy Standards Board (NAESB) has adopted Phase I business practice standards for the measurement and verification of demand response, a first step in a process that may lead to greater standardization through the NAESB consensus process". ¶43, Order on Compliance Filing, Docket No. ER09-1408-000, November 19, 2009

³ "NAESB stresses that the key to several NAESB participants' willingness to accept the standards submitted on April 17th was the agreement among participants to include more specific technical measurement and verification standards in NAESB's current annual work plan and to proceed with further work on more detailed technical standards." Ibid, p.4

⁴ "Members of the WEQ need to continue their efforts to develop the substantive standards needed to achieve greater efficiency in the operation and evaluation of the performance of demand response products and services. The Commission continues to believe that the industry should take the lead in developing and implementing demand response standards that will be both practical and workable." Ibid, p.8



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Although the subject subcommittee is limited (per the Annual Plan) to looking at M&V standards, the Task Force is of the opinion that NAESB and the WEQ should take a broader look at DSM/DR/EE standards and products. Questions such as, “What is program design?” and NAESB’s role (if any) in program design need to be clarified. Such an effort will help NAESB be responsive to the expectations of its membership, the industry, and FERC. For example, FERC held a technical conference on November 19 regarding demand response. NAESB should monitor these types of activities and, where appropriate, identify additional annual plan items to facilitate necessary work. The Task Force is also concerned about a potential divergence or conflict between M&V standards being developed in the WEQ versus those being developed for the Retail Quadrant. We do not see any mechanism in place to identify and resolve potential conflicts. It is recommended that a new provisional item be added to the WEQ 2010 Annual Plan to accommodate

Review the need for, and develop standards where appropriate, in response to issues raised by FERC’s National Action Plan on Demand Response.

Respectfully Submitted,

DR Task Force

Alan Johnson
Daryl McGee
Alan Pritchard
Roy True
Cathy Wesley
Lou Ann Westerfield
Attachments

Task Force meeting notes - November 2, 2009

Task Force meeting notes – November 5, 2009

Task Force meeting notes – November 10, 2009

Task Force meeting notes – November 12, 2009

Task Force meeting notes – November 16, 2009

Task Force meeting notes – November 30, 2009



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

1. RECOMMENDED ACTION:

☒ Accept as requested
☐ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☒ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

☒ Initiation [A1]
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☒ Data Element
☒ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

These recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application and participation in the wholesale markets, and may be the subject of individual tariffs filed by the System Operator with and approved by with the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for measurement and verification of wholesale electricity Energy Efficiency products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this document is not intended to replace applicable Governing Documents for wholesale Energy Efficiency, and in the event of a conflict, the latter documents shall have precedence.

Contact information: Eric Winkler, Ph.D., ISO New England, 413-540-4513, ewinkler@iso-ne.com

WEQ-020 Business Practices Standards for Measurement and Verification of Energy Efficiency Products - Please see attached documentation.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.000

New Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 in support of 2010 WEQ AP Items 4(g)

WEQ.000-1 ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
ANSI	American National Standard Institute
ASHREA	American Society of Heating, Refrigeration and Air Conditioning Engineers
c.v.	Coefficient of Variation
EERP	Energy Efficiency Resource Provider
FEMP	Federal Energy Management Program (US)
HVAC	Heating, ventilating, and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
IPMVP	International Performance Measurement and Verification Protocol
kHz	Kilohertz
M&V	Measurement and Verification
RMS	Root-Mean Square
VEE	Validation Editing and Estimation

WEQ.000-2 DEFINITION OF TERMS

Term	Definition
Demand Reduction Value	The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW.
Energy Efficiency	Installed measures on Retail Customer facilities that achieve a permanent reduction in electric energy usage while maintaining a comparable quality of service.
Energy Efficiency Baseline	Energy usage that would have occurred without implementation of the subject measure or project



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant:

Wholesale Electric Quadrants

Requesters:

DSM/EE Subcommittee

Request No.:

2010 - WEQ AP Item 4(d)

Request Title:

Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Term	Definition
Energy Efficiency Capacity Resource	A type of Demand Resource used in capacity markets in which demand is reduced over a defined period of time measured in MW.
Energy Efficiency Resource Provider	An entity that is responsible for delivering Energy Efficiency.
Measurement and Verification	The process of determining reductions in usage and/or demand resulting from Demand Response or Energy Efficiency.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020 Measurement and Verification of Energy Efficiency Products

WEQ.020.1. Introduction and Principles

WEQ.020.1.1. Introduction and Principles

Energy Efficiency Resource Providers (“EERP”) that offer Energy Efficiency resources into wholesale electricity markets must provide consistent and reliable evidence of reductions in electrical usage for qualification and performance of the reductions. Methodologies for Measurement and Verification (“M&V”) of demand reduction shall be established by the System Operator consistent with tariffs approved by FERC, and eCompliance with said these M&V requirements shall be the responsibility of the EERP. Compliance with the

These standards are intended to ensure that Energy Efficiency Resources are qualified for participation in the market and the Demand Reduction Values, in performance reporting, accurately reflect the demand reduction delivered to the electrical system.

A Business Practice Standard for M&V of Energy Efficiency has the potential to broaden implementation and acceptance of energy reduction measures and practices. The standards are not designed to establish or support any regulatory policy.

WEQ.020.2. Applicability

WEQ.020.2.1.1.

This document contains information on standards for M&V of wholesale electricity Energy Efficiency products and services in markets administered by ISOs and RTOs (hereinafter referred to as “System Operator”). The information contained within this standard is not intended to replace applicable Governing Documents applicable to wholesale Energy Efficiency. In the event of a conflict between these standards with the Governing Documents, the Governing Documents shall have precedence over these standards FERC shall have regulatory authority.

WEQ.020.2.1.2.

These standards establish Energy Efficiency M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Energy Efficiency services. These standards do not require the System Operator to offer services including Energy Efficiency products and services. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section of the WEQ-000 Business Practice Standards.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020.2.1.3. These Standards include the requirements on EERPs for the M&V of Energy Efficiency offered into wholesale markets. References not limited to submission of materials, use of equipment, measurement, sampling and calculations refer to materials submitted to the System Operator by the EERPs and actions taken by the EERP. [A3]

WEQ.020.3. Business Practice Standards

WEQ.020.3.1. Energy Efficiency Use Criteria in Wholesale Markets

The following criteria ~~comprise elements of~~ indicate how Energy Efficiency may participate in wholesale markets, but are not requirements ~~for M&V of Energy Efficiency products in wholesale markets. Detailed criteria in s~~ Standards WEQ.020.3.3. to WEQ.020.3.12 shall constitute the required elements of M&V for EERPs participating in wholesale electric markets.

WEQ.020.3.1.1. Installation and Eligibility

Verified permanent load reduction behind the distribution meter resulting from installation of Energy Efficiency equipment, processes, or systems that exceed Energy Efficiency codes and standards at the time of commitment, installation or permanent load shifting.

WEQ.020.3.1.2. Modeling Energy Efficiency

An Energy Efficiency Capacity Resource may be modeled as in the system equivalent ~~to~~ of other supply side resources in accordance with the applicable Governing Documents.

WEQ.020.3.1.3. Increase in Energy Efficiency Value

Energy Efficiency Capacity Resource (WHAT) may be augmented via [A4] incremental or reconfiguration auctions, provided such resource is qualified in advance of the applicable auction in accordance with the applicable Governing Documents.

WEQ.020.3.1.4. Early Completion

Energy Efficiency Capacity Resource that is deliverable in a period in advance of the commitment period, for which it originally cleared, may participate in more near term prior commitment periods, subject to qualification requirements specified in the applicable Governing Documents.

WEQ.020.3.2. General Measurement and Verification Plan Requirements

A ~~document~~ General Measurement and Verification Plan that defines specific M&V methods for verifying the Demand Reduction Value associated with an Energy Efficiency resource is required of EERPs for qualification and participation in the a market program, market, product class [A5] or auction. The following general elements of M&V plans are not required [A6] or exhaustive. Detailed criteria in standards WEQ.020.3.3 to WEQ.020.3.12 shall constitute the required elements of an M&V plan as specified in the regional Governing Documents.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

- WEQ.020.3.2.1. Project Description**
Plan should include a project description that includes but is not limited to: a general description of the project location, facility types, measure types, estimated Demand Reduction Value, estimated cost of project (capital, operation and M&V) and savings.
- WEQ.020.3.2.2. Schedule**
Plan should include a project schedule that describes the timeline of a project build out for establishing qualification eligibility. Plans shall specify a schedule of M&V activity during project buildout and during resource delivery period.
- WEQ.020.3.2.3. Measure Description**
Plan should include measure level characteristics, including but not limited to: Demand Reduction Values based on metering, engineering estimates, or model simulation.
- WEQ.020.3.2.4. Equipment/Process Specification and Documentation**
Plan should include a detailed description of existing and new equipment and process characteristics sufficient to establish Energy Efficiency Baseline calculations.
- WEQ.020.3.2.5. Measurement and Verification Approach**
Plan should include justification of appropriate measurement methodology that includes but is not limited to the four International Performance M&V Protocol (IPMVP) methodologies at the measure level.
- WEQ.020.3.2.6. Methodological Assumptions**
Plan should include a detailed description of underlying assumptions for Energy Efficiency Baseline and post installation energy use.
- WEQ.020.3.2.7. M&V Activities: Energy Efficiency Baseline Period**
Plan should include a description of the period of time under which the Energy Efficiency Baseline will be quantified.
- WEQ.020.3.2.8. M&V Activities: Post Installation Period**
Plan should include a description of activities conducted post installation to document actual Demand Reduction Values.
- WEQ.020.3.2.9. Calculation and Adjustments**
Plan should include a detailed description of calculations used to establish Energy Efficiency Baseline and actual Demand Reduction Value.
- WEQ.020.3.2.10. Metering Plan**
Plan should include a detailed description of meter management, not limited to maintenance, meter data collection and processing.
- WEQ.020.3.2.11. Updated M&V Plan Components**
Plan should include a description of process by which M&V plan updates are made and documented.

WEQ.020.3.3. Post installation M&V Report Components



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

WEQ.020.3.3.1. Initial Post-Installation M&V Report:

During the course of project buildout, a post-installation report shall be submitted by the EERP to the ISO/RTO to document the verified reductions resulting from installed measures. The report shall be required at least annually.

WEQ.020.3.3.2. Updated Post-Installation M&V Report

An updated performance report shall be submitted by the EERP to the ISO/RTO. This shall to document achieved reductions performance of the resource for the purposes of establishing reduction values to be achieved carried into subsequent delivery periods. The report shall be required at least annually

WEQ.020.3.4. Performance Reporting

WEQ.020.3.4.1. Minimum Requirements

Performance reports shall be submitted by the EERP to the ISO/RTO to document achieved reductions during the delivery period. Report shall be required at least annually.

WEQ.020.3.5. M&V Supporting Documents

WEQ.020.3.5.1. Minimum Requirements

All reports, studies, specifications and other documents referenced by the EERP in the M&V Plan shall be current and applicable to the relevant measures.

WEQ.020.3.6. M&V Methodologies

WEQ.020.3.6.1. Acceptable Methodologies

Measurement and Verification methodologies used by the EERP shall be appropriate to the measure type and sensitivity requirements of the measurement techniques. Acceptable methods shall include:

WEQ.020.3.6.1.1. IPMVP¹ Option A: Partially Measured Retrofit Isolation/Stipulated Measurement.

IPMVP Option A may involve an equipment specific retrofit or replacement, new installation or a system level Measurement and Verification assessment. The approach is intended for measures where either performance factors (such as lighting wattage) or operational factors (such as operating hours) can be measured on a spot or short-term basis during baseline establishment and post-installation periods, or for measures for which a measured proxy variable can, in combination with well-

¹ "The International Performance Measurement and Verification Protocol (IPMVP) provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities." Efficiency Valuation Organization, 2010. <http://www.evo-world.org>. The IPMVP (EVO 10000 – 1:2010, © Efficiency Valuation Organization 2010), may be obtained from EVO-world.org and may be periodically updated.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

established algorithms and/or stipulated factors, can provide an accurate estimate of the Demand Reduction Value.

WEQ.020.3.6.1.2. IPMVP Option B: Retrofit Isolation/Metered Equipment.

IPMVP Option B involves a retrofit or system-level Measurement and Verification assessment. The approach is intended for retrofits with performance factors and operational factors that can be measured at the component or system level using interval electrical demand meters installed on the affected end-use.

WEQ.020.3.6.1.3. IPMVP Option C: Whole facility/Regression.

IPMVP Option C estimates Demand Reduction Values by analyzing the overall energy use in a facility and identifying the impact of the implemented measure on the total building or facility energy use patterns. The evaluation of whole-building or facility level metered data is completed using techniques ranging from simple billing comparison to multivariate regression analysis.

WEQ.020.3.6.1.4. IPMVP Option D: Calibrated Simulation.

IPMVP Option D involves calibrated computer simulation models of component or whole building demand and energy usage to determine measure demand and energy savings. Engineering simulation models (such as DOE-2) can model both residential buildings (homes, apartments and condominiums) as well as more complex commercial buildings. Operational simulations can be used for industrial processes that take into account the specifics of the process addressed by the energy efficiency actions. Both engineering and operational simulations are made more powerful by calibrating these methods to actual MW and MWh data from the site or process being examined, even if these data are available for a monitoring period shorter than or different from the required performance hours. Short-term metering and monitoring are methods that produce data that can be used to adjust engineering simulations. This approach is generally termed "calibrated engineering simulations." Linking simulation inputs to baseline and post-installation conditions completes the calibration. Characterizing baseline and post-installation conditions may involve metering performance and operating factors both before and after the retrofit. Long-term whole-building energy use data may be used to calibrate the simulations.

WEQ.020.3.6.1.5. Alternative Acceptable M&V Methodologies.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Acceptable methods for the EERp M&V methodologies are not limited to the ~~The IPMVP Options~~. The EERP may propose alternative or supplemental M&V methodologies not listed in the Section above. EERPs proposing alternative methodologies shall demonstrate that the alternative methodologies will be equivalent to one of the accepted methodologies described above or equally appropriate to the measure type and sensitivity requirements of the measurement techniques EERP will, and demonstrate justifiable need for deviation from the acceptable methodologies described in the Section above based on unique Project characteristics or requirements, equivalence of methodological approach, or appropriateness to the measure type.

WEQ.020.3.7. Energy Efficiency Baseline Conditions

WEQ.020.3.7.1. Energy Efficiency Baseline Criteria for all Energy Efficiency

Energy Efficiency Baseline conditions used by the EERP shall reflect the conditions under which new energy efficient equipment or processes are installed to provide a service function. The four conditions shall include:

- WEQ.020.3.7.1.1. Replacement of functional equipment still within its current useful life.
- WEQ.020.3.7.1.2. Replacement of functional equipment beyond its current useful life.
- WEQ.020.3.7.1.3. Unplanned replacement or failed equipment.
- WEQ.020.3.7.1.4. New construction.

WEQ.020.3.7.2. The standard Energy Efficiency Baseline used by the EERP shall be the nameplate rating of the equipment meeting the level of efficiency required by applicable state code, federal product efficiency standard, or standard practice, whichever is most stringent. The standard Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.3, 020.3.7.1.4. The standard Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.2, unless otherwise specified by the Governing Documents.

WEQ.020.3.7.3. The current load Energy Efficiency Baseline used by the EERP shall be the existing load of operating equipment across the performance hours. The current load Energy Efficiency Baseline is determined at the time of commitment in the case of forward commitment or at the time of installation as set forth in the Governing Documents. Use of current load Energy Efficiency Baseline shall be applied to criteria 020.3.7.1.1. Use of current load Energy Efficiency Baseline may be applied to criteria 020.3.7.1.2, if specified by the Governing Documents.

WEQ.020.3.8. Statistical Significance



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

- WEQ.020.3.8.1. General Requirements**
M&V of Energy Efficiency may include measurement methodologies requiring statistical estimation techniques for Demand Reduction Values. In the event that statistical methods are required, the following requirements for statistical significance shall be met.
- WEQ.020.3.8.2. Sample Size**
Specification for statistical error and precision in sampling. The use of a bi-directional t-test (two-tailed) may be required of the EERP where performance reporting may result in both performance bonuses and or penalties. Sample Error and Precision used by the EERP shall be a minimum of 80/10 using a two-tailed test or 90/10 using a one-tailed test subject to the Governing Documents. Compliance with this criterion shall be applicable to the overall Demand Reduction Value of the Energy Efficiency Capacity Resource.
- WEQ.020.3.8.3. Sample Size Calculation**
The sample size used by the EERP requires the use of a population coefficient of variation (c.v.) which may not be known at the time of sample design. The sample size may be established using an estimate of the c.v. based on the following criteria. The estimated c.v. for homogeneous populations used by the EERP shall be 0.5 and 1.0 for heterogeneous populations.
- WEQ.020.3.8.4. Sample Size Recalibration**
Population sampling error and precision used by the EERP shall be recalibrated using a measured c.v.. The sample c.v. used by the EERP shall be calculated from the measured sample population and applied to the reported estimate of sampling error and precision.
- WEQ.020.3.8.5. Sampling Over Zones**
Sampling used by the EERP over heterogeneous zones shall control for bias and meet the overall error and precision requirements.
- WEQ.020.3.8.6. Sample Bias Control**
Types of potential sampling bias control to be used by the EERP include, but are not limited to: (a) construct validity; (b) sampling frame versus population; (c) selection bias (for a sample and for a census attempt where not all sites within the census received usable data); (d) non-response bias; (e) error in measuring variables; (f) sample homogeneity relative to project (external validity); (g) outlier data points; and (h) missing data. Sampling plans submitted by the EERP shall demonstrate and document that population sampling bias is minimized.
- WEQ.020.3.9. Nominated Energy Efficiency Value Calculations/Demand Reduction Value Calculations**
- WEQ.020.3.9.1. Nominated Energy Efficiency Values**
Calculation of Demand Reduction Values for equipment, measures and practices, including weather sensitive loads, may include estimated modifiers or variables.



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Estimated modifiers and variables used by the EERP in the calculation of the Demand Reduction Value shall include but are not limited to: coincidence factor, realization rate, equipment failure rate, and normalization method for weather sensitive loads.

WEQ.020.3.9.2.

Reduction in the Final Nominated Value

If the reported Demand Reduction Value does not meet the precision standard, the final performance value may be reduced.

~~Governing Documents shall dictate the calculation of further reductions to reported Demand Reduction Values[A8].~~

WEQ.020.3.10. Measurement and Monitoring

WEQ.020.3.10.1.

Measurement and Monitoring Requirements

Measurement and monitoring involve the collection of data ~~for~~ various types from equipment, measures and practices. Monitoring parameters and variables shall be used in the calculation of the Demand Reduction Value.

The EERP shall document all monitoring parameters and variables measured for use in calculation of the Demand Reduction Value.

All monitoring parameters used in the calculation of the Demand Reduction Value shall be applicable to the category of equipment, measure or practice, including but not limited to: heating ventilating and air conditioning (HVAC) equipment, HVAC controls, building envelopes, interior/exterior lighting, major electric consuming equipment and weather sensitive loads.

WEQ.020.3.10.2.

Monitoring Frequency and Duration

Monitoring frequency and duration of sampling must be controlled by the EERP so as to reduce measurement error ~~and biases~~.

The frequency and duration of measurement and monitoring used by the EERP shall be sufficient to ensure accurate representation of the Demand Reduction Value during the performance hours or minimum reporting interval, whichever is less, consistent with statistical significance requirements in section WEQ.020.3.8.

WEQ.020.3.11. Measurement Equipment Specification

WEQ.020.3.11.1.

Measurement Equipment Requirements

Measurement equipment devices used by the EERP shall have the following technical requirements:

WEQ.020.3.11.1.1. All solid-state measurement, monitoring and data recording equipment shall meet or exceed the relevant standards set by the American National Standard Institute ("ANSI") or equivalent standard for the equipment.

WEQ.020.3.11.1.2. Measurement, monitoring and data recording equipment that is directly measuring watt-hour, volt-hour, volt-ampere-hours, reactive volt-ampere-



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For Quadrant: **Wholesale Electric Quadrants**

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Request Title: **Business Practice Standards for Measurement and Verification of Energy Efficiency Products**

hour, and the associated demand components should conform to ANSI or equivalent standards for the M&V equipment.

- WEQ.020.3.11.1.3. Instruments or transducers for the analog or digital measurement of volt, volts-squared, amperes, amperes-squared, phase angle, volt-amperes, watts, and reactive volt-amperes should conform to ANSI or equivalent standards for the equipment.
- WEQ.020.3.11.1.4. Data recorders that are recording representative data pulses from measurement and monitoring devices shall use a pulse rate within the resolution capabilities of the recorder.
- WEQ.020.3.11.1.5. All measurement, monitoring and data recording equipment installed on electric circuits with significant harmonics shall meet the relevant standards provided by the Institute of Electrical and Electronics Engineers ("IEEE").
- WEQ.020.3.11.1.6. Any measurement or monitoring equipment that directly measures electrical demand in MWatts shall be a true Root-Mean Square ("RMS") measurement device with an accuracy of at least 98% and error no less than $\pm 2\%$.
- WEQ.020.3.11.1.7. Any measurement or monitoring equipment that directly measures electrical demand from three-phase end use devices or systems shall be installed such that measurements are taken on all three-phases to account for any phase imbalance or an equivalent method that can measure electrical demand using two phases.
- WEQ.020.3.11.1.8. Any measurement or monitoring equipment that directly measures electrical demand on circuits with significant harmonics shall have a digital sampling rate of at least 2.6 kilohertz (kHz) as defined in the relevant IEEE Standards.
- WEQ.020.3.11.1.9. Any measurement or monitoring equipment for proxy variables that does not directly measure electrical demand, including but not limited to voltage, current, temperature, flow rates and operating hours, shall have an accuracy of at least 98% and error not to exceed $\pm 2\%$, unless otherwise provided in the Governing Documents.
- WEQ.020.3.11.1.10. Any measurement or monitoring equipment of current amps and nominal voltage used to calculate electrical demand shall include the power factor of the end-uses in the demand MW calculations.
- WEQ.020.3.11.1.11. Data recorders shall be collect and stamp their measurements synchronized in real time, within an accuracy-uncertainty of no more than ± 2 minutes per month, with the National Institute of Standards and Technology ("NIST").
- WEQ.020.3.11.1.12. All measurement, monitoring and data recording equipment shall be calibrated by the EERP, independent calibration contractor, or designee, to meet or exceed the IPMVP, the US DOE Federal Energy Management



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: **Wholesale Electric Quadrants**

Requesters: **DSM/EE Subcommittee**

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Request Title: **Business Practice Standards for Measurement and Verification of Energy Efficiency Products**

Program ("FEMP") M&V guidelines,² applicable American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE") standards, NIST, or equivalent standard for the equipment.

WEQ.020.3.11.1.13. All measurement, monitoring and data logging equipment shall be maintained in such a way as to meet or exceed industry and manufacturer maintenance standards.

WEQ.020.3.11.1.14. Documentation on all measurement, monitoring and data recording equipment maintenance and calibration activities shall be maintained in accordance with applicable regional record retention policies as specified in Governing Documents.

WEQ.020.3.11.1.15. Interval metering devices that sample continuously and integrate values shall collect and store their data at a cumulative frequency of one hour or less. Interval meter devices that sample using snapshots shall collect and store integrated electricity usage data at a frequency of 15 minutes or less.

WEQ.020.3.12. Data Validation

WEQ.020.3.12.1. All measured data used in the Demand Reduction Value calculations shall be validated using standard Validation, Editing, and Estimation (VEE) procedures (NEED REFERENCE ON STANDARDS). For Projects involving an individual facility or energy consuming equipment, the following validation checks on any interval data from an individual facility shall be made by the EERP:

WEQ.020.3.12.1.1. Time Check: validate that the measurement devices time clock is within $\pm$ two minutes of the true time as defined by NIST.

WEQ.020.3.12.1.2. Sum Check: validate that the difference between the sum of the values recorded over the intervals and the value recorded by the meter over the same time-period is within $\pm$ 2%. This check may be performed on either usage or pulse data, provided the data scaling is consistent throughout the period.

WEQ.020.3.12.1.3. High/Low Check: establish minimum and maximum expected values for each Demand Asset, facility, or measure. The minimum and maximum values shall be based on equipment ratings or historical equipment and/or facility usage data. All interval data that is greater than the maximum expected value or less than the minimum expected value shall be identified. Any such interval data shall be deemed to fail validation.

WEQ.020.3.12.1.4. Zero Value Check: identify any interval data with a value equal to zero. Verification of whether the zero value is the correct value for that interval shall be made. If it is determined that the zero value is incorrect, substitution of a corrected or estimated non-zero value for the zero value

² M&V Guidelines: Measurement & Verification for Federal Energy Projects Version 3.0, US DOE Federal Energy Management Program, April 2008

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE****For Quadrant: Wholesale Electric Quadrants****Requesters: DSM/EE Subcommittee****Request No.: 2010 - WEQ AP Item 4(d)****Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products**

may be allowed. Under no circumstances shall a zero value be substituted for missing interval data.

WEQ.020.3.12.1.5. The EERP shall identify all estimated data used in the Demand Reduction Value calculations, as well as the methodology used to develop the estimate.

WEQ.020.3.12.1.6. The EERP shall classify all data that have passed validation and used in the Demand Reduction Value calculations as either: (i) actual data, (ii) estimated data or (iii) missing data. The data classification shall be stored along with the data values in the data retention and management system prescribed by the System Operator.

DRAFT



RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: Wholesale Electric Quadrants

Requesters: DSM/EE Subcommittee

Request No.: 2010 - WEQ AP Item 4(d)

Request Title: Business Practice Standards for Measurement and Verification of Energy Efficiency Products

4. SUPPORTING DOCUMENTATION

a. Description of Request:

WEQ 2010 Annual Plan Item 4 (d)

Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.

b. Description of Recommendation:

The recommended Business Practice Standards support the measurement and verification characteristics of Energy Efficiency products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

c. Business Purpose:

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

Standards for M&V of energy efficiency should consider a balance in between rigor and precision, which effects measurement investment cost [A10], and the consequences for error, which effects settlements and compensation. M&V activities are commonly decided by the entity making the efficiency investment and are guided by the an assessment of costs and benefits, product specification and business model used. As such, methodologies for M&V have varying degrees of rigor or quantitative precision and accuracy, depending on the consequences of error. A standard that can result in accurate valuation of implemented measures and practices, which is flexible, consistent, and cost effective, will be most useful to the industry and the public good. The standards reflecting the minimum requirement for M&V of Energy Efficiency should build on industry and public experience as well as accommodate evolutionary technological changes to the application of engineering, science and economics that are the basis of energy efficiency efforts.

Late Comments Submitted by G. Fry, Northeast Utilities
Recommendations: WEQ 2010 AP Item 4(a) and 4(b)
WEQ 2010 AP Item 4(d)

From: Gene Fry
To: Galik, Cory
Sent: Fri Jan 21 09:36:44 2011
Subject: NAESB DR & EE Draft Standards Comments

Cory,
I neglected to file the following comments on behalf of Northeast Utilities by the stated time. They support the standards.

"NAESB has drafted two Business Practice Standards. They are available for comment through January 14, 2011. One is for Demand Response (DR) and DSM-EE programs (DR Phase 2), almost all about DR. The second is for Measurement and Verification (M&V) of Energy Efficiency (EE) Products.

Northeast Utilities supports these draft Standards, once they are revised, where necessary, to define target accuracy to within X% instead of no more than X%, as stated in our initial comments on January 4, 2011.

The major benefit of the draft Standards is that they give much useful guidance for System Operators who will soon establish rules so that DR and EE products can bid into capacity markets. At the same time, they are consistent with rules now in use by System Operators that already use DR and EE products in capacity markets. That is, they do no harm to current practice. Finally, they provide that in the event of conflict between these Standards and System Operator rules, the latter prevail. That is good.

They provide numerical guidance in a few places. In the EE M&V Standard, the summary of methods is very useful, especially for newcomers. The statistical precision and default assumptions for coefficient of variation are reasonable and consistent with general practice in our region and for our System Operator.

For the DR Standard, the definitions are quite useful and consistent with standard practice. The standards for meter accuracy and reading intervals are reasonable and consistent with standard practice. We note that the Standard's permitted telemetry interval is shorter than our System Operator's requirement. But the overall wording of the Standard does not require a rule change; it merely suggests one. The number of days until reporting, the notification period, and the ramp time deadline are all reasonable and consistent with our System Operator's rules."

Gene Fry
Northeast Utilities
Conservation & Load Management
Program Evaluation

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**RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
ON ~~FEBRUARY 10, 2009~~**

December 2, 2008

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b) ~~2008 AP Item 5(a)~~

Review and develop business practice standards to support DR and DSM-EE programs

1. RECOMMENDED ACTION:

~~X~~ Accept as requested
~~X~~ Accept as modified below
 Decline

**EFFECT OF EC VOTE TO ACCEPT
RECOMMENDED ACTION:**

 X Change to Existing Practice
 Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

~~X~~ Initiation
 X Modification
 Interpretation
 Withdrawal

 X Principle
 X Definition
 X Business Practice Standard
 X Document
 Data Element
 Code Value
 X12 Implementation Guide
 X Business Process Documentation

Per Recommendation:

 X Initiation
 X Modification
 Interpretation
 Withdrawal

 X Principle
 X Definition
 X Business Practice Standard
 X Document
 Data Element
 Code Value
 X12 Implementation Guide
 X Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The standards support the measurement and verification characteristics of Demand Response products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Demand Response products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this draft is not intended to replace ~~applicable tariff, market rules governing~~ Governing dDocuments, operating procedures, protocols or manuals, for wholesale Demand Response, and in the event of a conflict, ~~the latter documents~~ the Governing Documents shall have precedence ~~over these standards~~.

Contact information: Eric Winkler, Ph.D., ISO New England, 413-540-4513, ewinkler@iso-ne.com

WEQ-~~015 Business~~ 015 Business Practices for Wholesale Electricity Demand Response Programs - Please see attached documentation.



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
ON FEBRUARY 10, 2009

December 2, 2008

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b) ~~2008 AP Item 5(a)~~

Review and develop business practice standards to support DR and DSM-EE programs

4. SUPPORTING DOCUMENTATION

a. Description of Request:

~~Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.~~

b. Description of Recommendation:

~~For the first second phase, develop business practices to support provide more clarity and granularity for the measurement and verification aspects of the wholesale market demand response programs.~~

c. Business Purpose:

~~The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.~~

d. Commentary/Rationale of Subcommittee(s)/Task Force(s):

- ~~April 11, 2007:~~ Several representatives of the NAESB WEQ, REQ, and RGQ as well as representatives of the US Department of Energy, US Environmental Protection Agency, FERC, and other industry experts met at the Department of Energy offices in Washington, D.C. to discuss the NAESB effort to draft business practices for Demand Side Management and Energy Efficiency. Ongoing Energy Efficiency and DSM projects and programs by other groups (such as NAPEE) were reviewed by the meeting attendees. The following resolution outlines the scope of the initial effort by NAESB to draft business practice standards for these topics: It was decided that NAESB should begin its standards development focus on measurement and verification of energy savings and peak demand reduction from both a wholesale and retail electric market perspective. A future schedule of meetings for DSM and Energy Efficiency should be posted on the NAESB website shortly.
- ~~May 24, 2007:~~ 75 NAESB members, FERC, DOE, EEL, ISO and State regulatory personnel, experts in DSM and energy markets participants (22% more than the first meeting) met in person and by conference telephone at NAESB headquarters in Houston to refine the scope of Phase I activities, agreeing on a specific list of tasks and assigning subgroups of volunteers to work on each task. At this meeting, no less than 28 individuals spoke to the group.
- ~~June 18, 2007:~~ 51 NAESB members, FERC, DOE, EEL, ISO and State regulatory personnel, experts in DSM and energy markets participants met in person and by conference telephone at BGE offices in Baltimore to further refine the scope of Phase I activities by reviewing the initial task list and revising it with more detailed deliverable requirements and dates, and with identification of base documents to support completing each task.
- ~~July 26, 2007:~~ 46 NAESB members, FERC, DOE, EEL, ISO and State regulatory personnel, experts in DSM and energy markets participants met in person and by conference telephone at AGA offices in Washington DC to present deliverables of existing demand response measurement and verification protocols and a list of 41 possible topics and subtopics for NAESB model business practices. The task force reviewed all 41 possibilities, deciding whether to draft MBPs and which ones can be grouped together.



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Review and develop business practice standards to support DR and DSM-EE programs

- ~~September 14, 2007:~~ The results of the meeting including possible standards text were sent out for comment including notes, considerations and possible standards text. Comments were requested on each of the nine standards development areas including whether the remarks were directed to wholesale or retail markets, pre program evaluation or post implementation evaluation, or to DSM or EE projects.
- ~~September 25, 2007:~~ A DSM EE meeting was held in Austin, Texas hosted by ERCOT. The purpose of the meeting was to review the comments, determine the level of progress made towards the task list and determine if adjustments to the task, focus or schedule were needed. When reviewing the comments it was determined to focus in five areas specific to demand response programs, and develop business practice standards that would prove helpful — (1) DR programs administered by ISOs and RTOS in the wholesale markets, (2) DR programs administered by utilities in wholesale markets, (3) DR programs administered by utilities in the retail markets, (4) a glossary to support the DR programs, and (5) a preamble to put the business practice standards in context. To focus on the DR programs, each of the three areas outlined will develop a matrix that describes the aspects of the DR programs in effect today, planned, or has been in effect in the past.
- ~~November 6, 2007:~~ Several of the NAESB leadership met with Commissioners Kerr and Ervin of NC to gain further understanding of expectations for DSM EE NAESB activity for electricity for the retail markets.
- ~~November 11, 2007:~~ NAESB participated in a panel on DSM EE at the NARUC Annual Meeting in Anaheim.
- ~~November 30, 2007:~~ Meeting hosted by Dominion in Richmond. During the meeting, each of the five groups described the progress made and plans to date. Drafts of the three matrices were reviewed, as was a draft glossary and outline for the preamble. It is possible that the two wholesale matrices will be combined. The calendar for 2008 was also set. The next meeting is scheduled for January 23 in Baltimore hosted by BGE.
- ~~December 3, 2007:~~ A meeting was held with Commissioner Mason of Ohio to gain further understanding of expectations for DSM EE NAESB activity for natural gas for the retail markets.
- ~~January 23, 2008:~~ The group met in Baltimore to review progress on the two matrices, the preamble and the glossary. The wholesale matrix for DR programs administered by ISOs and RTOs was reviewed. Data is being placed in five separate categories: Initial Testing and Auditing, Ongoing Testing and Auditing, Triggering, Construction, Statistical Analysis, Performance and Baselines. The matrix for retail DR programs is lagging but several companies have provided or agreed to provide data including BGE, Dominion, ConEd, Alabama Power and ComVerge. Procedures for how to collect the data was discussed with both interviews online and distributed surveys discussed. Both the preamble and glossary while first drafts are available are dependent on the work of the matrices and cannot be further developed until after more progress has been made on the matrices.
- ~~March 28, 2008:~~ The group met in Houston to review progress on the two matrices. The wholesale matrix for DR programs administered by ISOs and RTOs was reviewed. The matrix had expanded significantly to provide for more comparability for responses. 45 DR programs have been identified and the data is now being verified. A template for the type of standards to be expected from this effort was reviewed. The retail matrix now has additional data and several interviews were conducted online, with the conclusion that it is the preferred way to gather data.



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
ON FEBRUARY 10, 2009

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Review and develop business practice standards to support DR and DSM-EE programs

~~The retail group is to set up a face to face meeting in May to review the matrix and make changes before sending it out to utilities for interviews.~~

- ~~• **May 30, 2008:** The group met in Holyoke to continue review progress on the two matrices. The wholesale matrix for DR programs administered by ISOs and RTOs was reviewed. The matrix had expanded significantly to provide for more comparability for responses. With the 45 DR programs identified, the group is now consolidating the data to higher levels from the more specific items collected. With the consolidation, the business practices should be drafted. The outline for the business practices has been prepared. The retail matrix now has contributions from 11 DR programs and the matrix structure is being validated against flow charts of the programs. Once the matrix structure is validated, online interviews will be held. It was determined to concentrate on dispatchable DR programs first.~~
- ~~• **July 30, 2008:** The group met in Carmel, Indiana hosted by ACES Power to review the progress made in the two efforts. With the 45 DR programs identified, the wholesale group has consolidated the data to higher levels and draft language is being developed around four product types, energy, capacity, regulation and reserves which incorporate information from various ISO/RTOs, as well as other entities. For the retail effort, the group is relying on work from AEIC regarding process flow and applying that flow to DR programs in place. From the flows, draft standards are being prepared. Once the draft standards are prepared, efforts will be to collect through interviews information from other utilities, geographically diverse and administering programs different from those already documented. Through the interviews it is expected that we would validate both the matrix and the draft standards. The retail group is initially focusing on dispatchable DR programs. Coordination is also underway with NERC on the development of a DR survey and with the AEIC. Work will soon begin with both groups to include the glossary and the preamble text.~~
- ~~• **October 3, 2008:** The group met in Austin, Texas hosted by ERCOT to review progress made in development of M&V standards for retail and wholesale DR programs. A recommendation of business practice standards for the wholesale market was reviewed by the group. After discussion, it was the intent that the recommendation be distributed for a two week informal comment period. The comments would be discussed at the December meeting including any suggested changes. After discussion on December 2, the recommendation will either be voted out of subcommittee and would proceed to a formal comment period and Executive Committee consideration, or the recommendation would continue to be modified by the subcommittee through another round of informal comments. For retail, the subgroup has collected detailed data on some DR programs underway. After review of the wholesale effort, it was discussed that the retail subgroup would hold a two day session to determine whether to proceed at the level defined in the wholesale recommendation, or proceed to define more prescriptive standards.~~
- ~~• **December 2, 2008:** The group met in Birmingham hosted by Alabama Power to review comments and vote on the recommendation for Wholesale Electric Quadrant standards for M&V characteristics for DR products and services. After considerable discussion, and several votes to amend the recommendation the recommendation with the amendments put forward by the ISOs and RTOs and three separate amendments addressing titling, applicability, and additional specificity for the definition of Baseline, the motion to adopt the revised recommendation was approved with significant support with 86.5 percent approval by balanced vote. All WEQ segments were present and voting. The revised recommendation will go out for a thirty day~~



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ON FEBRUARY 10, 2009

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Review and develop business practice standards to support DR and DSM-EE programs

~~comment period and is now considered a work product of the WEQ EC. The abbreviated update report was given for the Retail market effort. The Retail group plans to use the WEQ revised recommendation as a foundation for their work.~~

~~e. Additional Background documentation~~

- ~~• DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>~~
- ~~• Presentation of the wholesale recommendation given on October 3: ISO presentation – <http://www.naesb.org/pdf3/dsmee100308w7.pdf>~~
- ~~• Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>~~

~~[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]~~



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
~~ON FEBRUARY 10, 2009~~

~~December 2, 2008~~

Requesters: DSM-EE Subcommittee

Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~ 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

Business Practices for Measurement and Verification of Wholesale Electricity Demand Response

Introduction

1. Measurement and Verification Standards

These Measurement and Verification (M&V) standards are intended to facilitate Demand Response in wholesale electricity markets by providing a common framework for the following:

- Transparency: accessible and understandable M&V requirements for Demand Response products;



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
~~ON FEBRUARY 10, 2009~~

~~December 2, 2008~~

Requesters: DSM-EE Subcommittee

Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~ 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

- Accountability: criteria that will enable the System Operator to accurately measure performance of Demand Response resources; and
- Consistency: standards applicable across all wholesale electricity markets.

~~2.2.~~ Applicability of Measurement and Verification Standards:

ISO/RTO Administered Markets

These standards are applicable only to Independent System Operator-Regional Transmission Organization administered markets in North America. The standards reflect business practices applicable to measurement and verification of wholesale market Demand Response services including the following four product/service categories¹:

Energy Service

A type of Demand Response service in which Demand Resources delivers a quantity of electricity measured in MWhs.

Capacity Service

A type of Demand Response service in which Demand Resources are obligated ~~to~~ as a means of controlling Demand over a defined period of time measured in MW.

Reserve Service

A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements ~~that are~~ established to meet applicable reliability standards.

Regulation Service

A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.

These standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services. ~~In these regards,~~ System Operators are not required to offer these Services and may not currently offer each of these Services. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section.

¹ The terms Product(s) or Service(s) may be used interchangeably in these standards.



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~~For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.~~

Tariff Conflict and NERC Standards:

In the event of a conflict between these business practices and ~~the~~ System Operator's ~~Tariffs, market rules, operating procedures, protocols or manuals, the Tariff, market rules, operating procedures, protocols or manuals~~Governing Documents, the Governing ~~shall~~Documents shall have precedence. Terms defined in the Definition of Terms do not modify or supersede ~~market rule or tariff~~definitions in the Governing Documents that apply to the compensation, design, operation, or use of Demand Response services. Additionally, all entities supplying Demand Response Services shall comply with applicable NERC reliability standards.

Non-ISO/RTO Markets:

~~These Wholesale Demand Response~~ standards do not apply in markets administered by non-ISO/RTOs. ~~Wholesale Demand Responsesuch~~ standards ~~applicable to non-ISO/RTO market~~ will be developed when required.



**RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
ON FEBRUARY 10, 2009**

December 2, 2008

Requesters: DSM-EE Subcommittee

Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~ 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

3.3. Overview of the Standards

These M&V standards establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value. ~~delivered. Standards developed may include e~~Commonalities may be found among ~~product types~~the standards for the four product categories outlined in section 2 above. The following ~~outline of standards is~~categories are applicable to each of these the four types of Demand Response products categories.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation



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ON FEBRUARY 10, 2009

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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value ~~provided by~~ corresponding to a specific Demand Resource. The standards include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each of the four types of Demand Response services. ~~The table below provides an outline of the applicable~~ eCriteria for performance evaluation methodologies ~~apply to baseline information, Demand Response even information and special processing, as shown below.~~

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These standards ~~provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services; do they do~~ not specify detailed characteristics of performance evaluation methodologies, ~~but rather provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services.~~ The System Operator may offer multiple performance evaluation models and may assign a Demand Resource to a model based on the Load characteristics of the Demand Resource's Load or allow the Demand Resource provider to choose a performance evaluation model consistent with its load characteristics from a predefined list. The following methodology types are applicable to wholesale Demand Response Services:

Maximum Base Load: A performance evaluation methodology based solely on ~~the ability of a~~ Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.

Meter Before / Meter After: A performance evaluation methodology ~~wherein which~~ electricity Demand over a prescribed period of time prior to resource Deployment is compared to similar readings during the Sustained Response Period.

Baseline Type-I: A Baseline performance evaluation methodology based on ~~a Demand Resource's~~ historical interval meter data ~~for a Demand Resource that which~~ may also include other ~~variables~~ parameters such as weather and calendar data.



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Baseline Type-II: A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the revenue meter for the Demand Resource's revenue meter.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	
Metering Generator Output	✓	✓	✓	✓



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WEQ-~~000-X2~~ ~~3~~ 3. DEFINITION OF TERMS

WEQ.0.3.1. Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

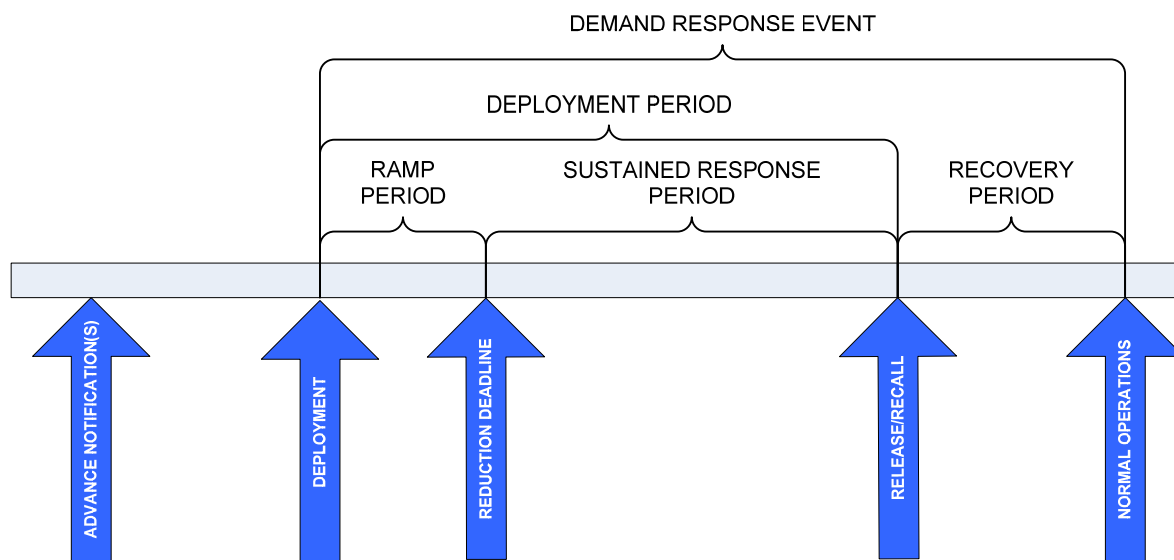


Figure 1. Timing of a Demand Response Event~~WEQ.0.3.2.~~

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

WEQ.0.3.3. After-the-Fact Metering: Interval meter data ~~used to measure Demand Response, separate from Telemetry that is used to measure Demand Response.~~ May not apply to Demand Resources under Baseline Type II (Non-Interval Meter).

WEQ.0.3.4. Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

WEQ.0.3.5. Reserved

WEQ.0.3.6. Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (~~Baseline Type~~ Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



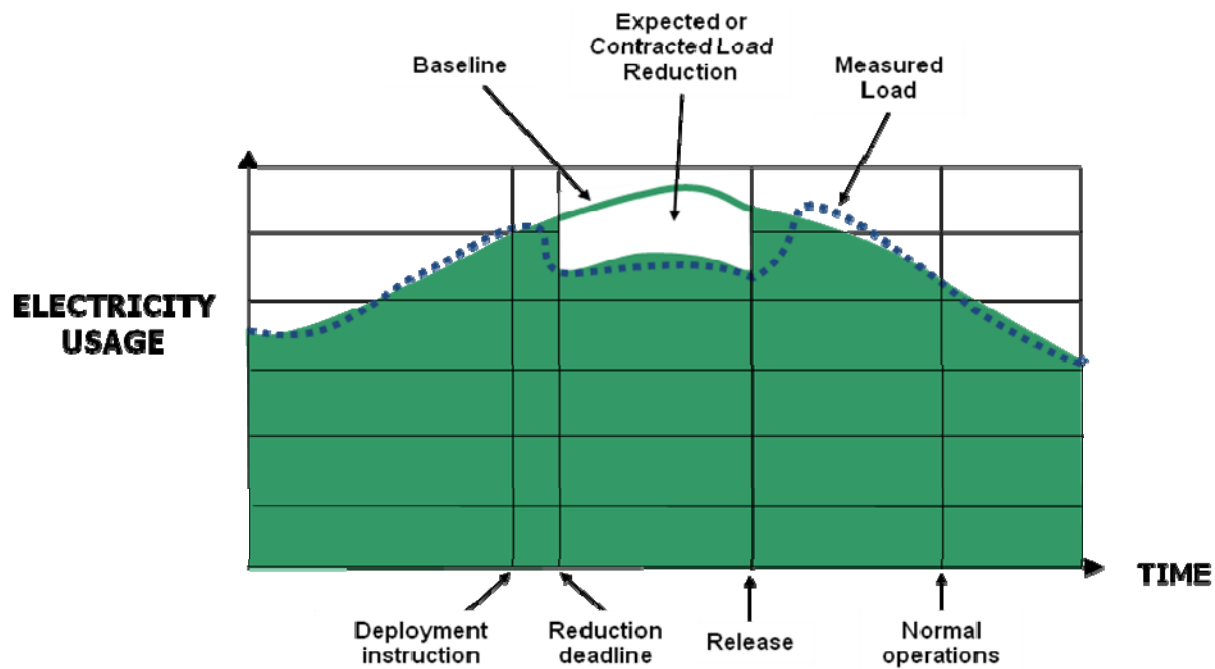
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WEQ.0.3.7.



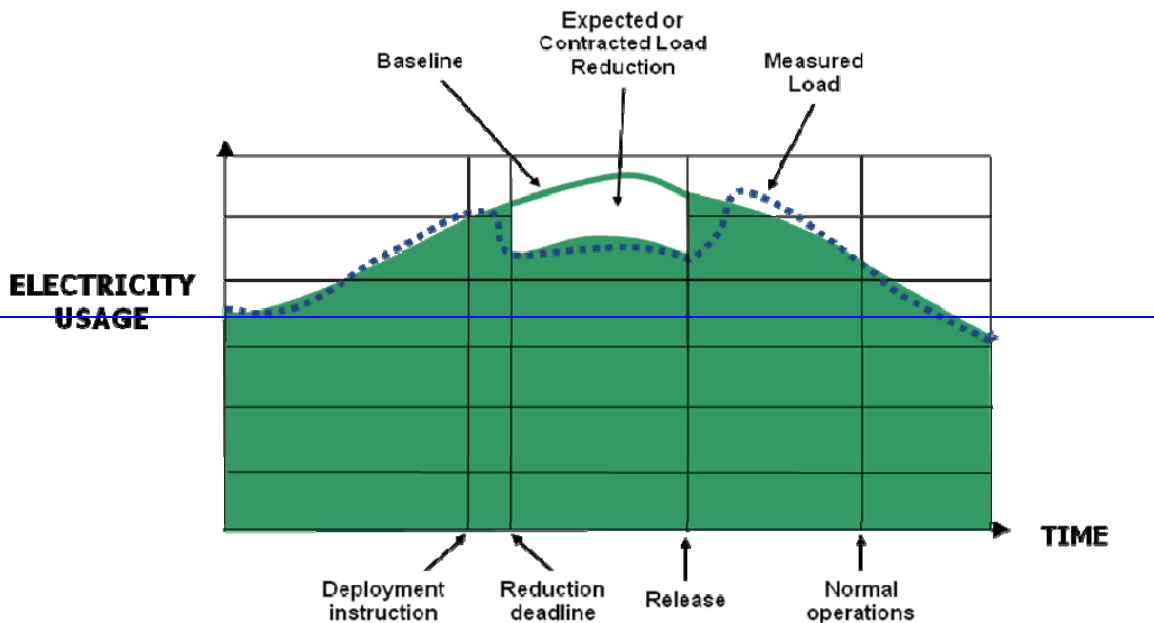
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Figure

2. Illustration of Baseline Concept.

WEQ.0.3.8. Baseline Adjustment: A modification to ~~the~~ Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

WEQ.0.3.9. Baseline Type-I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter ~~data which~~data, which may also include other variables such as weather and calendar data.

WEQ.0.3.10. Baseline Type-II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

WEQ.0.3.11. Baseline Window: A period of time preceding and optionally following a Demand Response Event over which ~~the~~ electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.

WEQ.0.3.12. Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.

WEQ.0.3.13. Reserved



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~~WEQ.0.3.14. Reserved~~

~~WEQ.0.3.15. Demand:~~ The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).

~~WEQ.0.3.16. Demand Reduction Value:~~ Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.

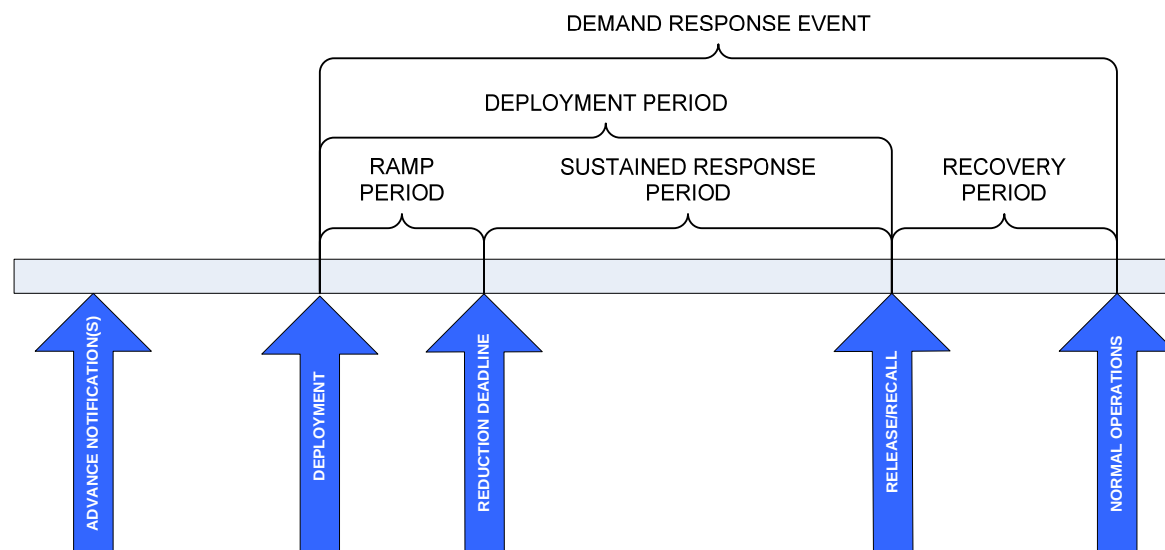
~~WEQ.0.3.17. Demand Resource:~~ A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response. ~~measurably and verifiably providing Demand Response.~~

~~WEQ.0.3.18. Demand Resource Availability:~~ The potential Demand Reduction Value available to be dispatched for a Demand Response Event.

~~WEQ.0.3.19. Demand Response:~~ A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

~~WEQ.0.3.20. Demand Response Event:~~ A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be not applicable to all Demand Response products or services.

~~WEQ.0.3.21.~~



~~WEQ.0.3.22. Demand Response Provider:~~ The entity that is responsible for delivering Demand Response.



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~~WEQ.0.3.23.~~ **Deployment:** The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.

~~WEQ.0.3.24.~~ **Deployment Period:** The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

~~WEQ.0.3.25.~~ Reserved

~~WEQ.0.3.26.~~ Reserved

~~WEQ.0.3.27.~~ Reserved

~~WEQ.0.3.28.~~ **Energy Service:** A type of Demand Response service in which a Demand Resource provides ~~delivers~~ a quantity of electricity measured in MWhs.

~~WEQ.0.3.29.~~ Reserved

~~WEQ.0.3.30.~~ Reserved

~~WEQ.0.3.31.~~ **Reserved—Governing Documents:** Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

~~WEQ.0.3.32.~~ Reserved

~~WEQ.0.3.33.~~ **Highly-Variable Load:** A Load with a fluctuating or unpredictable electricity usage pattern.

~~WEQ.0.3.34.~~ **Load:** An end-use device or customer that receives power from the electric system (NERC Definition).



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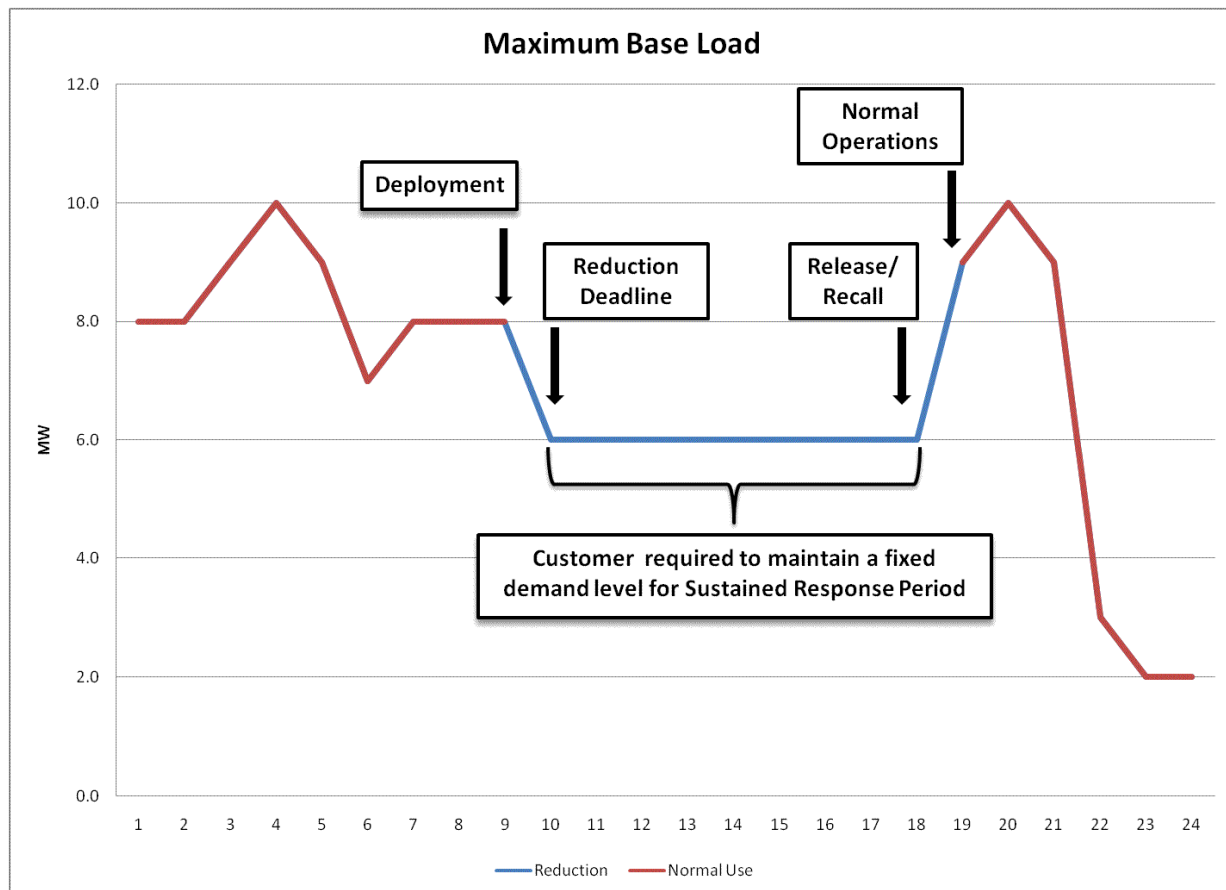
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WEQ.0.3.35. Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.

WEQ.0.3.36.





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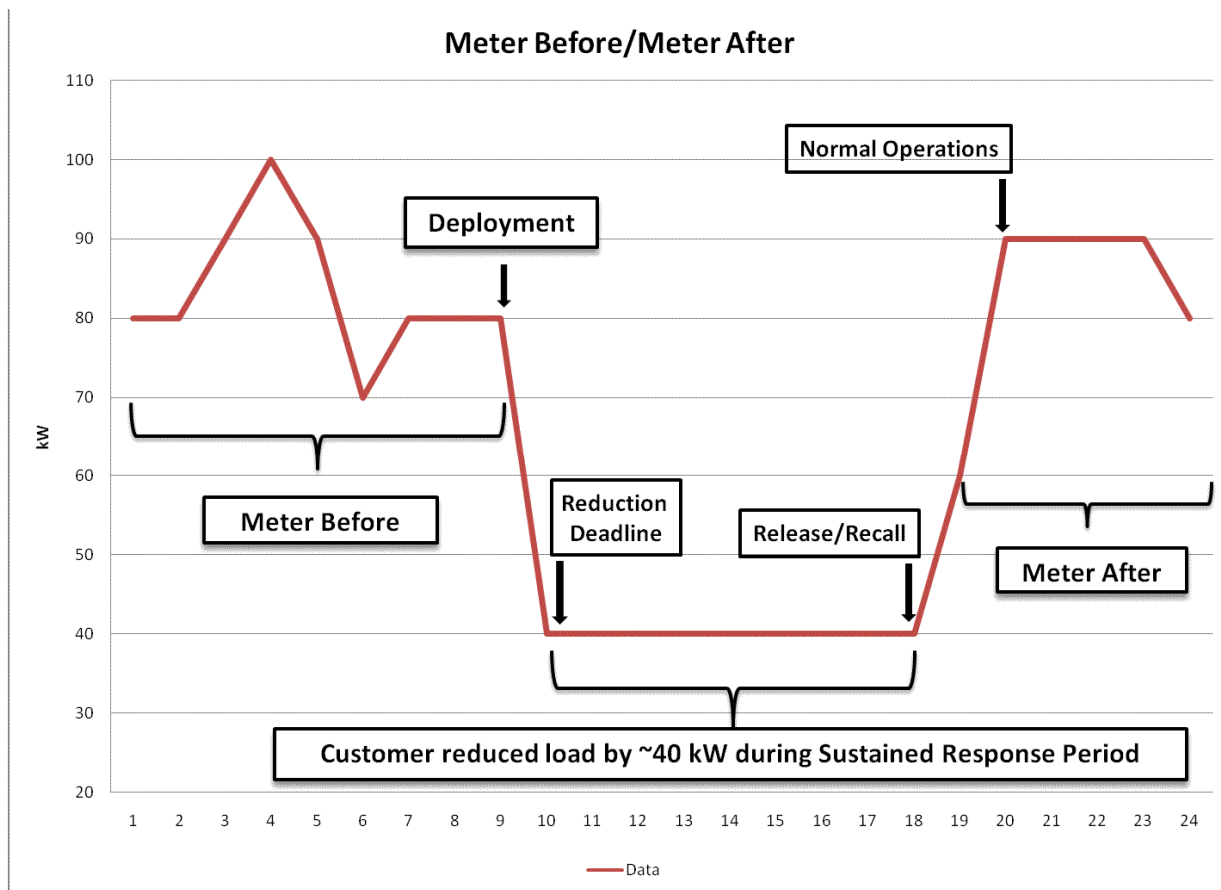
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WEQ.0.3.37. Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.

WEQ.0.3.38.



WEQ.0.3.39. Meter Data Recording Interval: The time between electricity meter usage recordings.

WEQ.0.3.40. Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

WEQ.0.3.41. Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.



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~~WEQ.0.3.42. Reserved~~

~~WEQ.0.3.43. Reserved~~

~~WEQ.0.3.44.~~ **Normal Operations:** The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.

~~WEQ.0.3.45. Reserved~~

~~WEQ.0.3.46.~~ **Performance Window:** The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

~~WEQ.0.3.47. Reserved~~

~~WEQ.0.3.48.~~ **Ramp Period:** The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

~~WEQ.0.3.49.~~ **Ramp Rate:** The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

~~WEQ.0.3.50. Reserved~~

~~WEQ.0.3.51.~~ **Recovery Period:** The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load.

~~WEQ.0.3.52.~~ **Reduction Deadline:** The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

~~WEQ.0.3.53.~~ **Regulation Service:** A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

~~WEQ.0.3.54.~~ **Release/Recall:** The time when the System Operator specifies a Deployment Period has ended or will end.

~~WEQ.0.3.55.~~ **Reserve Service:** A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

~~WEQ.0.3.56. Reserved~~

~~WEQ.0.3.57.~~ **Sustained Response Period:** The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.



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~~WEQ.0.3.58.~~ **System Operator:** A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

~~WEQ.0.3.59.~~ **Telemetry:** Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording. ~~For purposes of these standards Telemetry refers to communication signals between a Demand Resource or Demand Response Provider and the System Operator.~~

~~WEQ.0.3.60.~~ **Telemetry Interval:** The unit of time between communication of telemetered data.

~~WEQ.0.3.61.~~ Reserved

~~WEQ.0.3.62.~~ **Validation, Editing and Estimation:** The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.



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Business Practice Requirements:

Provision of Wholesale Electric Demand Response Energy Products

Applicability

The Standard applies to any entity that administers wholesale Demand Response Energy Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.0 015-1.0 GENERAL

015-1.0.1 Advance Notification

The ~~System Operator~~market rules pertaining to demand responseGoverning dDocuments shall specify any requirements for ~~thean~~ Advance Notification instruction.

015-1.0.2 Deployment Time

The ~~System Operator~~market rules pertaining to demand responseGoverning dDocuments shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.0.3 Reduction Deadline

The ~~System Operator~~market rules pertaining to demand responseGoverning dDocuments shall specify the Reduction Deadline.

015-1.0.4 Release/Recall

The ~~System Operator~~market rules pertaining to demand responseGoverning dDocuments shall specify the time at which Demand Resources may begin returning to Normal Operations. ~~shall be instructed to begin restoring Load.~~

015-1.0.5 Normal Operations

The ~~System Operator~~market rules pertaining to demand responseGoverning dDocuments shall specify Normal Operations.

015-1.0.6 Demand Resource Availability Measurement

Not applicable to Energy Service unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responseGoverning documents-Governing Documents.

015-1.0.7 Aggregation

The ~~System Operator~~market rules pertaining to demand responseGoverning dDocuments shall specify any requirements for aggregated Demand.

015-1.0.8 Transparency of Requirements



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Any specific requirements shall be defined in ~~a regional market's System Operator~~ market rules pertaining to demand response ~~is~~ tariff, market rules governing documents ~~the Governing Documents, operating procedures, protocols or manuals~~ and shall be posted in a publicly accessible location.

~~015-1.1~~ 015-1.1 **TELEMETRY**

~~015-1.1.1~~ 015-1.1.1 **Telemetry Requirement**

The ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, ~~the, the~~ entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data. For purposes of these standards ~~standards~~, Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator.

~~015-1.1.2~~ 015-1.1.2 **On-Site Generation Telemetry**

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents.

~~015-1.1.3~~ 015-1.1.3 **Telemetry Accuracy**

The ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed ~~3~~ 3.0 %.

~~015-1.1.4~~ 015-1.1.4 **Telemetry Interval**

The ~~System Operator~~ market rules pertaining to demand response ~~governing documents~~ shall specify the Telemetry Interval ~~at a value not to~~ shall not exceed 5 minutes.

~~015-1.1.5~~ 015-1.1.5 **Other Telemetry Measurements**

The ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents shall specify any additional Telemetry data requirements.

~~015-1.1.6~~ 015-1.1.6 **Communication Protocol**

The ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents shall specify the Telemetry communication protocol.

~~015-1.1.7~~ 015-1.1.7 **Governor Control Equivalent**

Not applicable to Energy Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents.

~~015-1.2~~ 015-1.2 **AFTER-THE-FACT METERING**

~~015-1.2.1~~ 015-1.2.1 **After-the-Fact Metering Requirement**

After-the-Fact Metering is required unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response ~~Governing d~~ Documents.

~~015-1.2.2~~ 015-1.2.2 **Meter Accuracy**



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~~The System Operator market rules pertaining to demand response governing documents shall specify the accuracy of the After-the-Fact Metering shall be accurate to within not to exceed 32% of full scale or relevant electric retail regulatory authority requirements, except where state jurisdictional requirements apply.~~

015-1.2.3 **Details of Meter/Equipment Standards**

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~.

015-1.2.4 **Meter Data Reporting Deadline**

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

~~The System Operator market rules pertaining to demand response governing documents governing documents shall specify the Meter Data Reporting Deadline.~~

015-1.2.5 **Meter Data Reporting Interval**

~~The System Operator market rules pertaining to demand response governing documents shall specify the Meter Data Reporting Interval at a value not to shall not exceed 1 hour.~~

015-1.2.6 **Clock / Time Accuracy**

The ~~System Operator market rules pertaining to demand response shall governing documents shall~~ specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~.

015-1.2.7 **Validating, Editing & Estimating (VEE) Method**

The ~~System Operator market rules pertaining to demand response shall governing documents shall~~ specify VEE requirements.

015-1.2.8 **On-Site Generation Meter Requirement**

The ~~System Operator market rules pertaining to demand response shall governing documents shall~~ specify additional metering requirements if on-site generation is present behind the primary metering point.

~~015-1.3~~ 015-1.3 **PERFORMANCE EVALUATION**

015-1.3.1 **Rules for Performance Evaluation**

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents governing documents~~:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II



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- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Capacity Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Capacity Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.4 015-1.4 GENERAL

015-1.4.1 Advance Notification

~~The System Operator market rules pertaining to demand response shall governing documents shall specify any requirements for the Advance Notification instruction. Advance Notification has a minimum of no advance notice and a maximum of a day ahead advance notice. Advance Notification instruction may be issued a maximum of one day ahead of the deployment event.~~

015-1.4.2 Deployment Time

The ~~System Operator~~ ~~market rules pertaining to demand response shall~~ ~~Governing Documents shall~~ specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.4.3 Reduction Deadline

The ~~System Operator~~ ~~market rules pertaining to demand response shall~~ ~~Governing Documents shall~~ specify the Reduction Deadline. ~~The minimum Reduction Deadline is instantaneous~~ ~~instantaneous~~ and the maximum Reduction Deadline is two hours.

015-1.4.4 Release/Recall

The ~~System Operator~~ ~~market rules pertaining to demand response shall~~ ~~Governing Documents shall~~ specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.4.5 Normal Operations

The ~~System Operator~~ ~~market rules pertaining to demand response shall~~ ~~Governing Documents shall~~ specify Normal Operations.

015-1.4.6 Demand Resource Availability Measurement



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The ~~System Operator~~ ~~market rules pertaining to demand response~~ shall ~~Governing Documents~~ specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.4.7 Aggregation

~~The governing documents allow for Aggregation of Demand Resources to meet the minimum eligibility resource size. The governing documents~~ Governing Documents shall specify any requirements for aggregated Demand Resources for the purposes of Measurement and Verification.

~~The System Operator~~ ~~market rules pertaining to demand response~~ shall specify any requirements for aggregated Demand Resources.

015-1.4.8 Transparency of Requirements

Any specific requirements shall be defined in ~~a regional market's System Operator~~ ~~market rules pertaining to demand response~~ ~~governing~~ ~~'s tariff, market rules, operating procedures, protocols or manuals~~ documents the Governing Documents and shall be posted in a publicly accessible location.

015-1.5 TELEMETRY

015-1.5.1 Telemetry Requirement

The ~~System Operator~~ ~~market rules pertaining to demand response~~ shall ~~Governing Documents~~ specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, ~~the~~ the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.5.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the ~~System Operator~~ ~~market rules pertaining to demand response~~ Governing Documents.

015-1.5.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

~~The System Operator~~ ~~market rules pertaining to demand response~~ shall ~~governing documents~~ shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.5.4 Telemetry Interval

The ~~System Operator~~ ~~market rules pertaining to demand response~~ shall ~~governing documents~~ shall specify the Telemetry Interval ~~at a value not to~~ shall not exceed 5 minutes.



RECOMMENDATION ~~AS APPROVED BY TO~~ THE NAESB WEQ EXECUTIVE COMMITTEE
~~ON FEBRUARY 10, 2009~~

~~December 2, 2008~~

Requesters: DSM-EE Subcommittee

Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~2008 AP Item 5(a)

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~~015-1.5.5~~ 015-1.5.5 Other Telemetry Measurements

The ~~System Operator~~market rules pertaining to demand response shall ~~Governing~~
~~dDocuments shall~~ specify any additional Telemetry data requirements.

~~015-1.5.6~~ 015-1.5.6 Communication Protocol

The ~~System Operator~~market rules pertaining to demand response shall ~~Governing~~
~~dDocuments shall~~ specify the Telemetry communication protocol.

~~015-1.5.7~~ 015-1.5.7 Governor Control Equivalent

Not applicable to Capacity Service unless otherwise specified by the ~~System Operator~~market
~~rules pertaining to demand response~~Governing ~~dDocuments~~.

~~015-1.6~~ 015-1.6 AFTER-THE-FACT METERING

~~015-1.6.1~~ 015-1.6.1 After-the-Fact Metering Requirement

After-the-fact Metering is required unless otherwise specified by the ~~System Operator~~market
~~rules pertaining to demand response~~Governing ~~dDocuments~~.

~~015-1.6.2~~ 015-1.6.2 Meter Accuracy

~~After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail
regulatory authority requirements.~~

~~015-1.6.3~~ 015-1.6.3 ~~The System Operator~~market rules pertaining to demand response shall ~~governing~~
~~documents shall specify the accuracy of the After the Fact Metering to be expressed as a~~
~~percentage of full scale, not to exceed 3% of full scale.~~

~~Details of Meter/Equipment Standards~~

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12
unless otherwise specified by the ~~System Operator~~market rules pertaining to demand
~~response~~Governing ~~dDocuments~~.

~~015-1.6.4~~ 015-1.6.4 Meter Data Reporting Deadline

~~The System Operator~~market rules pertaining to demand response shall ~~governing documents~~
~~shall specify the Meter Data Reporting Deadline. The~~ A Meter Data Reporting Deadline shall
~~be rules has a minimum of daily reporting one day and a maximum reporting deadline of 103~~
~~days after a Demand Response Event.~~

~~015-1.6.5~~ 015-1.6.5 Meter Data Reporting Interval

~~The System Operator~~market rules pertaining to demand response shall ~~governing documents~~
~~shall specify the Meter Data Reporting Interval. The Meter Data Reporting Interval shall not~~
~~exceed 1 hour. has a minimum interval reporting of 5 minutes and a maximum of at a value~~
~~not to exceed 1 hour.~~

~~015-1.6.6~~ 015-1.6.6 Clock / Time Accuracy



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
~~ON FEBRUARY 10, 2009~~

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The ~~System Operator~~market rules pertaining to demand response shall ~~Governing~~
~~dDocuments shall~~ specify the clock and time accuracy. Clock and time meter/equipment
standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise
specified by the ~~System Operator~~market rules pertaining to demand response ~~Governing~~
~~dDocuments~~.

~~015-1.6.7~~ 015-1.6.7 Validating, Editing & Estimating (VEE) Method

The ~~System Operator~~market rules pertaining to demand response shall ~~Governing~~
~~dDocuments shall~~ specify VEE requirements, if applicable.

~~015-1.6.8~~ 015-1.6.8 On-Site Generation Meter Requirement

The ~~System Operator~~market rules pertaining to demand response shall ~~Governing~~
~~dDocuments shall~~ specify additional metering requirements if on-site generation is present
behind the primary metering point.

~~015-1.7~~ 015-1.7 PERFORMANCE EVALUATION

~~015-1.7.1~~ 015-1.7.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless
otherwise specified by the ~~System Operator~~market rules pertaining to demand
response ~~Governing dDocuments~~:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

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Business Practice Requirements:

Provision of Wholesale Electric Demand Response Reserve Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Reserve Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

~~015-1.8~~ 015-1.8 GENERAL

~~015-1.8.1~~ 015-1.8.1 Advance Notification



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
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Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)~~2008 AP Item 5(a)~~

Review and develop business practice standards to support DR and DSM-EE programs

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify any requirements for the Advance Notification instruction.

015-1.8.2 **Deployment Time**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.8.3 **Reduction Deadline**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify the Reduction Deadline.

015-1.8.4 **Release/Recall**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.8.5 **Normal Operations**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify Normal Operations.

015-1.8.6 **Demand Resource Availability Measurement**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.8.7 **Aggregation**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify any requirements for Aggregated Demand Resources.

015-1.8.8 **Transparency of Requirements**

Any specific requirements shall be defined in ~~a regional market's System Operator~~market
~~rules pertaining to demand response~~the Governing Documents's tariff, market rules,
~~operating procedures, protocols or manuals~~ and shall be posted in a publicly accessible location.

~~015-1.9~~015-1.9 **TELEMETRY**

015-1.9.1 **Telemetry Requirement**

The ~~System Operator~~market rules pertaining to demand response shall~~Governing~~
~~Documents shall~~ specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, ~~the~~ the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data

015-1.9.2 **On-Site Generation Telemetry**



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
~~ON FEBRUARY 10, 2009~~

~~December 2, 2008~~

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Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

If on-site generation is present behind the primary telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegGoverning dDocuments-.

~~015-1.9.3~~ **Telemetry Accuracy**

The ~~System Operator~~market rules pertaining to demand response shallgGoverning dDocuments shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed ~~3~~53.0%.

~~015-1.9.4~~ **Telemetry Interval**

~~The System Operator~~market rules pertaining to demand response shallgoverning documents shall specify theThe Telemetry Interval ~~at a value not to~~shall not exceed 5 minutes.

~~015-1.9.5~~ **Other Telemetry Measurements**

The ~~System Operator~~market rules pertaining to demand response shallgGoverning dDocuments shall specify any additional Telemetry data requirements.

~~015-1.9.6~~ **Communication Protocol**

The ~~System Operator~~market rules pertaining to demand response shallgGoverning dDocuments shall specify the Telemetry communication protocol.

~~015-1.9.7~~ **Governor Control Equivalent**

Not applicable to Reserve Service unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegGoverning dDocuments-.

~~015-1.10~~ **AFTER-THE-FACT METERING**

~~015-1.10.1~~ **After-the-Fact Metering Requirement**

After-the-fact Metering is required unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegGoverning dDocuments-.

~~015-1.10.2~~ **Meter Accuracy**

~~After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements. The System Operator~~market rules pertaining to demand response shallgoverning documents shall specify the accuracy of the After the Fact Metering not to exceed ~~3~~2% of full scale, except where state jurisdictional requirements apply-.

~~015-1.10.3~~ **Details of Meter/Equipment Standards**

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegGoverning dDocuments-.

~~015-1.10.4~~ **Meter Data Reporting Deadline**

~~The gSystem Operator~~market rules pertaining to demand response shallgoverning documents shall specify tA he Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.



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ON FEBRUARY 10, 2009

December 2, 2008

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Request No.: 2010 WEQ AP Item 4(a) and 4(b)~~2008 AP Item 5(a)~~

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015-1.10.5 Meter Data Reporting Interval

~~The System Operator market rules pertaining to demand response shall governing documents shall specify the~~ Meter Data Reporting Interval ~~shall not exceed 1 hour. at a value not to exceed 1 hour.~~

015-1.10.6 Clock / Time Accuracy

The ~~System Operator market rules pertaining to demand response shall~~ Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the ~~System Operator market rules pertaining to demand response~~ Governing Documents.

015-1.10.7 Validating, Editing & Estimating (VEE) Method

The ~~System Operator market rules pertaining to demand response shall~~ Governing Documents shall specify VEE requirements.

015-1.10.8 On-Site Generation Meter Requirement

The ~~System Operator market rules pertaining to demand response shall~~ Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

~~015-1.11~~ 015-1.11 PERFORMANCE EVALUATION

015-1.11.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Regulation Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Regulation Products.

Purpose



RECOMMENDATION ~~AS APPROVED BY~~ **TO THE NAESB WEQ EXECUTIVE COMMITTEE**
ON FEBRUARY 10, 2009

December 2, 2008

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b) 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.12 2015-1.12 GENERAL

015-1.12.1 Advance Notification

Not applicable to Regulation Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~.

015-1.12.2 Deployment Time

Not applicable to Regulation Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~.

015-1.12.3 Reduction Deadline

Not applicable to Regulation Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~.

015-1.12.4 Release/Recall

Not applicable to Regulation Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~.

015-1.12.5 Normal Operations

Not applicable to Regulation Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~.

015-1.12.6 Demand Resource Availability Measurement

Not applicable to Regulation Service unless otherwise specified by the ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~.

015-1.12.7 Aggregation

The ~~System Operator~~ market rules pertaining to demand response governing documents ~~Governing Documents~~ shall specify any requirements for aggregated Demand Resources.

015-1.12.8 Transparency of Requirements

Any specific requirements shall be defined in ~~at the tariff, the regional market's~~ System Operator market rules pertaining to demand response governing documents ~~Governing Documents's tariff, market rules, operating procedures, protocols or manuals~~ and shall be posted in a publicly accessible location.



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ON FEBRUARY 10, 2009

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Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b) 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

~~015-1.13~~ 015-1.13 TELEMETRY

015-1.13.1 Telemetry Requirement

The ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.13.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents.

015-1.13.3 Telemetry Accuracy

The ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed ~~3.0~~ 5.0 %.

015-1.13.4 Telemetry Interval

In accordance with NERC Reliability Standards [2] (DGP3), The System Operator ~~market rules pertaining to demand response governing documents~~ shall specify the Telemetry Interval at a value not to exceed 5 minutes. The telemetry Interval shall not exceed six seconds (NERC BAL-005-0b, R8).

015-1.13.5 Other Telemetry Measurements

The ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents shall specify any additional Telemetry data requirements.

015-1.13.6 Communication Protocol

The ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents shall specify the Telemetry communication protocol.

~~015-1.13.7~~ 015-1.13.7 Governor Control Equivalent

Demand Resources providing Regulation Service shall ~~automatically~~ respond to grid frequency deviations, ~~either by dispatch instruction or automated response~~, similar to governor action provided by generation resources, unless otherwise specified by the ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents.

~~015-1.14~~ 015-1.14 AFTER-THE-FACT METERING

015-1.14.1 After-the-Fact Metering Requirement

After-the-fact Metering is ~~not~~ required unless otherwise specified by the ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents [r4].



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~~015-1.14.2~~ Meter Accuracy

~~The System Operator market rules pertaining to demand response governing documents shall specify the accuracy of the After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements, to be expressed as a percentage of full scale, not to exceed 2.0% not to exceed 3% of full scale.~~

~~015-1.14.3~~ Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~Governing Documents.

~~015-1.14.4~~ Meter Data Reporting Deadline

~~The System Operator market rules pertaining to demand response governing documents shall specify the~~ Meter Data Reporting Deadline ~~shall be a maximum of 55 days after a Demand Response Event.~~

~~015-1.14.5~~ Meter Data Reporting Interval

~~The System Operator market rules pertaining to demand response governing documents shall specify the~~ Meter Data Reporting Interval ~~shall not exceed 1 hour, at a value not to exceed 1 hour.~~

~~015-1.14.6~~ Clock / Time Accuracy

~~In accordance with NERC Reliability Standards [r5], the~~ ~~System Operator market rules pertaining to demand response governing documents~~Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~Governing Documents.

~~015-1.14.7~~ Validating, Editing & Estimating (VEE) Method

The ~~System Operator market rules pertaining to demand response governing documents~~Governing Documents shall specify VEE requirements, ~~if applicable.~~

~~015-1.14.8~~ On-Site Generation Meter Requirement

The ~~System Operator market rules pertaining to demand response governing documents~~Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

~~015-1.15~~015-1.15 PERFORMANCE EVALUATION

~~015-1.15.1~~ Rules for Performance Evaluation

Performance shall be evaluated using telemetry data and additionally through the use of one of the following methods unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~Governing Documents:

- Meter Before / Meter After



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- Metering Generator Output

Business Practice Requirements

Maximum Base Load Evaluation

~~015-1.16~~015-1.16 **BASELINE INFORMATION**

There are no Baseline calculations defined for Maximum Base Load evaluations. The Maximum Base Load Evaluation methodology shall be associated with a demand reduction obligation compared to the Demand Resource's average Load or as specified by the ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents.

~~015-1.17~~015-1.17 **EVENT INFORMATION**

~~015-1.17.1~~015-1.17.1 **Use of Real-Time Telemetry**

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

~~015-1.17.2~~015-1.17.2 **Use of After-The-Fact Metering**

After-the-fact metering shall be used to measure performance, unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents.

~~015-1.17.3~~015-1.17.3 **Performance Window**

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents.

~~015-1.17.4~~015-1.17.4 **Measurement Type**

During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance shall be one of the following unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents:

- Peak Demand
- Average Demand ~~- over a period of from 5 minutes to the entire Performance Window~~

~~015-1.18~~015-1.18 **SPECIAL PROCESSING**

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify any special processing rules.

Business Practice Requirements



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Meter Before / Meter After

~~015-1.19~~015-1.19 BASELINE INFORMATION

~~015-1.19.1~~015-1.19.1 Baseline Window

The ~~System Operator~~market rules pertaining to demand responsegoverning documentsGoverning Documents ~~shall~~ shall specify ~~the time interval associated with the meter read, prior to deployment, used to establish the Baseline Window.~~the Baseline Window.

~~015-1.19.2~~015-1.19.2 Calculation Type

During the Baseline Window, the energy consumption or Demand of the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegoverning documentsGoverning Documents:

- a) Instantaneous
- b) Maximum
- c) Average

~~015-1.19.3~~015-1.19.3 Sampling Precision and Accuracy

Sampling is not permitted for this performance evaluation type, unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegoverning documentsGoverning Documents.

~~015-1.19.4~~015-1.19.4 Exclusion Rules

The ~~System Operator~~market rules pertaining to demand response ~~shall~~governing documentsGoverning Documents shall specify any exclusion rules.

~~015-1.19.5~~015-1.19.5 Baseline Adjustments

Baseline Adjustments are not permitted for this performance evaluation type, unless specified by the ~~The System Operator~~market rules pertaining to demand responsegoverning documentsGoverning Documents shall specify any event day adjustments.

~~015-1.19.6~~015-1.19.6 Adjustment Window

No Adjustment Window is used for this model unless otherwise specified by the ~~System Operator~~market rules pertaining to demand responsegoverning documentsGoverning Documents.

~~015-1.20~~015-1.20 EVENT INFORMATION

~~015-1.20.1~~015-1.20.1 Use of real-time Telemetry

The ~~System Operator~~market rules pertaining to demand responsegoverning documentsGoverning Documents ~~shall~~ specify that if real-time Telemetry data may or may not be utilized ~~is to be used~~ to measure performance.

~~015-1.20.2~~015-1.20.2 Use of After-The-Fact Metering



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After-the-fact metering shall be used to measure performance, unless otherwise specified by the ~~System Operator~~market rules pertaining to demand response governing documents -Governing Documents.

~~015-1.21~~015-1.20.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the ~~System Operator~~market rules pertaining to demand response governing documents -Governing Documents.

~~015-1.21~~015-1.20.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the ~~System Operator~~market rules pertaining to demand response governing documents -Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average

~~015-1.21~~015-1.21 SPECIAL PROCESSING

~~015-1.21~~015-1.21.1 Highly-Variable Load Logic

The ~~System Operator~~market rules pertaining to demand response shall governing documentsGoverning Documents shall specify any performance evaluation requirements for Highly-Variable Loads.

~~015-1.21~~015-1.21.2 On-Site Generation Requirements

The ~~System Operator~~market rules pertaining to demand response shall governing documentsGoverning Documents shall specify any performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-I (Interval Meter)

~~015-1.22~~015-1.22 BASELINE INFORMATION

~~015-1.22~~015-1.22.1 Baseline Window

The ~~System Operator~~market rules pertaining to demand response shall governing documentsGoverning Documents shall specify the Baseline Window.

~~015-1.22~~015-1.22.2 Calculation Type

The ~~System Operator~~market rules pertaining to demand response shall governing documentsGoverning Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average



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c) Regression

015-1.22.3 **Sampling Precision and Accuracy**

Sampling is not permitted for this Performance Evaluation type, unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~. Governing Documents.

015-1.22.4 **Exclusion Rules**

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window

015-1.22.5 **Baseline Adjustments**

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

015-1.22.6 **Adjustment Window**

The ~~minimum Adjustment Window shall begin no more than is the last SCADA reading and the maximum Adjustment Window is threefour hours after deployment. Other Adjustment Windows shall be specified by the market rules pertaining to demand response governing documents~~ (6) System Operator shall specify the Adjustment Window.

~~015-1.23~~ 015-1.23 **EVENT INFORMATION**

015-1.23.1 **Use of Real-Time Telemetry**

The ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents shall specify ~~that if~~ real-time Telemetry ~~data may or may not be required is to be used~~ data may or to measure performance.

015-1.23.2 **Use of After-The-Fact Metering**

~~The use of~~ After-the-fact metering shall be used to measure performance unless telemetry is specified as the method of measurement. is allowed but may be optional shall be used to measure



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~~performance, unless otherwise specified by the System Operator market rules pertaining to demand response governing documents.~~

015-1.23.3 Performance Window

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify the Performance Window.

015-1.23.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents:

- a) Maximum
- b) Average
- c) Regression

~~015-1.24~~ 015-1.24 SPECIAL PROCESSING

015-1.24.1 Highly-Variable Load Logic

The ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents may specify performance evaluation requirements for Highly-Variable Loads.

015-1.24.2 On-Site Generation Requirements

The ~~System Operator market rules pertaining to demand response governing documents~~ Governing Documents may specify performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-II (Non-Interval Meter)

~~015-1.25~~ 015-1.25 BASELINE INFORMATION

015-1.25.1 Baseline Window

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify the Baseline Window.

015-1.25.2 Calculation Type

The ~~System Operator market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.25.3 Sampling Precision and Accuracy



RECOMMENDATION ~~AS APPROVED BY~~ TO THE NAESB WEQ EXECUTIVE COMMITTEE
ON FEBRUARY 10, 2009

December 2, 2008

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b) 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify sampling precision and accuracy requirements.

015-1.25.4 Exclusion Rules

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window

015-1.25.5 Baseline Adjustments

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

015-1.25.6 Adjustment Window

The Adjustment Window shall begin no more than four hours prior to deployment. ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents shall specify the Adjustment Window.~~

015-1.26015-1.26 EVENT INFORMATION

015-1.26.1 Use of Real-Time Telemetry

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify if real-time Telemetry data is required to be used to measure performance.

015-1.26.2 Use of After-The-Fact Metering

After-the-fact metering or other energy measurement technology meeting the requirements of the Governing Documents shall be used to measure performance. ~~as a supplement to real time Telemetry (if real time Telemetry is specified) unless otherwise specified by the System Operator~~ ~~market rules pertaining to demand response governing documents.~~

015-1.26.3 Performance Window



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The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify the Performance Window. ~~(Should this say the Performance Window should be stated in terms of Sustained Response Period and or Deployment Period?)~~

015-1.26.4 Measurement Type

During the Performance Window, the performance of the Demand Resource shall be evaluated using one of the following ~~measurements~~ unless otherwise specified by the ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents:

- a) Maximum
- b) Average
- c) Regression
- ~~e) Statistical equivalent of 5 Minute or hourly metering~~

~~015-1.27~~ 015-1.27 SPECIAL PROCESSING

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify any special processing rules.

Business Practice Requirements

Metering Generator Output

~~015-1.28~~ 015-1.28 BASELINE INFORMATION

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify Baseline calculations for ~~Metering Generator~~ Metering Generator Output.

~~015-1.29~~ 015-1.29 EVENT INFORMATION

015-1.29.1 Use of Real-Time Telemetry

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.29.2 Use of After-The-Fact Metering

After-the-fact metering on the generator and optionally on the associated Load shall be used to measure performance unless otherwise specified by the ~~System Operator~~ ~~market rules pertaining to demand response governing documents~~ Governing Documents.

015-1.29.3 Performance Window

The ~~System Operator~~ ~~market rules pertaining to demand response shall governing documents~~ Governing Documents shall specify the Performance Window.

015-1.29.4 Measurement Type



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~~ON FEBRUARY 10, 2009~~

~~December 2, 2008~~

Requesters: DSM-EE Subcommittee

Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~2008 AP Item 5(a)

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During the Performance Window, the Demand Resource shall be evaluated using the total measured generation output unless otherwise specified by the ~~System Operator market rules pertaining to demand response governing documents~~.Governing Documents.

~~015-1.30~~015-1.30 SPECIAL PROCESSING

The ~~System Operator market rules pertaining to demand response shall governing documents~~Governing Documents ~~shall~~ specify any special processing rules.



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~~ON FEBRUARY 10, 2009~~

December 2, 2008

Requesters: DSM-EE Subcommittee

Request No.: **2010 WEQ AP Item 4(a) and 4(b)** ~~2008 AP Item 5(a)~~

Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Business Practice Sub-Working Group

<u>Date</u>	<u>Revision Description</u>	<u>Categories Changed</u>	<u>Approved</u>
<u>3/12/2010</u>	<u>Removed "System Operator" and replaced it with "Market Rules pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.</u>	<u>015-1.0 through 015-1.10</u>	
<u>06/11/2010</u>	<u>Modified language to provide additional enhancement.</u>	<u>015-1.12 through 015-1.14</u>	
<u>06/18/2010</u>	<u>Changed the Telemetry Accuracy and Meter Accuracy per the IRC Matrix update.</u>	<u>015-1.1 through 015-1.2 and 015-1.9 through 015-1.10</u>	
<u>06/23/2010</u>	<u>Modified language to include parameters in IRC Matrix.</u>	<u>015-1.4 through 015-1.6.</u>	
<u>7/23/2010</u>	<u>Added definition for "~~Governing documents~~Governing Documents" and modified text accordingly throughout business practice standards.</u>	<u>Definition section addition and modified all applicable locations in document.</u>	
<u>7/30/2010</u>	<u>In Regulation, under Telemetry Accuracy, changes to 5% from 3%.</u>	<u>015-1.13 Telemetry</u>	
<u>8/13/2010</u>	<u>Removed "Market Rules" and replaced- it with "~~governing documents~~Governing Documents."</u>	<u>Throughout document.</u>	
<u>9/16/2010</u>	<u>Replaced glossary with glossary approved in May 2010.</u>	<u>Glossary</u>	



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~~December 2, 2008~~

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~~December 2, 2008~~

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Request No.: ~~2010 WEQ AP Item 4(a) and 4(b)~~ 2008 AP Item 5(a)

Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Performance Evaluation Sub-Working Group

<u>Date</u>	<u>Revision Description</u>	<u>Categories Changed</u>	<u>Approved</u>
<u>3/12/2010</u>	Removed "System Operator" and replaced it with " ~~market~~ <u>rules governing documents</u> Governing Documents pertaining to demand response ~~to~~ " to more accurately reflect that rules are developed by markets not the System Operator.	<u>015-1.11 through 015-1.30</u>	
<u>7/17/2010</u>	<u>Added clarifications in Use of ATF Metering and inserted additional Measurement Type.</u>	<u>015-1.26</u>	
<u>7/23/2010</u>	<u>Modified language to provide additional enhancement</u>	<u>015-1.19, 015-1.20, 015-1.22 and 015-1.23</u>	
<u>7/30/2010</u>	<u>In Max Base Load, under Measurement Type, added clarification phrase to "b) Average Demand"</u>	<u>015-1.17 Event Information</u>	
<u>8/13/2010</u>	<u>Removed "Market Rules" and replaced it with "~~governing documents~~ Governing Documents."</u>	<u>Throughout document.</u>	



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~~December 2, 2008~~

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Review and develop business practice standards to support DR and DSM-EE programs

4. SUPPORTING DOCUMENTATION

a. Description of Request:

Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.

b. Description of Recommendation:

For the second phase, develop business practices to provide more clarity and granularity for the measurement and verification aspects of wholesale market demand response products.

c. Business Purpose:

The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.

e. Additional Background documentation

- DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>
- Presentation of the wholesale recommendation given on October 3: ISO presentation - <http://www.naesb.org/pdf3/dsmee100308w7.pdf>
- Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>

[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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Review and develop business practice standards to support DR and DSM-EE programs

1. RECOMMENDED ACTION:

☐	Accept as requested
☒	Accept as modified below
☐	Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒	Change to Existing Practice
☐	Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐	Initiation
☒	Modification
☐	Interpretation
☐	Withdrawal
☒	Principle
☒	Definition
☒	Business Practice Standard
☒	Document
☐	Data Element
☐	Code Value
☐	X12 Implementation Guide
☒	Business Process Documentation

Per Recommendation:

☒	Initiation
☒	Modification
☐	Interpretation
☐	Withdrawal
☒	Principle
☒	Definition
☒	Business Practice Standard
☒	Document
☐	Data Element
☐	Code Value
☐	X12 Implementation Guide
☒	Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The standards support the measurement and verification characteristics of Demand Response products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Demand Response products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this draft is not intended to replace applicable Governing Documents, for wholesale Demand Response, and in the event of a conflict, the Governing Documents shall have precedence.

WEQ-015 Business Practices for Wholesale Electricity Demand Response Programs - Please see attached documentation.



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Business Practices for Measurement and Verification of Wholesale Electricity Demand Response

Introduction

1. Measurement and Verification Standards

These Measurement and Verification (M&V) standards are intended to facilitate Demand Response in wholesale electricity markets by providing a common framework for the following:

- Transparency: accessible and understandable M&V requirements for Demand Response products;
- Accountability: criteria that will enable the System Operator to accurately measure performance of Demand Response resources; and Consistency: standards applicable across all wholesale electricity markets.

2. Applicability of Measurement and Verification Standards:

ISO/RTO Administered Markets

These standards are applicable only to Independent System Operator-Regional Transmission Organization administered markets in North America. The standards reflect business practices applicable to measurement and verification of wholesale market Demand Response services including the following four product/service categories¹:

Energy Service

A type of Demand Response service in which Demand Resources delivers a quantity of electricity measured in MWhs.

Capacity Service

A type of Demand Response service in which Demand Resources are obligated as a means of controlling Demand over a defined period of time measured in MW.

Reserve Service

A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements established to meet applicable reliability standards.

¹ The terms Product(s) or Service(s) may be used interchangeably in these standards.



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Regulation Service

A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.

These standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services. System Operators are not required to offer these Services and may not currently offer each of these Services. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section.

Tariff Conflict and NERC Standards:

In the event of a conflict between these business practices and a System Operator's Governing Documents, the Governing Documents shall have precedence. Terms defined in the Definition of Terms do not modify or supersede definitions in the Governing Documents that apply to the compensation, design, operation, or use of Demand Response services. Additionally, all entities supplying Demand Response Services shall comply with applicable NERC reliability standards.

Non-ISO/RTO Markets:

Wholesale Demand Response standards do not apply in markets administered by non-ISO/RTOs; such standards will be developed when required.



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3. Overview of the Standards

These M&V standards establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value. Commonalities may be found among the standards for the four product categories outlined in section 2 above. The following categories are applicable to each of these the four types of Demand Response products.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation



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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value corresponding to a specific Demand Resource. The standards include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each of the four types of Demand Response service. Criteria for performance evaluation methodologies apply to baseline information, Demand Response even information and special processing, as shown below.

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These standards provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services; they do not specify detailed characteristics of performance evaluation methodologies. The System Operator may offer multiple performance evaluation models and may assign a Demand Resource to a model based on the Load characteristics of the Demand Resource or allow the Demand Resource provider to choose a performance evaluation model consistent with its load characteristics from a predefined list. The following methodology types are applicable to wholesale Demand Response Services:

Maximum Base Load: A performance evaluation methodology based solely on the ability of a Demand Resource to maintain its electricity usage at or below a specified level during a Demand Response Event.

Meter Before / Meter After: A performance evaluation methodology in which electricity Demand over a prescribed period of time prior to resource Deployment is compared to similar readings during the Sustained Response Period.

Baseline Type-I: A Baseline performance evaluation methodology based on historical interval meter data for a Demand Resource that may also include other parameters such as weather and calendar data.

Baseline Type-II: A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the revenue meter for the Demand Resource.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	
Metering Generator Output	✓	✓	✓	✓



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WEQ-000-2 DEFINITION OF TERMS

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

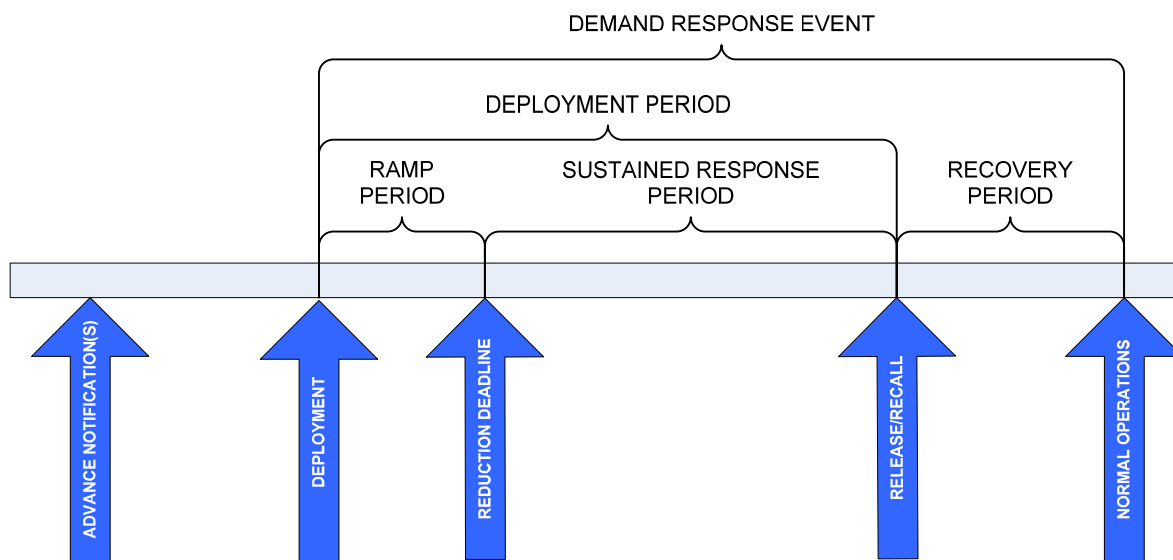


Figure 1. Timing of a Demand Response Event

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After-the-Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non-Interval Meter).

Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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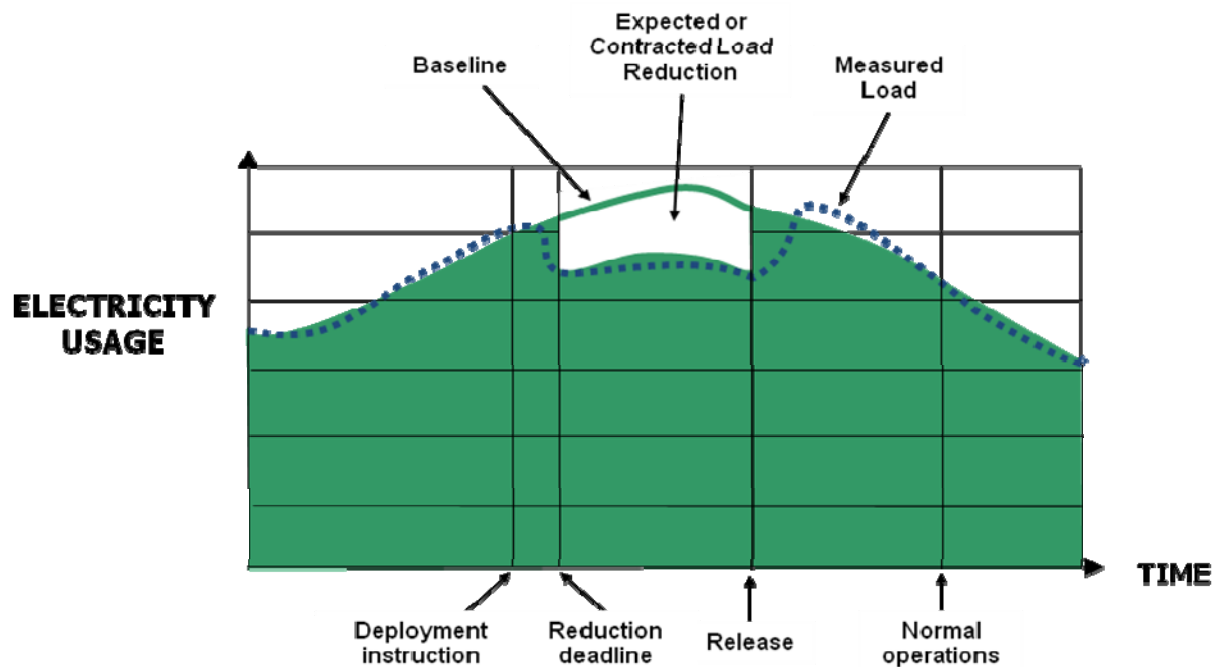


Figure 2. Illustration of Baseline Concept.

Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type-I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data, which may also include other variables such as weather and calendar data.

Baseline Type-II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

Baseline Window: A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.

Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.



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Demand: The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).

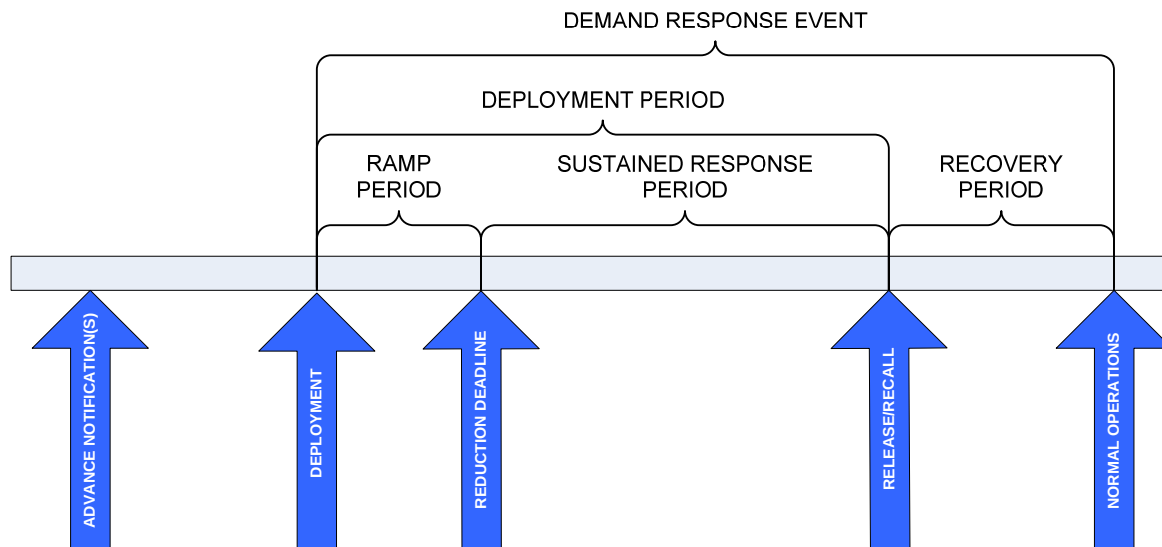
Demand Reduction Value: Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.

Demand Resource: A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response.

Demand Resource Availability: The potential Demand Reduction Value available to be dispatched for a Demand Response Event.

Demand Response: A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

Demand Response Event: A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be applicable to all Demand Response products or services.



Demand Response Provider: The entity that is responsible for delivering Demand Response.

Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.



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Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly-Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

Load: An end-use device or customer that receives power from the electric system (NERC Definition).

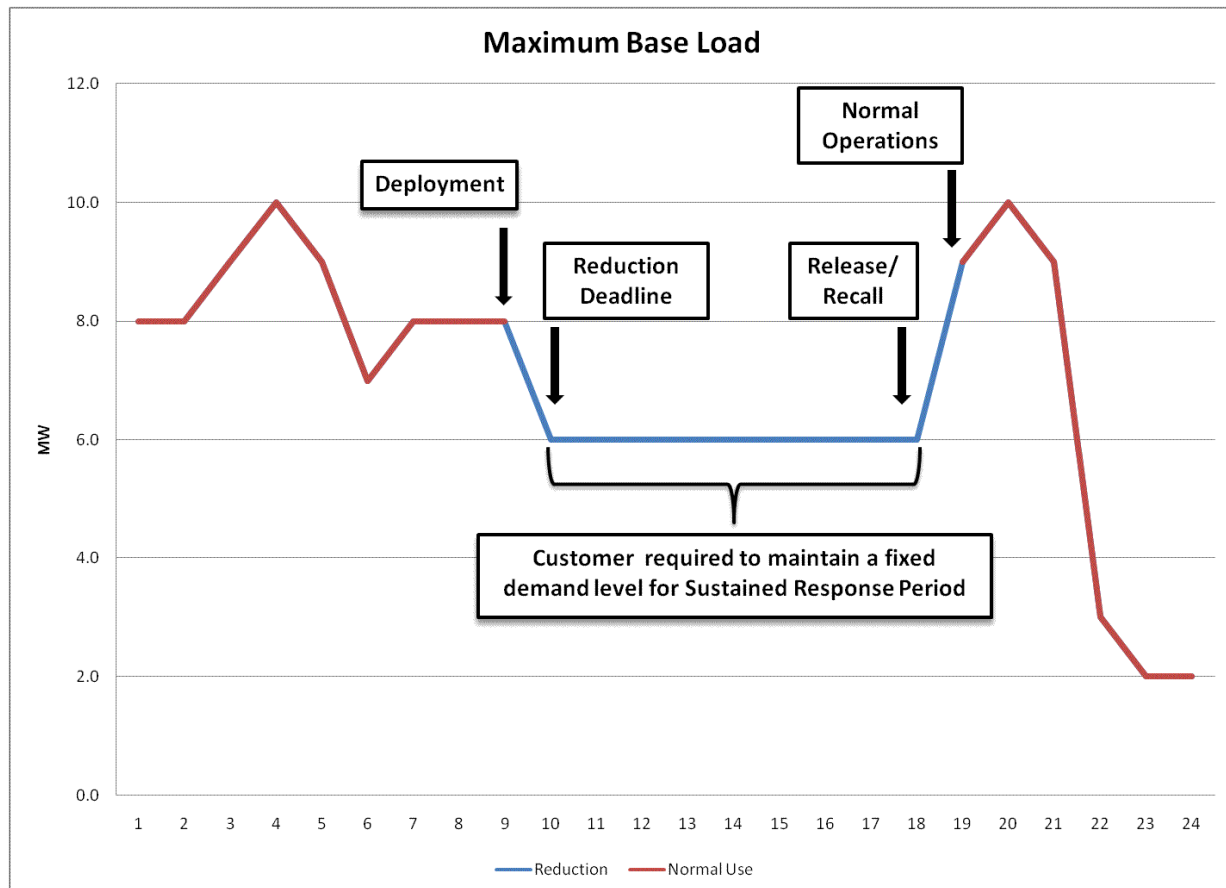


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Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.

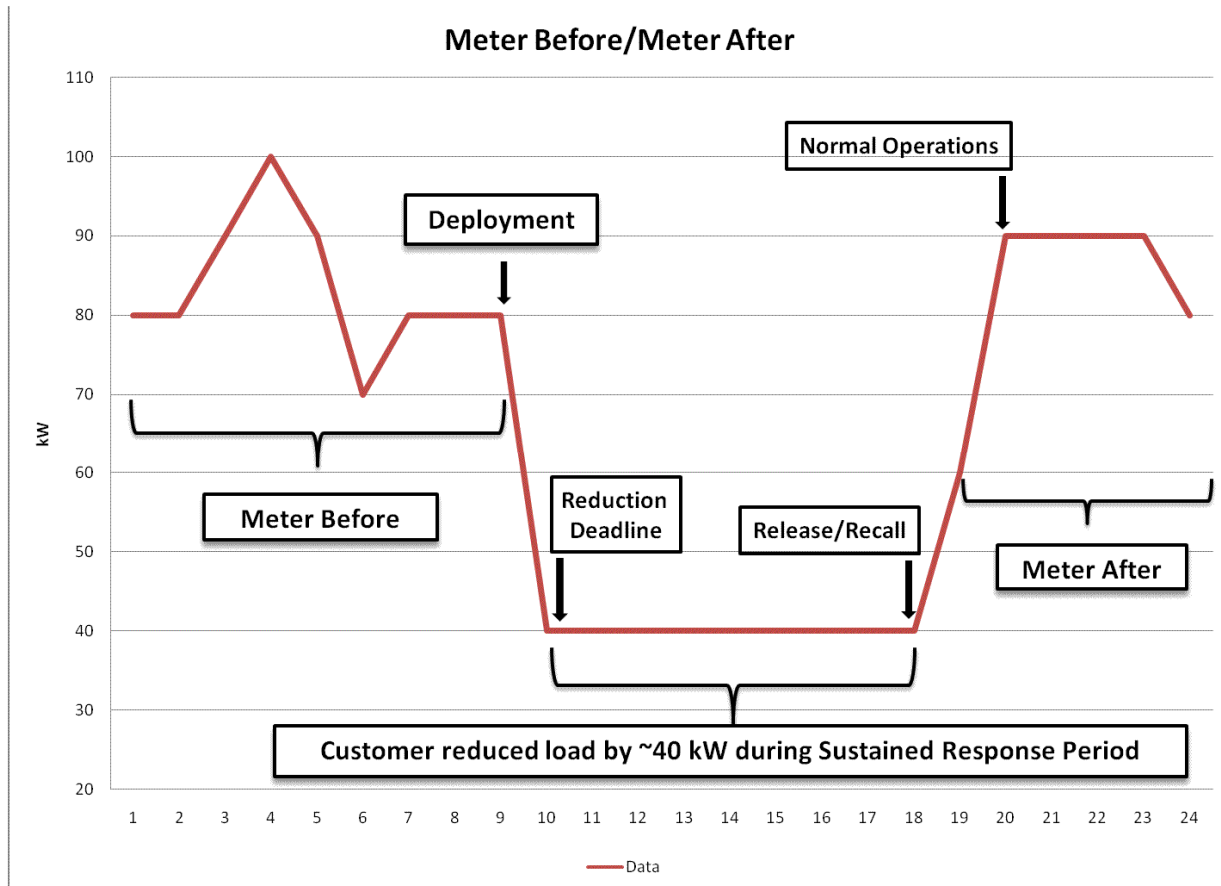




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Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.



Meter Data Recording Interval: The time between electricity meter usage recordings.

Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.

Telemetry Interval: The unit of time between communication of telemetered data.

Validation, Editing and Estimation: The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Energy Products

Applicability

The Standard applies to any entity that administers wholesale Demand Response Energy Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.0 GENERAL

015-1.0.1 Advance Notification

The Governing Documents shall specify any requirements for an Advance Notification instruction.

015-1.0.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.0.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.

015-1.0.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources may begin returning to Normal Operations.

015-1.0.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.0.6 Demand Resource Availability Measurement

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.0.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand.

015-1.0.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.1 TELEMETRY

015-1.1.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data. For purposes of these standards, Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator.

015-1.1.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.1.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.1.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.1.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.1.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.1.7 Governor Control Equivalent

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.2 AFTER-THE-FACT METERING

015-1.2.1 After-the-Fact Metering Requirement

After-the-Fact Metering is required unless otherwise specified by the Governing Documents.

015-1.2.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements,

015-1.2.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.2.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.2.5 Meter Data Reporting Interval

Meter Data Reporting Interval shall not exceed 1 hour.

015-1.2.6 Clock / Time Accuracy

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.2.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements.

015-1.2.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.3 PERFORMANCE EVALUATION

015-1.3.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Capacity Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Capacity Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

**Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)**

Review and develop business practice standards to support DR and DSM-EE programs

015-1.4 GENERAL

015-1.4.1 Advance Notification

Advance Notification instruction may be issued a maximum of one day ahead of the deployment event.

015-1.4.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.4.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline. The minimum Reduction Deadline is instantaneous and the maximum Reduction Deadline is two hours.

015-1.4.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.4.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.4.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.4.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand Resources for the purposes of Measurement and Verification.

15-1.4.8 Transparency of Requirements

Any specific requirements shall be defined in governing the Governing Documents and shall be posted in a publicly accessible location.

015-1.5 TELEMETRY

015-1.5.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.5.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.5.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

15-1.5.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.5.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.5.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.5.7 Governor Control Equivalent

Not applicable to Capacity Service unless otherwise specified by the Governing Documents.

015-1.6 AFTER-THE-FACT METERING

015-1.6.1 After-the-Fact Metering Requirement

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

015-1.6.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.6.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.6.5 Meter Data Reporting Interval

The Meter Data Reporting Interval shall not exceed 1 hour.

015-1.6.6 Clock / Time Accuracy

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.



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Review and develop business practice standards to support DR and DSM-EE programs

015-1.6.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.7 PERFORMANCE EVALUATION

015-1.7.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Reserve Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Reserve Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.8 GENERAL

015-1.8.1 Advance Notification

The Governing Documents shall specify any requirements for the Advance Notification instruction.

015-1.8.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.8.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
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Review and develop business practice standards to support DR and DSM-EE programs

015-1.8.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.8.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.8.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.8.7 Aggregation

The Governing Documents shall specify any requirements for Aggregated Demand Resources.

015-1.8.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.9 TELEMETRY

015-1.9.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data

015-1.9.2 On-Site Generation Telemetry

If on-site generation is present behind the primary telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.9.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.9.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.9.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.9.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.



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Requesters: DSM-EE Subcommittee
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Review and develop business practice standards to support DR and DSM-EE programs

- 015-1.9.7 Governor Control Equivalent**
Not applicable to Reserve Service unless otherwise specified by the Governing Documents.
- 015-1.10 AFTER-THE-FACT METERING**
- 015-1.10.1 After-the-Fact Metering Requirement**
After-the-fact Metering is required unless otherwise specified by the Governing Documents.
- 015-1.10.2 Meter Accuracy**
After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.
- 015-1.10.3 Details of Meter/Equipment Standards**
Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.
- 015-1.10.4 Meter Data Reporting Deadline**
A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.
- 015-1.10.5 Meter Data Reporting Interval**
A Meter Data Reporting Interval shall not exceed 1 hour.
- 015-1.10.6 Clock / Time Accuracy**
The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.
- 015-1.10.7 Validating, Editing & Estimating (VEE) Method**
The Governing Documents shall specify VEE requirements.
- 015-1.10.8 On-Site Generation Meter Requirement**
The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.



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015-1.11 PERFORMANCE EVALUATION

015-1.11.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Regulation Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Regulation Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.12 GENERAL

015-1.12.1 Advance Notification

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.2 Deployment Time

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.3 Reduction Deadline

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.4 Release/Recall

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.



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Requesters: DSM-EE Subcommittee
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Review and develop business practice standards to support DR and DSM-EE programs

015-1.12.5 Normal Operations

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.6 Demand Resource Availability Measurement

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand Resources.

015-1.12.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.13 TELEMETRY

015-1.13.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.13.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.13.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.13.4 Telemetry Interval

The telemetry Interval shall not exceed six seconds (NERC BAL-005-0b, R8).

015-1.13.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.13.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.13.7 Governor Control Equivalent

Demand Resources providing Regulation Service shall respond to grid frequency deviations, similar to governor action provided by generation resources, unless otherwise specified by the Governing Documents.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
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Review and develop business practice standards to support DR and DSM-EE programs

015-1.14 AFTER-THE-FACT METERING

015-1.14.1 After-the-Fact Metering Requirement

After-the-fact Metering is ~~not~~ required unless otherwise specified by the Governing Documents.

015-1.14.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.14.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.

015-1.14.5 Meter Data Reporting Interval

A Meter Data Reporting Interval shall not exceed 1 hour.

015-1.14.6 Clock / Time Accuracy

In accordance with NERC Reliability Standards, the Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.

015-1.14.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.15 PERFORMANCE EVALUATION

015-1.15.1 Rules for Performance Evaluation

Performance shall be evaluated using telemetry data and additionally through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Meter Before / Meter After
- Metering Generator Output



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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Review and develop business practice standards to support DR and DSM-EE programs

Business Practice Requirements

Maximum Base Load Evaluation

015-1.16 BASELINE INFORMATION

There are no Baseline calculations defined for Maximum Base Load evaluations. The Maximum Base Load Evaluation methodology shall be associated with a demand reduction obligation compared to the Demand Resource's average Load or as specified by the Governing Documents.

015-1.17 EVENT INFORMATION

015-1.17.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.17.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.17.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.17.4 Measurement Type

During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance shall be one of the following unless otherwise specified by the Governing Documents:

- a) Peak Demand
- b) Average Demand - over a period of from 5 minutes to the entire Performance Window

015-1.18 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Meter Before / Meter After

015-1.19 BASELINE INFORMATION

015-1.19.1 Baseline Window

The Governing Documents shall specify the time interval associated with the meter read, prior to deployment, used to establish the Baseline Window.



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015-1.19.2 Calculation Type

During the Baseline Window, the energy consumption or Demand of the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average

015-1.19.3 Sampling Precision and Accuracy

Sampling is not permitted for this performance evaluation type, unless otherwise specified by the Governing Documents.

015-1.19.4 Exclusion Rules

The Governing Documents shall specify any exclusion rules.

015-1.19.5 Baseline Adjustments

Baseline Adjustments are not permitted for this performance evaluation type, unless specified by the Governing Documents.

015-1.19.6 Adjustment Window

No Adjustment Window is used for this model unless otherwise specified by the Governing Documents.

015-1.20 EVENT INFORMATION

015-1.20.1 Use of real-time Telemetry

The Governing Documents specify that real-time Telemetry data may or may not be utilized to measure performance.

015-1.20.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.20.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.20.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average



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015-1.21 SPECIAL PROCESSING

015-1.21.1 Highly-Variable Load Logic

The Governing Documents shall specify any performance evaluation requirements for Highly-Variable Loads.

015-1.21.2 On-Site Generation Requirements

The Governing Documents shall specify any performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-I (Interval Meter)

015-1.22 BASELINE INFORMATION

015-1.22.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.22.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.22.3 Sampling Precision and Accuracy

Sampling is not permitted for this Performance Evaluation type, unless otherwise specified by the Governing Documents.

015-1.22.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window



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015-1.22.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

015-1.22.6 Adjustment Window

The Adjustment Window shall begin no more than four hours after deployment.

015-1.23 EVENT INFORMATION

015-1.23.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry is required to measure performance.

015-1.23.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance unless telemetry is specified as the method of measurement.

015-1.23.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.23.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression

015-1.24 SPECIAL PROCESSING

015-1.24.1 Highly-Variable Load Logic

The Governing Documents may specify performance evaluation requirements for Highly-Variable Loads.

015-1.24.2 On-Site Generation Requirements

The Governing Documents may specify performance evaluation requirements for on-site generation.



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Business Practice Requirements

Baseline Type-II (Non-Interval Meter)

015-1.25 BASELINE INFORMATION

015-1.25.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.25.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.25.3 Sampling Precision and Accuracy

The Governing Documents shall specify sampling precision and accuracy requirements.

015-1.25.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window

015-1.25.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

015-1.25.6 Adjustment Window

The Adjustment Window shall begin no more than four hours prior to deployment.



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015-1.26 EVENT INFORMATION

015-1.26.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is required to measure performance.

015-1.26.2 Use of After-The-Fact Metering

After-the-fact metering or other energy measurement technology meeting the requirements of the Governing Documents shall be used to measure performance.

015-1.26.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.26.4 Measurement Type

During the Performance Window, the performance of the Demand Resource shall be evaluated using one of the following unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression

015-1.27 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Metering Generator Output

015-1.28 BASELINE INFORMATION

The Governing Documents shall specify Baseline calculations for Metering Generator Output.

015-1.29 EVENT INFORMATION

015-1.29.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.29.2 Use of After-The-Fact Metering

After-the-fact metering on the generator and optionally on the associated Load shall be used to measure performance unless otherwise specified by the Governing Documents.

015-1.29.3 Performance Window

The Governing Documents shall specify the Performance Window.



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**Requesters: DSM-EE Subcommittee
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015-1.29.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using the total measured generation output unless otherwise specified by the Governing Documents.

015-1.30

SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Business Practice Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with " Market Rules " pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.0 through 015-1.10	
06/11/2010	Modified language to provide additional enhancement.	015-1.12 through 015-1.14	
06/18/2010	Changed the Telemetry Accuracy and Meter Accuracy per the IRC Matrix update.	015-1.1 through 015-1.2 and 015-1.9 through 015-1.10	
06/23/2010	Modified language to include parameters in IRC Matrix.	015-1.4 through 015-1.6.	
7/23/2010	Added definition for "Governing Documents" and modified text accordingly throughout business practice standards.	Definition section addition and modified all applicable locations in document.	
7/30/2010	In Regulation, under Telemetry Accuracy, changes to 5% from 3%.	015-1.13 Telemetry	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	
9/16/2010	Replaced glossary with glossary approved in May 2010.	Glossary	



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Performance Evaluation Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with "Governing Documents pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.11 through 015-1.30	
7/17/2010	Added clarifications in Use of ATF Metering and inserted additional Measurement Type.	015-1.26	
7/23/2010	Modified language to provide additional enhancement	015-1.19, 015-1.20, 015-1.22 and 015-1.23	
7/30/2010	In Max Base Load, under Measurement Type, added clarification phrase to "b) Average Demand"	015-1.17 Event Information	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	



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4. SUPPORTING DOCUMENTATION

a. Description of Request:

Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.

b. Description of Recommendation:

For the second phase, develop business practices to provide more clarity and granularity for the measurement and verification aspects of wholesale market demand response products.

c. Business Purpose:

The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.

e. Additional Background documentation

- DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>
- Presentation of the wholesale recommendation given on October 3: ISO presentation - <http://www.naesb.org/pdf3/dsmee100308w7.pdf>
- Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>

[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]

Comments Submitted by G. Fry, Northeast Utilities
on NAESB WEQ 2010 Annual Plan Items 4a and 4b

From: Gene Fry
Sent: Tuesday, January 04, 2011 15:36
To: Galik, Cory
Subject: Northeast Utilities Comments (Round 1) on NAESB Draft DR Business Practices Standards

Cory and NAESB,

On December 8, 2010, NAESB invited comments on the proposed Business Practice Standards to support DR and DSM-EE programs (DR Phase 2) and another document.

Below is the first round of comments by Northeast Utilities on that document. Northeast Utilities anticipates making further comments on both documents by January 14, 2010.

In four places, the standard for accuracy is materially mis-phrased. In Sections 015-1.1.3, 015-1.5.3, 015-1.9.3, and 015-1.13.3, the draft standards say that **accuracy should not exceed 3.0%**.

In fact, accuracy should exceed 97%.
Error or uncertainty should not exceed 3.0%.

The easiest way to fix this problem is to say that accuracy should be within 3.0%. That is, replace "not to exceed 3.0%" with "to within 3.0%" in the four affected sections.

Please adjust the phrasing in those four sections to make good sense.

Gene Fry
Northeast Utilities
Conservation & Load Management
Program Evaluation

	RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE
	Requesters: DSM-EE Subcommittee Request No.: 2010 WEQ AP Item 4(a) and 4(b)
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1. RECOMMENDED ACTION:

	Accept as requested
X	Accept as modified below
	Decline

**EFFECT OF EC VOTE TO ACCEPT
RECOMMENDED ACTION:**

X	Change to Existing Practice
	Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

	Initiation
X	Modification
	Interpretation
	Withdrawal
X	Principle
X	Definition
X	Business Practice Standard
X	Document
	Data Element
	Code Value
	X12 Implementation Guide
X	Business Process Documentation

Per Recommendation:

X	Initiation
X	Modification
	Interpretation
	Withdrawal
X	Principle
X	Definition
X	Business Practice Standard
X	Document
	Data Element
	Code Value
	X12 Implementation Guide
X	Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The standards support the measurement and verification characteristics of Demand Response products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Demand Response products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this draft is not intended to replace applicable Governing Documents, for wholesale Demand Response, and in the event of a conflict, the Governing Documents shall have precedence.

WEQ-015 Business Practices for Wholesale Electricity Demand Response Programs - Please see attached documentation.



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Business Practices for Measurement and Verification of Wholesale Electricity Demand Response

Introduction

1. Measurement and Verification Standards

These Measurement and Verification (M&V) standards are intended to facilitate Demand Response in wholesale electricity markets by providing a common framework for the following:

- Transparency: accessible and understandable M&V requirements for Demand Response products;
- Accountability: criteria that will enable the System Operator to accurately measure performance of Demand Response resources; and Consistency: standards applicable across all wholesale electricity markets.

2. Applicability of Measurement and Verification Standards:

ISO/RTO Administered Markets

These standards are applicable only to Independent System Operator-Regional Transmission Organization administered markets in North America. The standards reflect business practices applicable to measurement and verification of wholesale market Demand Response services including the following four product/service categories¹:

Energy Service

A type of Demand Response service in which Demand Resources delivers a quantity of electricity measured in MWhs.

Capacity Service

A type of Demand Response service in which Demand Resources are obligated as a means of controlling Demand over a defined period of time measured in MW.

Reserve Service

A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements established to meet applicable reliability standards.

¹ The terms Product(s) or Service(s) may be used interchangeably in these standards.



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Regulation Service

A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.

These standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services. System Operators are not required to offer these Services and may not currently offer each of these Services. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section.

Tariff Conflict and NERC Standards:

In the event of a conflict between these business practices and a System Operator's Governing Documents, the Governing Documents shall have precedence. Terms defined in the Definition of Terms do not modify or supersede definitions in the Governing Documents that apply to the compensation, design, operation, or use of Demand Response services. Additionally, all entities supplying Demand Response Services shall comply with applicable NERC reliability standards.

Non-ISO/RTO Markets:

Wholesale Demand Response standards do not apply in markets administered by non-ISO/RTOs; such standards will be developed when required.



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3. Overview of the Standards

These M&V standards establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value. Commonalities may be found among the standards for the four product categories outlined in section 2 above. The following categories are applicable to each of ~~these~~ the four types of Demand Response products.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation



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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value corresponding to a specific Demand Resource. The standards include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each of the four types of Demand Response service. Criteria for performance evaluation methodologies apply to baseline information, Demand Response event information and special processing, as shown below.

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These standards provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services; they do not specify detailed characteristics of performance evaluation methodologies. The System Operator may offer multiple performance evaluation models and may assign a Demand Resource to a model based on the Load characteristics of the Demand Resource or allow the Demand Resource provider to choose a performance evaluation model consistent with its load characteristics from a predefined list. The following methodology types are applicable to wholesale Demand Response Services:

Maximum Base Load: A performance evaluation methodology based solely on the ability of a Demand Resource to maintain its electricity usage at or below a specified level during a Demand Response Event.

Meter Before / Meter After: A performance evaluation methodology in which electricity Demand over a prescribed period of time prior to resource Deployment is compared to similar readings during the Sustained Response Period.

Baseline Type-I: A Baseline performance evaluation methodology based on historical interval meter data for a Demand Resource that may also include other parameters such as weather and calendar data.

Baseline Type-II: A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the revenue meter for the Demand Resource.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	
Metering Generator Output	✓	✓	✓	✓



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WEQ-000-2 DEFINITION OF TERMS

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

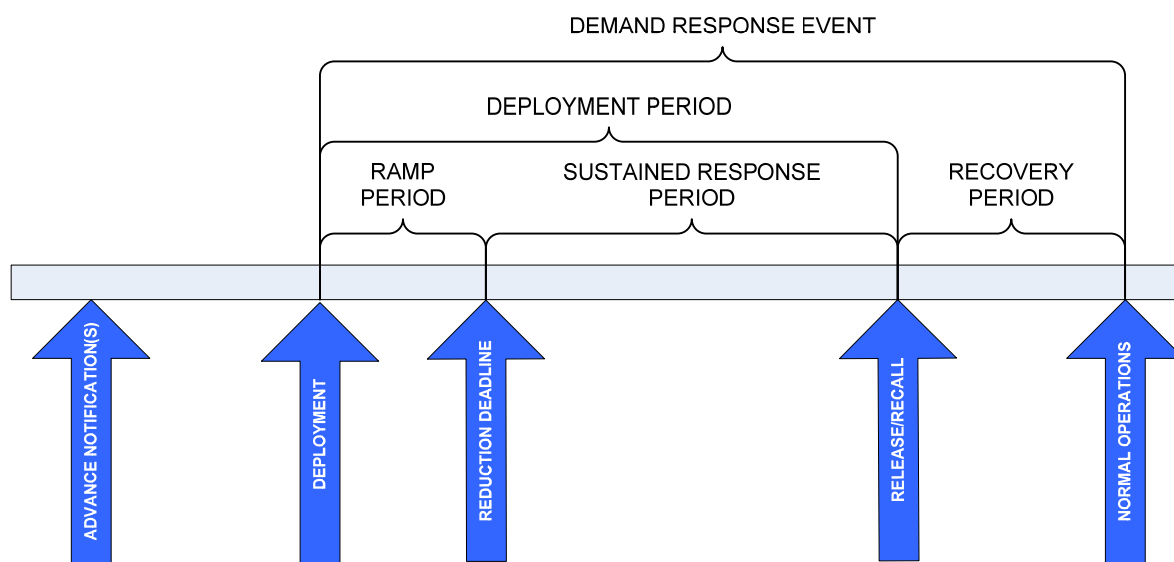


Figure 1. Timing of a Demand Response Event

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After-the-Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non-Interval Meter).

Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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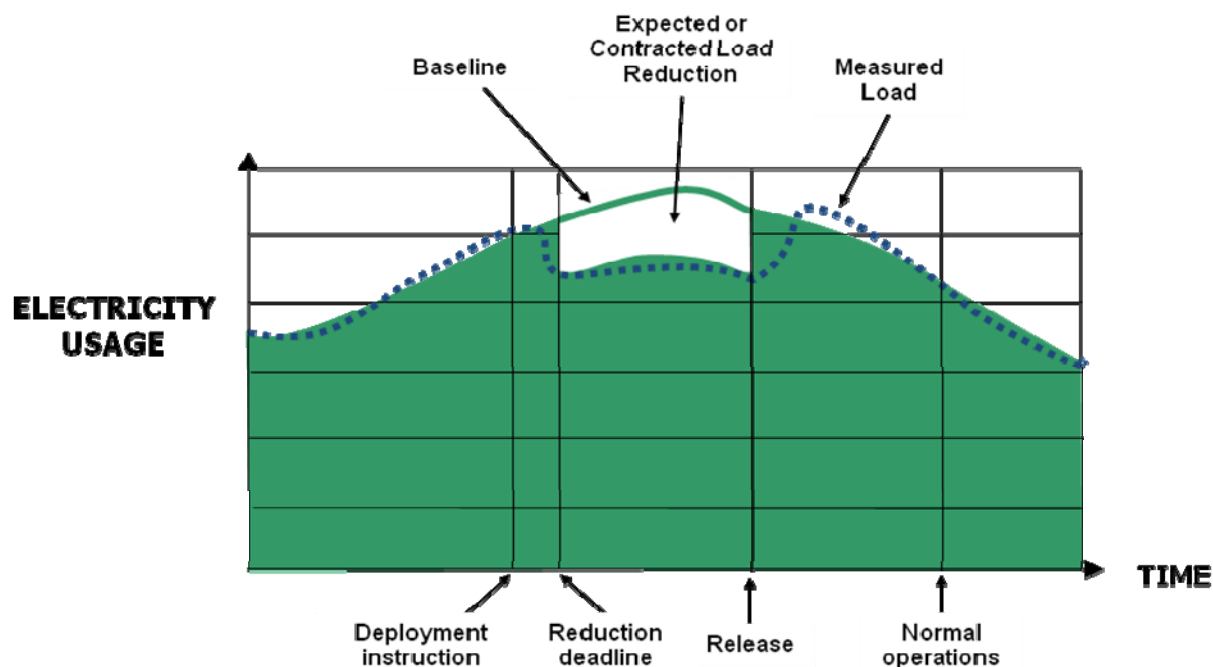


Figure 2. Illustration of Baseline Concept.

Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type-I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data, which may also include other variables such as weather and calendar data.

Baseline Type-II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

Baseline Window: A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.

Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.



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Demand: The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).

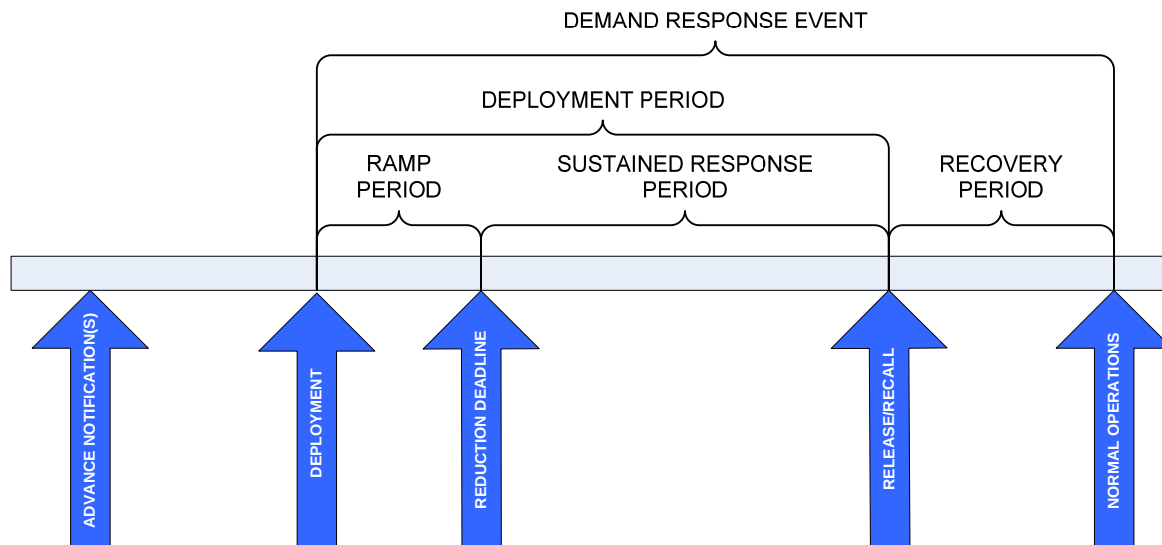
Demand Reduction Value: Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.

Demand Resource: A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response.

Demand Resource Availability^[T1]: The potential Demand Reduction Value available to be dispatched for a Demand Response Event^[T2].

Demand Response: A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

Demand Response Event: A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be applicable to all Demand Response products or services.



Demand Response Provider: The entity that is responsible for delivering Demand Response.

Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.



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Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly-Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

Load: An end-use device or customer that receives power from the electric system (NERC Definition).

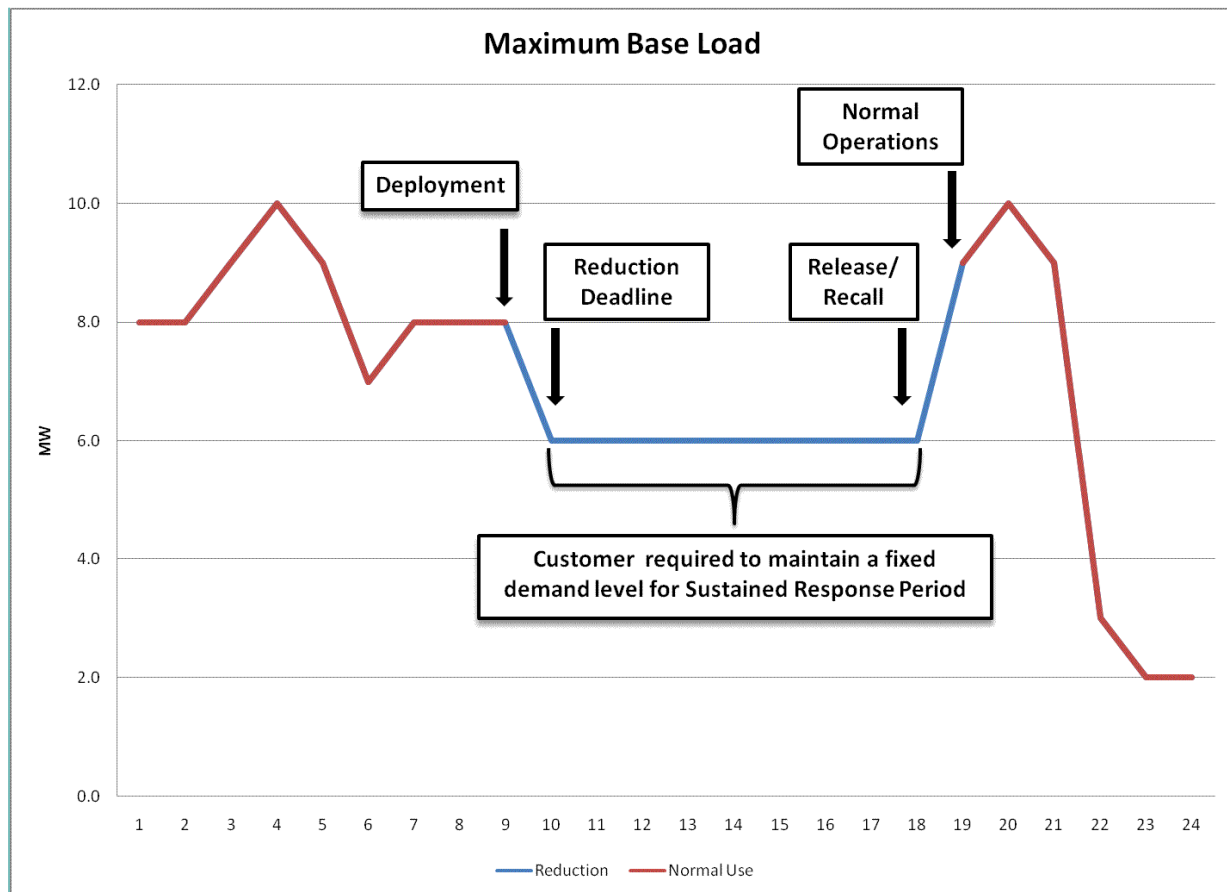


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Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.



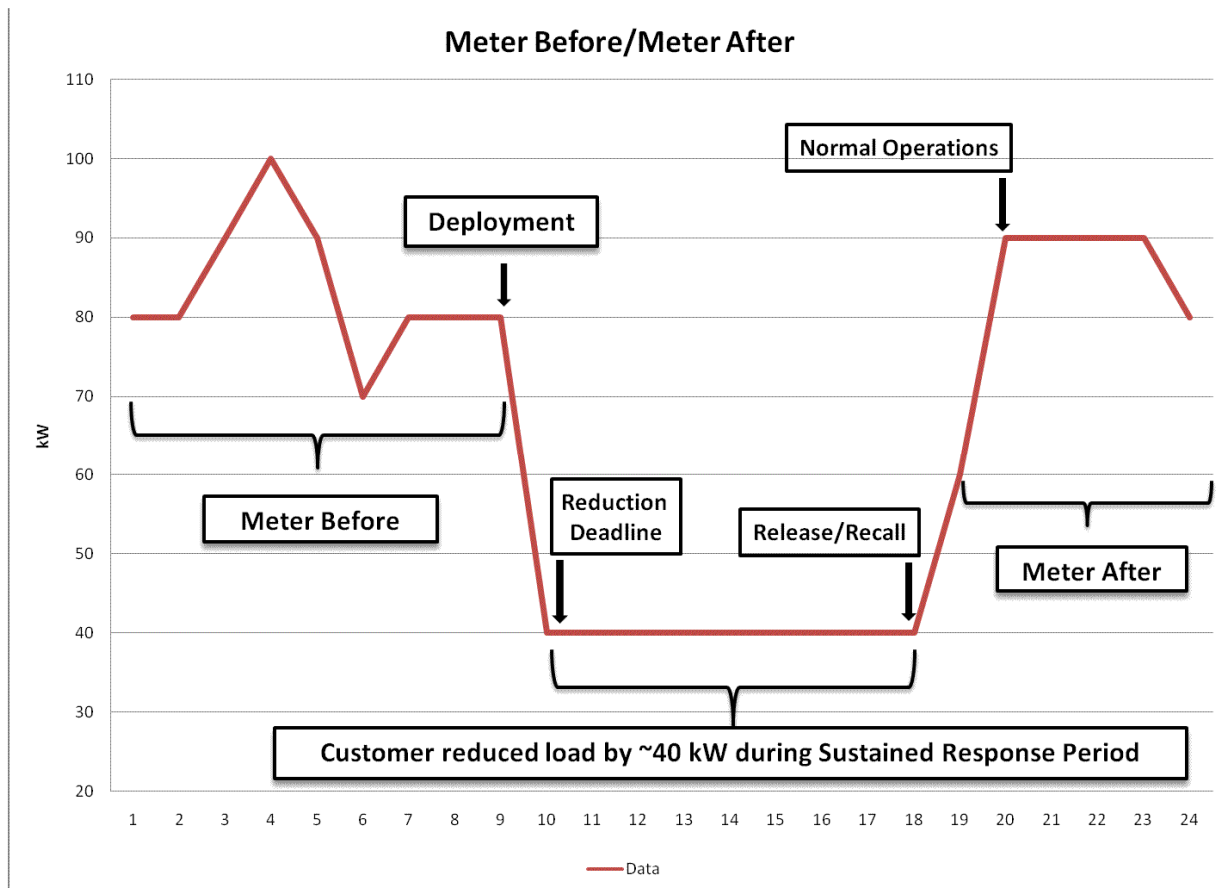
[T3]



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Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.



Meter Data Recording Interval: The time between electricity meter usage recordings.

Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

Metering Generator Output^[T4]: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources [may be](#) required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.

Telemetry Interval: The unit of time between communication of telemetered data.

Validation, Editing and Estimation: The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.



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Business Practice Requirements:

Provision of Wholesale Electric Demand Response Energy Products

Applicability

The Standard applies to any entity that administers wholesale Demand Response Energy Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.0 GENERAL

015-1.0.1 Advance Notification

The Governing Documents shall specify any requirements for an Advance Notification instruction.

015-1.0.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.0.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.

015-1.0.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources may begin returning to Normal Operations.

015-1.0.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.0.6 Demand Resource Availability Measurement

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.0.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand.

015-1.0.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.



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015-1.1 TELEMETRY

015-1.1.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data. For purposes of these standards, Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator.

015-1.1.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.1.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.1.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.1.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.1.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.1.7 Governor Control Equivalent

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.2 AFTER-THE-FACT METERING

015-1.2.1 After-the-Fact Metering Requirement

After-the-Fact Metering is required unless otherwise specified by the Governing Documents.

015-1.2.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements,

015-1.2.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.



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015-1.2.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.2.5 Meter Data Reporting Interval

Meter Data Reporting Interval shall not exceed 1 hour.

015-1.2.6 Clock / Time Accuracy

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.2.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements.

015-1.2.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.3 PERFORMANCE EVALUATION

015-1.3.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Capacity Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Capacity Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.



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015-1.4 GENERAL

015-1.4.1 Advance Notification

Advance Notification instruction may be issued a maximum of one day ahead of the deployment event.

015-1.4.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.4.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline. The minimum Reduction Deadline is instantaneous and the maximum Reduction Deadline is two hours.

015-1.4.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.4.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.4.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.4.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand Resources for the purposes of Measurement and Verification.

15-1.4.8 Transparency of Requirements

Any specific requirements shall be defined in governing the Governing Documents and shall be posted in a publicly accessible location.

015-1.5 TELEMETRY

015-1.5.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.5.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.



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015-1.5.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

15-1.5.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.5.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.5.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.5.7 Governor Control Equivalent

Not applicable to Capacity Service unless otherwise specified by the Governing Documents.

015-1.6 AFTER-THE-FACT METERING

015-1.6.1 After-the-Fact Metering Requirement

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

015-1.6.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.6.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.6.5 Meter Data Reporting Interval

The Meter Data Reporting Interval shall not exceed 1 hour.

015-1.6.6 Clock / Time Accuracy

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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015-1.6.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.7 PERFORMANCE EVALUATION

015-1.7.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Reserve Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Reserve Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.8 GENERAL

015-1.8.1 Advance Notification

The Governing Documents shall specify any requirements for the Advance Notification instruction.

015-1.8.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.8.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.



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015-1.8.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.8.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.8.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.8.7 Aggregation

The Governing Documents shall specify any requirements for Aggregated Demand Resources.

015-1.8.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.9 TELEMETRY

015-1.9.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data

015-1.9.2 On-Site Generation Telemetry

If on-site generation is present behind the primary telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.9.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.9.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.9.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.9.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

**Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)**

Review and develop business practice standards to support DR and DSM-EE programs

- 015-1.9.7 Governor Control Equivalent**
Not applicable to Reserve Service unless otherwise specified by the Governing Documents.
- 015-1.10 AFTER-THE-FACT METERING**
- 015-1.10.1 After-the-Fact Metering Requirement**
After-the-fact Metering is required unless otherwise specified by the Governing Documents.
- 015-1.10.2 Meter Accuracy**
After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.
- 015-1.10.3 Details of Meter/Equipment Standards**
Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.
- 015-1.10.4 Meter Data Reporting Deadline**
A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.
- 015-1.10.5 Meter Data Reporting Interval**
A Meter Data Reporting Interval shall not exceed 1 hour.
- 015-1.10.6 Clock / Time Accuracy**
The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.
- 015-1.10.7 Validating, Editing & Estimating (VEE) Method**
The Governing Documents shall specify VEE requirements.
- 015-1.10.8 On-Site Generation Meter Requirement**
The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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015-1.11 PERFORMANCE EVALUATION

015-1.11.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Regulation Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Regulation Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.12 GENERAL

015-1.12.1 Advance Notification

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.2 Deployment Time

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.3 Reduction Deadline

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.4 Release/Recall

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.



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015-1.12.5 Normal Operations

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.6 Demand Resource Availability Measurement

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand Resources.

015-1.12.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.13 TELEMETRY

015-1.13.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.13.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.13.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.13.4 Telemetry Interval

The telemetry Interval shall not exceed six seconds (NERC BAL-005-0b, R8).

015-1.13.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.13.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.13.7 Governor Control Equivalent

Demand Resources providing Regulation Service shall respond to grid frequency deviations, similar to governor action provided by generation resources, unless otherwise specified by the Governing Documents.



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015-1.14 AFTER-THE-FACT METERING

015-1.14.1 After-the-Fact Metering Requirement

After-the-fact Metering is ~~not~~ required unless otherwise specified by the Governing Documents^[r6].

015-1.14.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.14.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.

015-1.14.5 Meter Data Reporting Interval

A Meter Data Reporting Interval shall not exceed 1 hour.

015-1.14.6 Clock / Time Accuracy

In accordance with NERC Reliability Standards, the Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.

015-1.14.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.15 PERFORMANCE EVALUATION

015-1.15.1 Rules for Performance Evaluation

Performance shall be evaluated using telemetry data and additionally through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Meter Before / Meter After
- Metering Generator Output



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Business Practice Requirements

Maximum Base Load Evaluation

015-1.16 BASELINE INFORMATION

There are no Baseline calculations defined for Maximum Base Load evaluations. The Maximum Base Load Evaluation methodology shall be associated with a demand reduction obligation compared to the Demand Resource's [average\[T7\]](#) Load or as specified by the Governing Documents.

015-1.17 EVENT INFORMATION

015-1.17.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.17.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.17.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.17.4 Measurement Type

During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance shall be one of the following unless otherwise specified by the Governing Documents:

- a) Peak Demand
- b) Average Demand - over a period of from 5 minutes to the entire Performance Window

015-1.18 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Meter Before / Meter After

015-1.19 BASELINE INFORMATION

015-1.19.1 Baseline Window

The Governing Documents shall specify the time interval associated with the meter read, prior to deployment, used to establish the Baseline Window.



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015-1.19.2 Calculation Type

During the Baseline Window, the energy consumption or Demand of the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average

015-1.19.3 Sampling Precision and Accuracy

Sampling is not permitted for this performance evaluation type, unless otherwise specified by the Governing Documents.

015-1.19.4 Exclusion Rules

The Governing Documents shall specify any exclusion rules.

015-1.19.5 Baseline Adjustments

Baseline Adjustments are not permitted for this performance evaluation type, unless specified by the Governing Documents.

015-1.19.6 Adjustment Window

No Adjustment Window is used for this model unless otherwise specified by the Governing Documents.

015-1.20 EVENT INFORMATION

015-1.20.1 Use of real-time Telemetry

The Governing Documents specify that real-time Telemetry data may or may not be utilized to measure performance.

015-1.20.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.20.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.20.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average



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015-1.21 SPECIAL PROCESSING

015-1.21.1 Highly-Variable Load Logic

The Governing Documents shall specify any performance evaluation requirements for Highly-Variable Loads.

015-1.21.2 On-Site Generation Requirements

The Governing Documents shall specify any performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-I (Interval Meter)

015-1.22 BASELINE INFORMATION

015-1.22.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.22.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.22.3 Sampling Precision and Accuracy

Sampling is not permitted for this Performance Evaluation type, unless otherwise specified by the Governing Documents.

015-1.22.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window



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015-1.22.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

015-1.22.6 Adjustment Window

The Adjustment Window shall begin no more than four hours after [T8] deployment.

015-1.23 EVENT INFORMATION

015-1.23.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry is required to measure performance.

015-1.23.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance unless telemetry is specified as the method of measurement.

015-1.23.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.23.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression

015-1.24 SPECIAL PROCESSING

015-1.24.1 Highly-Variable Load Logic

The Governing Documents may specify performance evaluation requirements for Highly-Variable Loads.

015-1.24.2 On-Site Generation Requirements

The Governing Documents may specify performance evaluation requirements for on-site generation.



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Business Practice Requirements

Baseline Type-II (Non-Interval Meter)

015-1.25 BASELINE INFORMATION

015-1.25.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.25.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.25.3 Sampling Precision and Accuracy

The Governing Documents shall specify sampling precision and accuracy requirements.

015-1.25.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window

015-1.25.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

015-1.25.6 Adjustment Window

The Adjustment Window shall begin no more than four hours prior to deployment.



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015-1.26 EVENT INFORMATION

015-1.26.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is required to measure performance.

015-1.26.2 Use of After-The-Fact Metering

After-the-fact metering or other energy measurement technology meeting the requirements of the Governing Documents shall be used to measure performance.

015-1.26.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.26.4 Measurement Type

During the Performance Window, the performance of the Demand Resource shall be evaluated using one of the following unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression

015-1.27 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Metering Generator Output

015-1.28 BASELINE INFORMATION

The Governing Documents shall specify Baseline calculations for Metering Generator Output.

015-1.29 EVENT INFORMATION

015-1.29.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.29.2 Use of After-The-Fact Metering

After-the-fact metering on the generator and optionally on the associated Load shall be used to measure performance unless otherwise specified by the Governing Documents.

015-1.29.3 Performance Window

The Governing Documents shall specify the Performance Window.



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015-1.29.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using the total measured generation output unless otherwise specified by the Governing Documents.

015-1.30

SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.



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Revision History

Business Practice Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with " Market Rules pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.0 through 015-1.10	
06/11/2010	Modified language to provide additional enhancement.	015-1.12 through 015-1.14	
06/18/2010	Changed the Telemetry Accuracy and Meter Accuracy per the IRC Matrix update.	015-1.1 through 015-1.2 and 015-1.9 through 015-1.10	
06/23/2010	Modified language to include parameters in IRC Matrix.	015-1.4 through 015-1.6.	
7/23/2010	Added definition for "Governing Documents" and modified text accordingly throughout business practice standards.	Definition section addition and modified all applicable locations in document.	
7/30/2010	In Regulation, under Telemetry Accuracy, changes to 5% from 3%.	015-1.13 Telemetry	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	
9/16/2010	Replaced glossary with glossary approved in May 2010.	Glossary	

Comments Submitted by B. Sailors, Duke Energy



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Performance Evaluation Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed “System Operator” and replaced it with “Governing Documents pertaining to demand response” to more accurately reflect that rules are developed by markets not the System Operator.	015-1.11 through 015-1.30	
7/17/2010	Added clarifications in Use of ATF Metering and inserted additional Measurement Type.	015-1.26	
7/23/2010	Modified language to provide additional enhancement	015-1.19, 015-1.20, 015-1.22 and 015-1.23	
7/30/2010	In Max Base Load, under Measurement Type, added clarification phrase to “b) Average Demand”	015-1.17 Event Information	
8/13/2010	Removed “Market Rules” and replaced it with “Governing Documents.”	Throughout document.	



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

4. SUPPORTING DOCUMENTATION

a. Description of Request:

Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.

b. Description of Recommendation:

For the second phase, develop business practices to provide more clarity and granularity for the measurement and verification aspects of wholesale market demand response products.

c. Business Purpose:

The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.

e. Additional Background documentation

- DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>
- Presentation of the wholesale recommendation given on October 3: ISO presentation - <http://www.naesb.org/pdf3/dsmee100308w7.pdf>
- Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>

[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]

Formal Comments Submitted by the Standard Review Subcommittee

Quadrant: Wholesale Electric Quadrant

Recommendations: 2010 WEQ AP Item 4(a) and 4(b) - Review and develop business practice standards to support DR and DSM-EE programs

Submitted By: WEQ Standards Review Subcommittee

Date: January 14, 2011

Under the Standards Review Subcommittee (SRS) Scope of Work, which was approved by the SRS on May 18, 2010, the SRS agreed to review recommendations and if subcommittee deemed appropriate, they would submit advisory comments to the Executive Committee (EC) for consideration. As stated in the Scope of Work these comments are “not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices.”

- In the recommendation the references to “program” were changed to “products” and/or “services.” Footnote 1 indicates the terms may be used interchangeably. These are not defined terms though in some instances “products” and “services” are capitalized. The SRS suggests for consistency that the terms either be defined or lower cased.
- When the subcommittee co-chairs initially began work on the common WEQ Glossary the WEQ-015 had not been approved by the EC and ratified by the membership. The SRS recommends that the Definition of Terms section be removed from being embedded in WEQ-015 and added as a separate section for WEQ-000.
- In section WEQ-015-1.14.1 of the clean version there is a comment “Need to refer to the latest IRC matrix to determine if this agrees” which either needs to be addressed and then deleted or deleted if it has been addressed. The same section has “~~not~~” with the text being struck through. Since this is the clean version it is unclear whether the intent is to keep “~~not~~” or have it removed when the recommendation approved and sent for membership ratification.
- The SRS is also attaching redlines editorial changes to the clean version of the recommendation posted for formal comments.
- The following should be included in WEQ-000-1 Abbreviations and Acronyms:
 - o M&V
 - o VEE
- The SRS would recommend the Revision History sections be moved from the standards section of the document Section 4 Supporting Documentation in the recommendation. As it appears now the Revision History is part of what would be included in the published version of the Business Practice Standard.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

1. RECOMMENDED ACTION:

☐	Accept as requested
☒	Accept as modified below
☐	Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒	Change to Existing Practice
☐	Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐	Initiation
☒	Modification
☐	Interpretation
☐	Withdrawal
☒	Principle
☒	Definition
☒	Business Practice Standard
☒	Document
☐	Data Element
☐	Code Value
☐	X12 Implementation Guide
☒	Business Process Documentation

Per Recommendation:

☒	Initiation
☒	Modification
☐	Interpretation
☐	Withdrawal
☒	Principle
☒	Definition
☒	Business Practice Standard
☒	Document
☐	Data Element
☐	Code Value
☐	X12 Implementation Guide
☒	Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The standards support the measurement and verification characteristics of Demand Response products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Demand Response products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this draft is not intended to replace applicable Governing Documents, for wholesale Demand Response, and in the event of a conflict, the Governing Documents shall have precedence.

WEQ-015 Business Practices for Wholesale Electricity Demand Response Programs - Please see attached documentation.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

WEQ-000 Changes

The following Terms and Definitions are being moved from WEQ-015 to WEQ-000-2 Terms and Definitions.

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

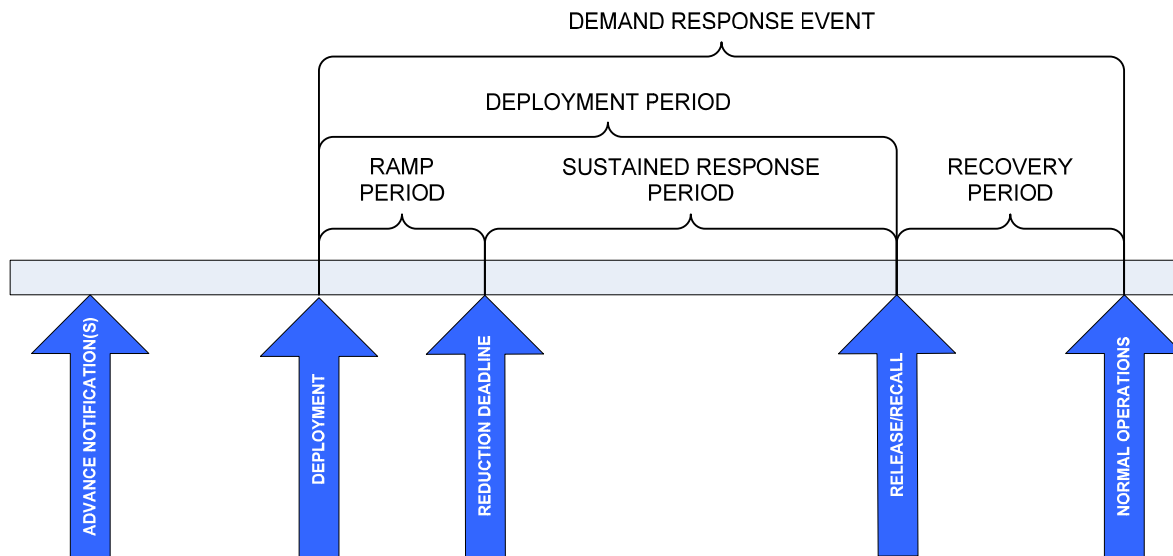


Figure 1. Timing of a Demand Response Event

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After-the-Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non-Interval Meter).

Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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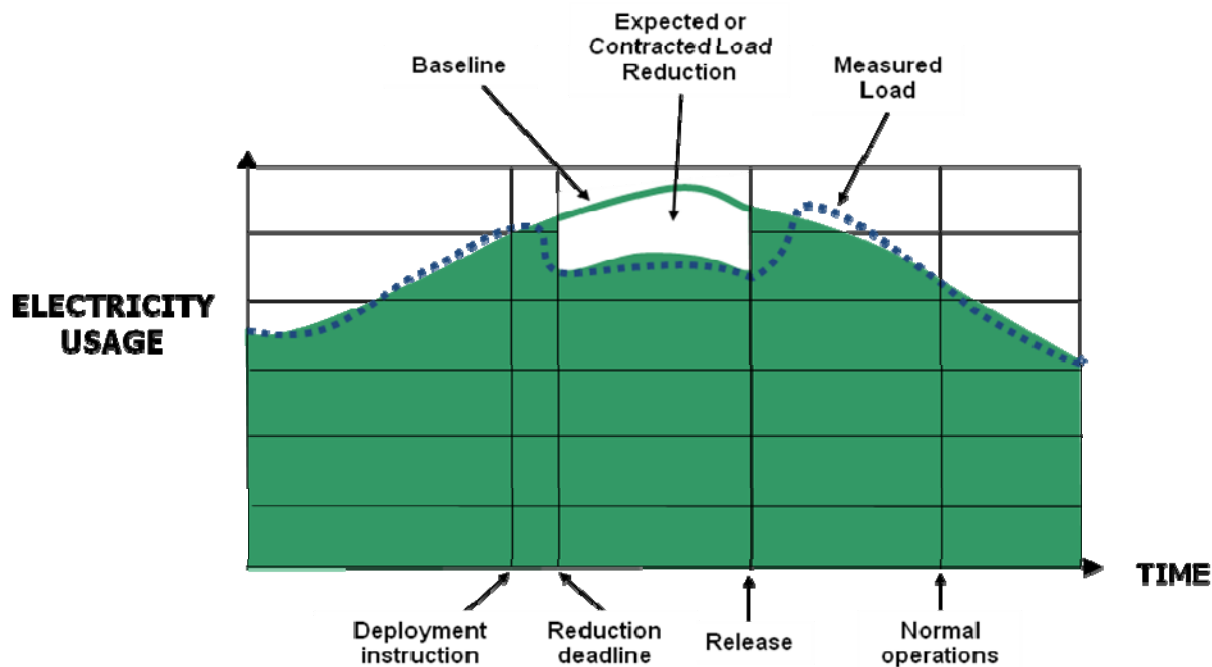


Figure 2. Illustration of Baseline Concept.

Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type-I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data, which may also include other variables such as weather and calendar data.

Baseline Type-II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

Baseline Window: A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.

Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.



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Demand: The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).

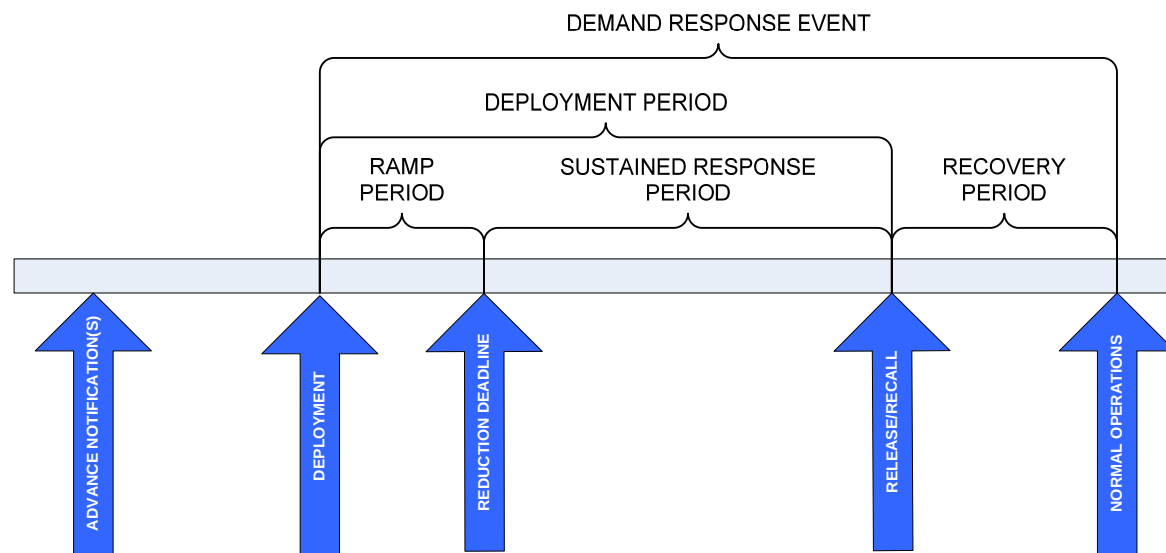
Demand Reduction Value: Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.

Demand Resource: A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response.

Demand Resource Availability: The potential Demand Reduction Value available to be dispatched for a Demand Response Event.

Demand Response: A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

Demand Response Event: A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be applicable to all Demand Response products or services.



Demand Response Provider: The entity that is responsible for delivering Demand Response.

Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.



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Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly-Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

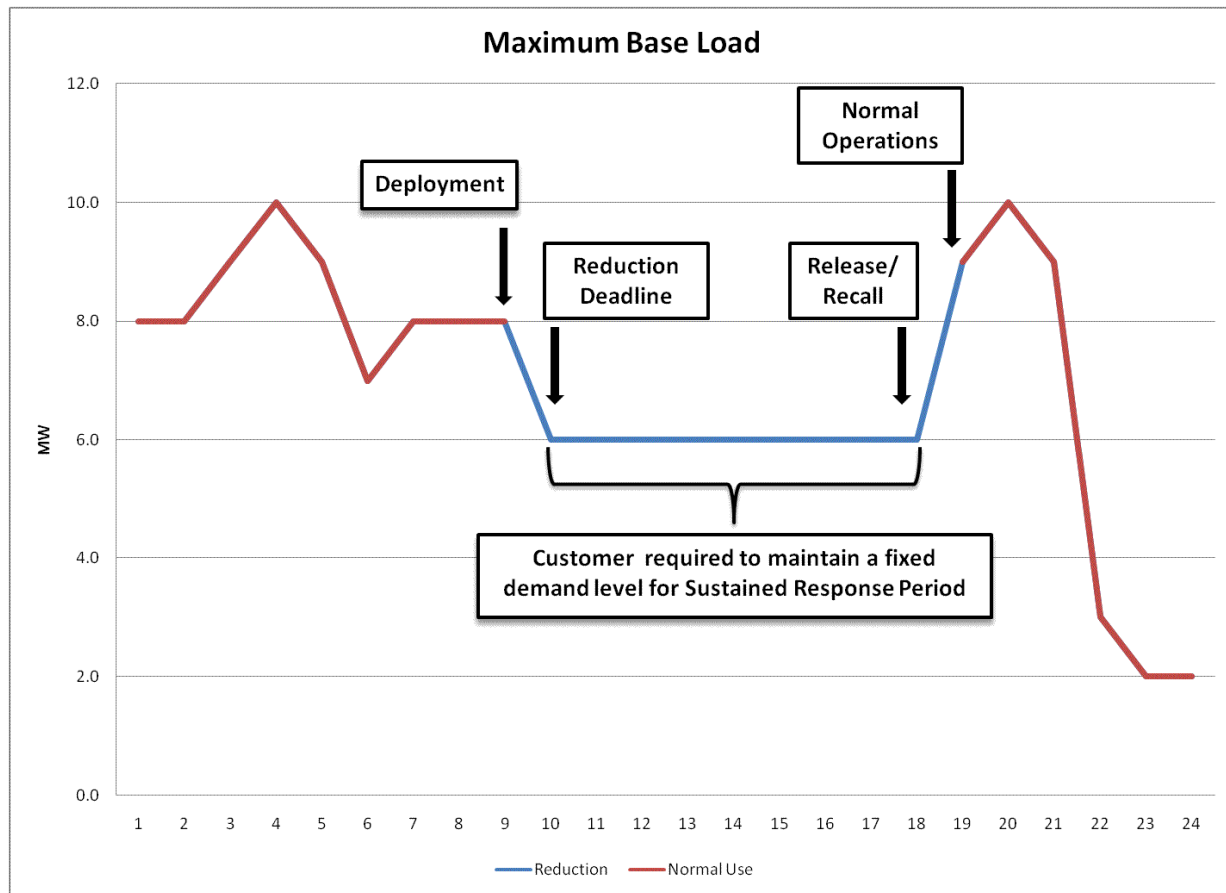
Load: An end-use device or customer that receives power from the electric system (NERC Definition).



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Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.

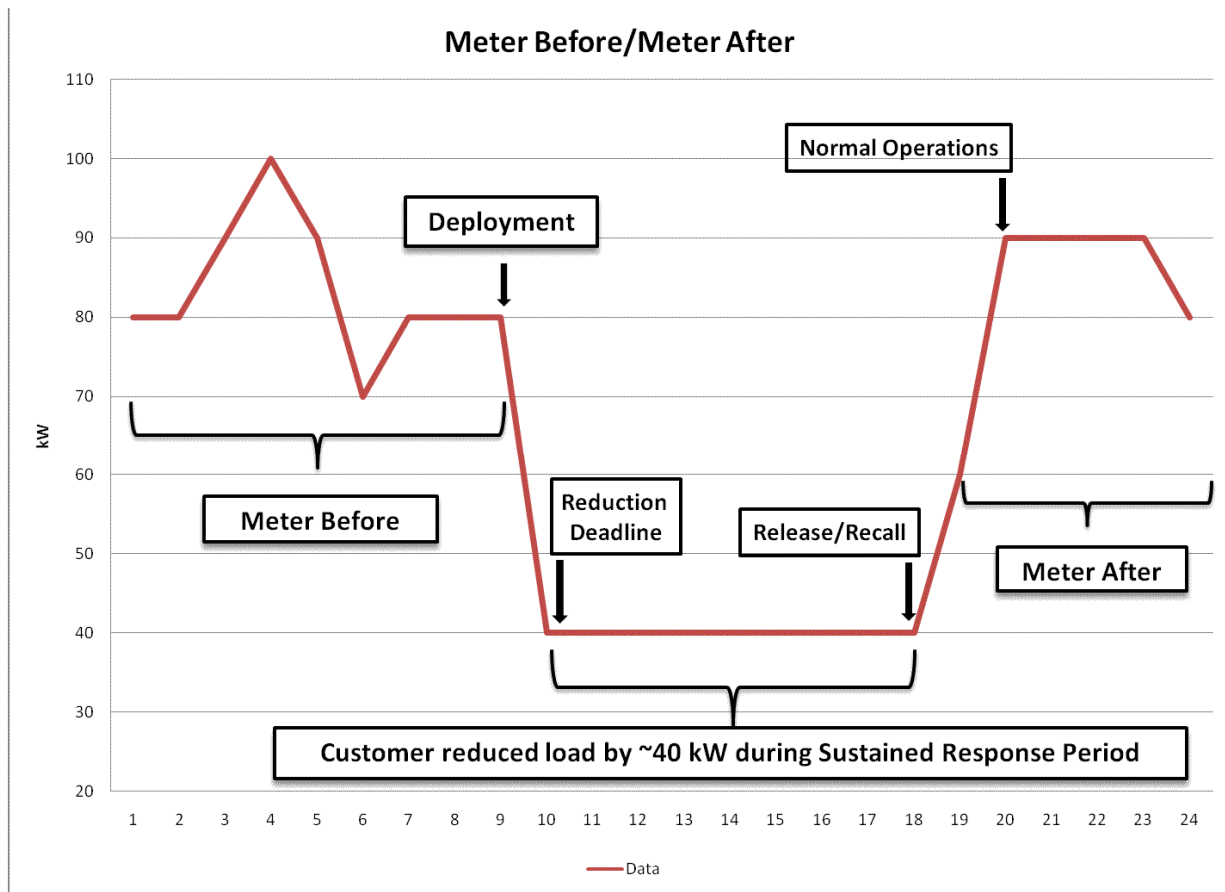




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Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.



Meter Data Recording Interval: The time between electricity meter usage recordings.

Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.

Telemetry Interval: The unit of time between communication of telemetered data.

Validation, Editing and Estimation: The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.



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WEQ-015 Changes

Business Practices for Measurement and Verification of Wholesale Electricity Demand Response

Introduction

1. Measurement and Verification Standards

These Measurement and Verification (M&V) standards are intended to facilitate Demand Response in wholesale electricity markets by providing a common framework for the following:

- Transparency: accessible and understandable M&V requirements for Demand Response products;
- Accountability: criteria that will enable the System Operator to accurately measure performance of Demand Response resources; and
- Consistency: standards applicable across all wholesale electricity markets.

2. Applicability of Measurement and Verification Standards:

ISO/RTO Administered Markets

These standards are applicable only to Independent System Operator-Regional Transmission Organization administered markets in North America. The standards reflect business practices applicable to measurement and verification of wholesale market Demand Response services including the following four product/service categories¹:

Energy Service

A type of Demand Response service in which Demand Resources delivers a quantity of electricity measured in MWhs.

Capacity Service

A type of Demand Response service in which Demand Resources are obligated as a means of controlling Demand over a defined period of time measured in MW.

Reserve Service

A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements established to meet applicable reliability standards.

¹ The terms Product(s) or Service(s) may be used interchangeably in these standards.



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Regulation Service

A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.

These standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services. System Operators are not required to offer these Services and may not currently offer each of these Services. Terms that are capitalized in these standards have the meanings ascribed to them in the [Definitions of Terms section WEQ-000-2 Definition of Terms](#).

Tariff Conflict and NERC Standards:

In the event of a conflict between these business practices and a System Operator's Governing Documents, the Governing Documents shall have precedence. Terms defined in the Definition of Terms do not modify or supersede definitions in the Governing Documents that apply to the compensation, design, operation, or use of Demand Response services. Additionally, all entities supplying Demand Response Services shall comply with applicable NERC reliability standards.

Non-ISO/RTO Markets:

Wholesale Demand Response standards do not apply in markets administered by non-ISO/RTOs; such standards will be developed when required.



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3. Overview of the Standards

These M&V standards establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value. Commonalities may be found among the standards for the four product categories outlined in section 2 above. The following categories are applicable to each of these the four types of Demand Response products.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation



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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value corresponding to a specific Demand Resource. The standards include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each of the four types of Demand Response service. Criteria for performance evaluation methodologies apply to baseline information, Demand Response even information and special processing, as shown below.

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These standards provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services; they do not specify detailed characteristics of performance evaluation methodologies. The System Operator may offer multiple performance evaluation models and may assign a Demand Resource to a model based on the Load characteristics of the Demand Resource or allow the Demand Resource provider to choose a performance evaluation model consistent with its load characteristics from a predefined list. The following methodology types are applicable to wholesale Demand Response Services:

Maximum Base Load: A performance evaluation methodology based solely on the ability of a Demand Resource to maintain its electricity usage at or below a specified level during a Demand Response Event.

Meter Before / Meter After: A performance evaluation methodology in which electricity Demand over a prescribed period of time prior to resource Deployment is compared to similar readings during the Sustained Response Period.

Baseline Type-I: A Baseline performance evaluation methodology based on historical interval meter data for a Demand Resource that may also include other parameters such as weather and calendar data.

Baseline Type-II: A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the revenue meter for the Demand Resource.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	
Metering Generator Output	✓	✓	✓	✓



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WEQ 000-2 DEFINITION OF TERMS

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

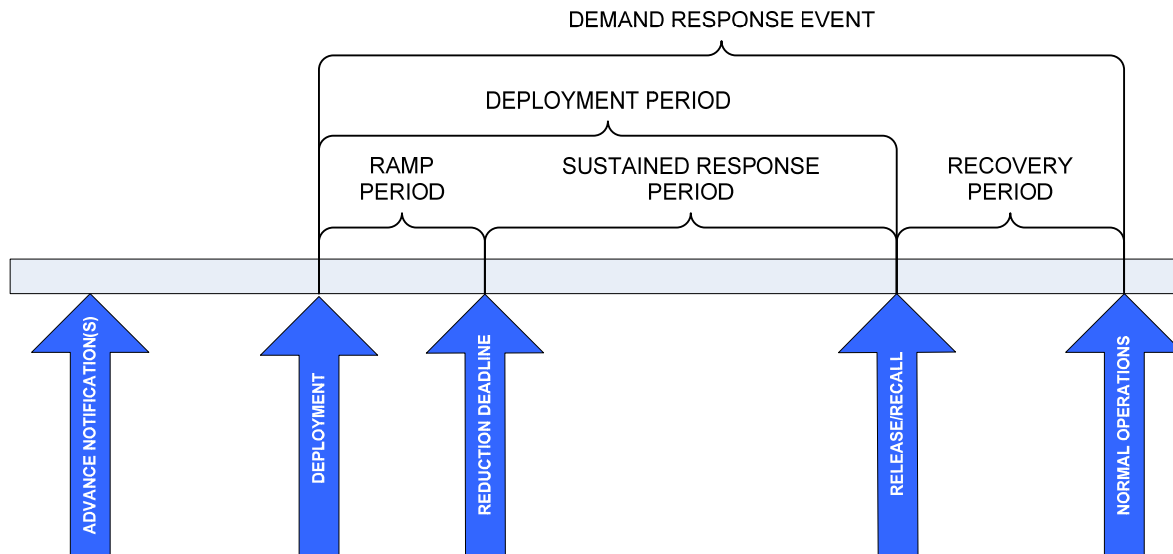


Figure 1. Timing of a Demand Response Event

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After the Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non Interval Meter).

Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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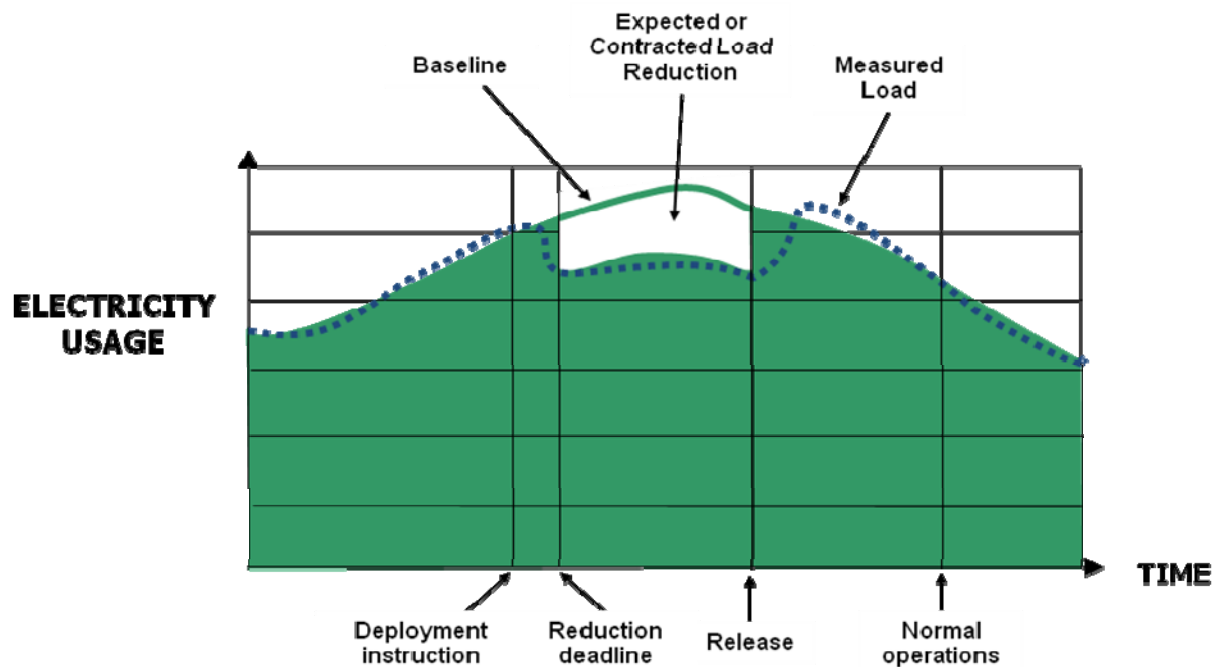


Figure 2. Illustration of Baseline Concept.

Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data, which may also include other variables such as weather and calendar data.

Baseline Type II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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Baseline Window: A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type I and Type II.

Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.

Demand: The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).

Demand Reduction Value: Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.

Demand Resource: A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response.

Demand Resource Availability: The potential Demand Reduction Value available to be dispatched for a Demand Response Event.

Demand Response: A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

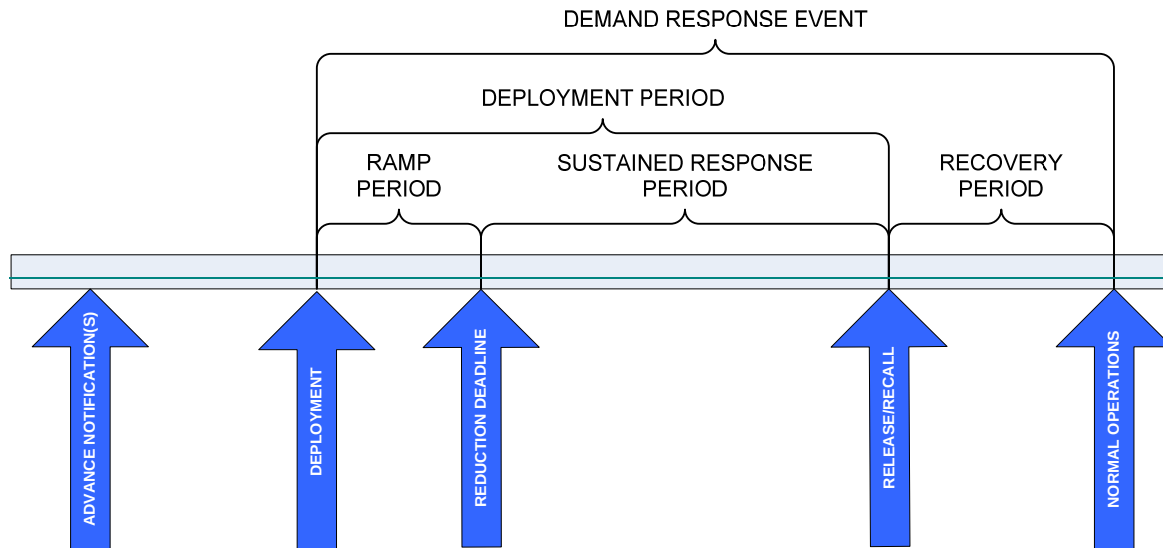
Demand Response Event: A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be not applicable to all Demand Response products or services.



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Demand Response Provider: The entity that is responsible for delivering Demand Response.

Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.

Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

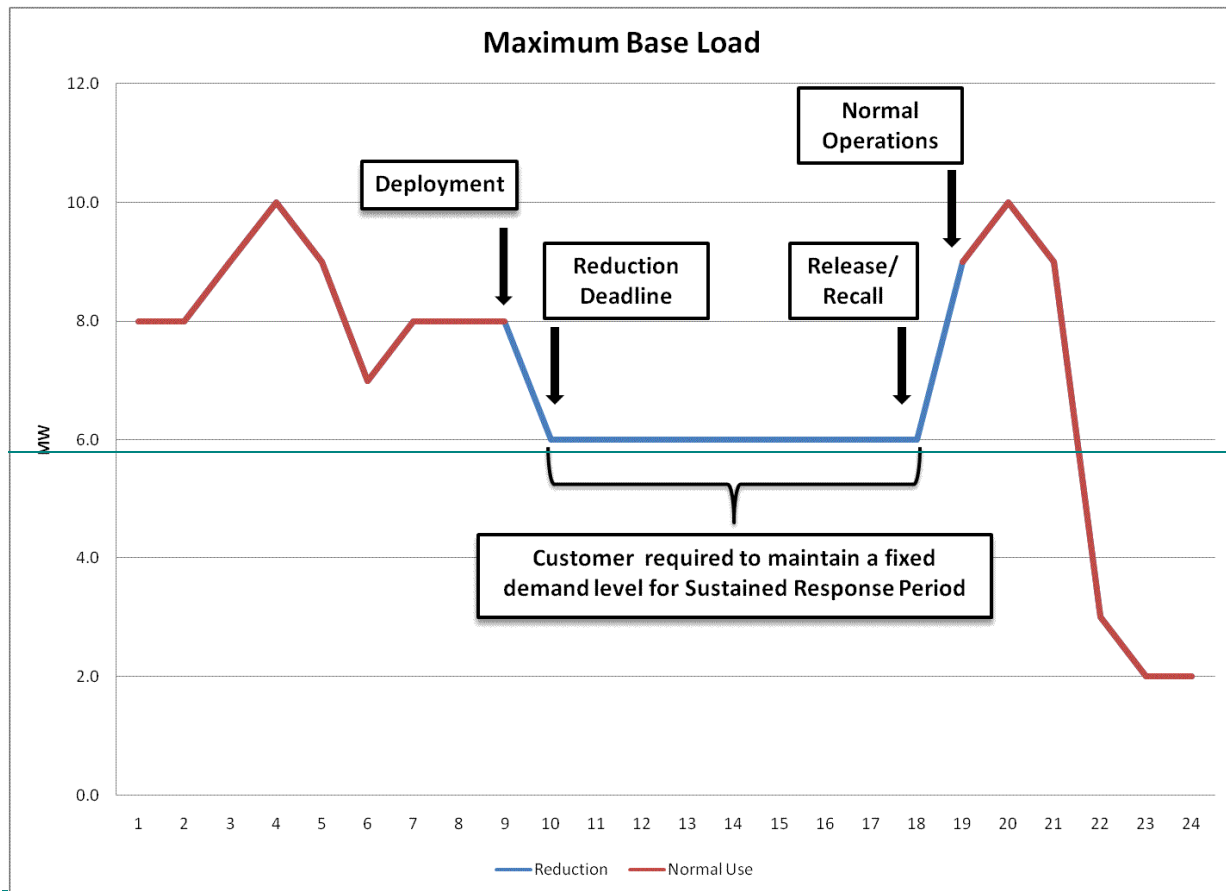
Load: An end-use device or customer that receives power from the electric system (NERC Definition).

Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.



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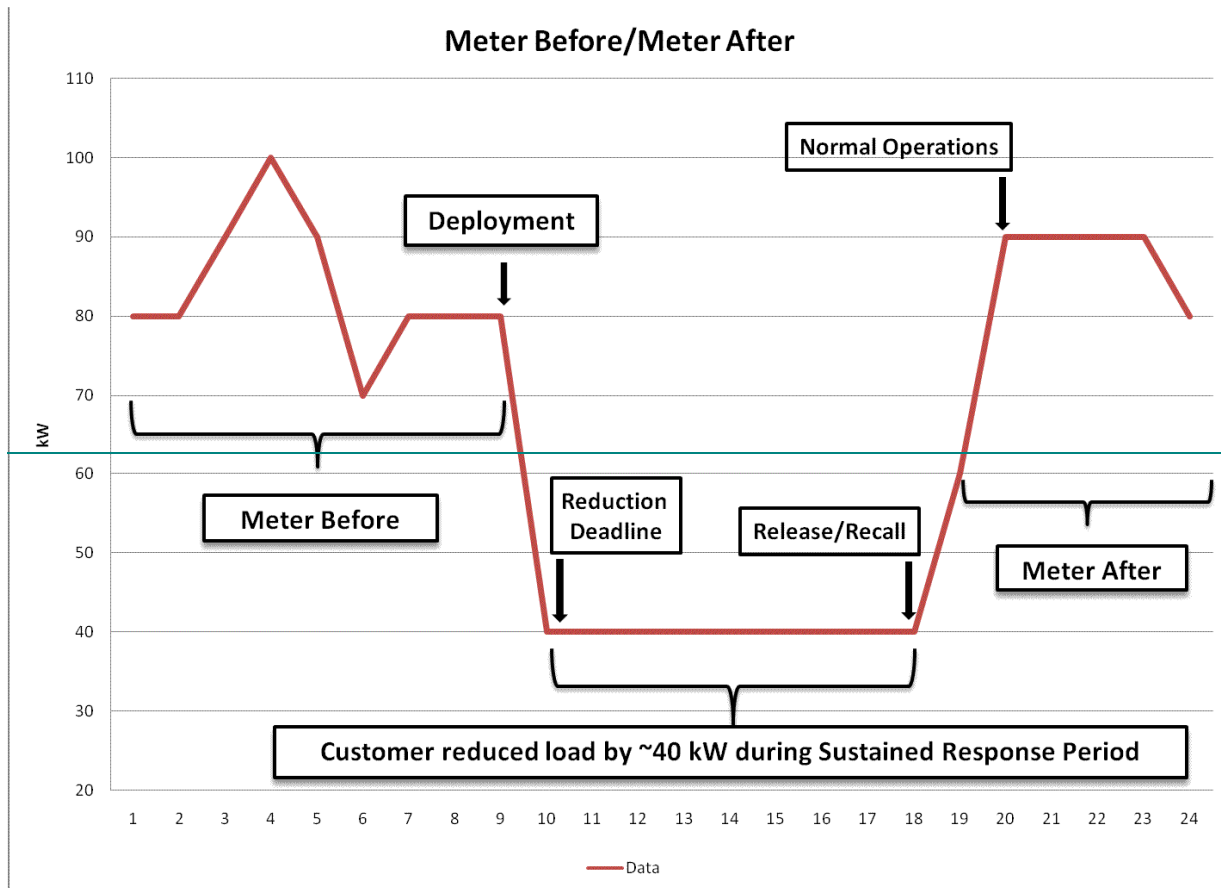


Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.



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Meter Data Recording Interval: The time between electricity meter usage recordings.

Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end of month).

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.



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Telemetry Interval: ~~The unit of time between communication of telemetered data.~~

Validation, Editing and Estimation: ~~The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.~~



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Business Practice Requirements:

Provision of Wholesale Electric Demand Response Energy Products

Applicability

The [Business Practice](#) Standard applies to any entity that administers wholesale Demand Response Energy Products.

Purpose

The purpose of this [Business Practice](#) Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.0 GENERAL

015-1.0.1 Advance Notification

The Governing Documents shall specify any requirements for an Advance Notification instruction.

015-1.0.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.0.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.

015-1.0.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources may begin returning to Normal Operations.

015-1.0.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.0.6 Demand Resource Availability Measurement

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.0.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand.

015-1.0.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.



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015-1.1 TELEMETRY

015-1.1.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data. For purposes of these standards, Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator.

015-1.1.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.1.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.1.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.1.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.1.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.1.7 Governor Control Equivalent

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.2 AFTER-THE-FACT METERING

015-1.2.1 After-the-Fact Metering Requirement

After-the-Fact Metering is required unless otherwise specified by the Governing Documents.

015-1.2.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements,

015-1.2.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.2.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.2.5 Meter Data Reporting Interval

Meter Data Reporting Interval shall not exceed 1 hour.

015-1.2.6 Clock / Time Accuracy

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.2.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements.

015-1.2.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.3 PERFORMANCE EVALUATION

015-1.3.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Capacity Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Capacity Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.



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015-1.4 GENERAL

015-1.4.1 Advance Notification

Advance Notification instruction may be issued a maximum of one day ahead of the deployment event.

015-1.4.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.4.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline. The minimum Reduction Deadline is instantaneous and the maximum Reduction Deadline is two hours.

015-1.4.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.4.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.4.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.4.7 Aggregation

-The Governing Documents shall specify any requirements for aggregated Demand Resources for the purposes of Measurement and Verification.

15-1.4.8 Transparency of Requirements

Any specific requirements shall be defined in governing the Governing Documents and shall be posted in a publicly accessible location.

015-1.5 TELEMETRY

015-1.5.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.5.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.



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015-1.5.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

15-1.5.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.5.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.5.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.5.7 Governor Control Equivalent

Not applicable to Capacity Service unless otherwise specified by the Governing Documents.

015-1.6 AFTER-THE-FACT METERING

015-1.6.1 After-the-Fact Metering Requirement

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

015-1.6.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.6.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.6.5 Meter Data Reporting Interval

The Meter Data Reporting Interval shall not exceed 1 hour.

015-1.6.6 Clock / Time Accuracy

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.



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015-1.6.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.7 PERFORMANCE EVALUATION

015-1.7.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Reserve Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Reserve Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.8 GENERAL

015-1.8.1 Advance Notification

The Governing Documents shall specify any requirements for the Advance Notification instruction.

015-1.8.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.8.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.



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015-1.8.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.8.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.8.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.8.7 Aggregation

The Governing Documents shall specify any requirements for Aggregated Demand Resources.

015-1.8.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.9 TELEMETRY

015-1.9.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data

015-1.9.2 On-Site Generation Telemetry

If on-site generation is present behind the primary telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.9.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.9.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.9.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.9.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.



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- 015-1.9.7 Governor Control Equivalent**
Not applicable to Reserve Service unless otherwise specified by the Governing Documents.
- 015-1.10 AFTER-THE-FACT METERING**
- 015-1.10.1 After-the-Fact Metering Requirement**
After-the-fact Metering is required unless otherwise specified by the Governing Documents.
- 015-1.10.2 Meter Accuracy**
After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.
- 015-1.10.3 Details of Meter/Equipment Standards**
Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.
- 015-1.10.4 Meter Data Reporting Deadline**
A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.
- 015-1.10.5 Meter Data Reporting Interval**
A Meter Data Reporting Interval shall not exceed 1 hour.
- 015-1.10.6 Clock / Time Accuracy**
The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.
- 015-1.10.7 Validating, Editing & Estimating (VEE) Method**
The Governing Documents shall specify VEE requirements.
- 015-1.10.8 On-Site Generation Meter Requirement**
The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.



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015-1.11 PERFORMANCE EVALUATION

015-1.11.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Regulation Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Regulation Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.12 GENERAL

015-1.12.1 Advance Notification

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.2 Deployment Time

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.3 Reduction Deadline

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.4 Release/Recall

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.



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015-1.12.5 Normal Operations

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.6 Demand Resource Availability Measurement

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand Resources.

015-1.12.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.13 TELEMETRY

015-1.13.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.13.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.13.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0%.

015-1.13.4 Telemetry Interval

The telemetry Interval shall not exceed six seconds (NERC BAL-005-0b, R8).

015-1.13.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.13.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.13.7 Governor Control Equivalent

Demand Resources providing Regulation Service shall respond to grid frequency deviations, similar to governor action provided by generation resources, unless otherwise specified by the Governing Documents.



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015-1.14 AFTER-THE-FACT METERING

015-1.14.1 After-the-Fact Metering Requirement

After-the-fact Metering is ~~not~~ required unless otherwise specified by the Governing Documents^[r1].

015-1.14.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.14.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.

015-1.14.5 Meter Data Reporting Interval

A Meter Data Reporting Interval shall not exceed 1 hour.

015-1.14.6 Clock / Time Accuracy

In accordance with NERC Reliability Standards, the Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.

015-1.14.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.15 PERFORMANCE EVALUATION

015-1.15.1 Rules for Performance Evaluation

Performance shall be evaluated using telemetry data and additionally through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Meter Before / Meter After
- Metering Generator Output



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Business Practice Requirements

Maximum Base Load Evaluation

015-1.16 BASELINE INFORMATION

There are no Baseline calculations defined for Maximum Base Load evaluations. The Maximum Base Load Evaluation methodology shall be associated with a demand reduction obligation compared to the Demand Resource's average Load or as specified by the Governing Documents.

015-1.17 EVENT INFORMATION

015-1.17.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.17.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.17.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.17.4 Measurement Type

During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance shall be one of the following unless otherwise specified by the Governing Documents:

- a) Peak Demand
- b) Average Demand - over a period of from 5 minutes to the entire Performance Window.

015-1.18 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Meter Before / Meter After

015-1.19 BASELINE INFORMATION

015-1.19.1 Baseline Window

The Governing Documents shall specify the time interval associated with the meter read, prior to deployment, used to establish the Baseline Window.



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015-1.19.2 Calculation Type

During the Baseline Window, the energy consumption or Demand of the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average.

015-1.19.3 Sampling Precision and Accuracy

Sampling is not permitted for this performance evaluation type, unless otherwise specified by the Governing Documents.

015-1.19.4 Exclusion Rules

The Governing Documents shall specify any exclusion rules.

015-1.19.5 Baseline Adjustments

Baseline Adjustments are not permitted for this performance evaluation type, unless specified by the Governing Documents.

015-1.19.6 Adjustment Window

No Adjustment Window is used for this model unless otherwise specified by the Governing Documents.

015-1.20 EVENT INFORMATION

015-1.20.1 Use of real-time Telemetry

The Governing Documents specify that real-time Telemetry data may or may not be utilized to measure performance.

015-1.20.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.20.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.20.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average.



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015-1.21 SPECIAL PROCESSING

015-1.21.1 Highly-Variable Load Logic

The Governing Documents shall specify any performance evaluation requirements for Highly-Variable Loads.

015-1.21.2 On-Site Generation Requirements

The Governing Documents shall specify any performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-I (Interval Meter)

015-1.22 BASELINE INFORMATION

015-1.22.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.22.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.22.3 Sampling Precision and Accuracy

Sampling is not permitted for this **p**Performance **e**Evaluation type, unless otherwise specified by the Governing Documents.

015-1.22.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window



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015-1.22.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions.

015-1.22.6 Adjustment Window

The Adjustment Window shall begin no more than four hours after deployment.

015-1.23 EVENT INFORMATION

015-1.23.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry is required to measure performance.

015-1.23.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance unless telemetry is specified as the method of measurement.

015-1.23.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.23.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression.

015-1.24 SPECIAL PROCESSING

015-1.24.1 Highly-Variable Load Logic

The Governing Documents may specify performance evaluation requirements for Highly-Variable Loads.

015-1.24.2 On-Site Generation Requirements

The Governing Documents may specify performance evaluation requirements for on-site generation.



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Business Practice Requirements

Baseline Type-II (Non-Interval Meter)

015-1.25 BASELINE INFORMATION

015-1.25.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.25.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression.

015-1.25.3 Sampling Precision and Accuracy

The Governing Documents shall specify sampling precision and accuracy requirements.

015-1.25.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window.

015-1.25.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions.

015-1.25.6 Adjustment Window

The Adjustment Window shall begin no more than four hours prior to deployment.



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015-1.26 EVENT INFORMATION

015-1.26.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is required to measure performance.

015-1.26.2 Use of After-The-Fact Metering

After-the-fact metering or other energy measurement technology meeting the requirements of the Governing Documents shall be used to measure performance.

015-1.26.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.26.4 Measurement Type

During the Performance Window, the performance of the Demand Resource shall be evaluated using one of the following unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression.

015-1.27 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Metering Generator Output

015-1.28 BASELINE INFORMATION

The Governing Documents shall specify Baseline calculations for Metering Generator Output.

015-1.29 EVENT INFORMATION

015-1.29.1 Use of Real-Time Telemetry

The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.

015-1.29.2 Use of After-The-Fact Metering

After-the-fact metering on the generator and optionally on the associated Load shall be used to measure performance unless otherwise specified by the Governing Documents.

015-1.29.3 Performance Window

The Governing Documents shall specify the Performance Window.



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015-1.29.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using the total measured generation output unless otherwise specified by the Governing Documents.

015-1.30

SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.



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Revision History

Business Practice Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with " Market Rules pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.0 through 015-1.10	
06/11/2010	Modified language to provide additional enhancement.	015-1.12 through 015-1.14	
06/18/2010	Changed the Telemetry Accuracy and Meter Accuracy per the IRC Matrix update.	015-1.1 through 015-1.2 and 015-1.9 through 015-1.10	
06/23/2010	Modified language to include parameters in IRC Matrix.	015-1.4 through 015-1.6.	
7/23/2010	Added definition for "Governing Documents" and modified text accordingly throughout business practice standards.	Definition section addition and modified all applicable locations in document.	
7/30/2010	In Regulation, under Telemetry Accuracy, changes to 5% from 3%.	015-1.13 Telemetry	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	
9/16/2010	Replaced glossary with glossary approved in May 2010.	Glossary	



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Revision History

Performance Evaluation Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with "Governing Documents pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.11 through 015-1.30	
7/17/2010	Added clarifications in Use of ATF Metering and inserted additional Measurement Type.	015-1.26	
7/23/2010	Modified language to provide additional enhancement	015-1.19, 015-1.20, 015-1.22 and 015-1.23	
7/30/2010	In Max Base Load, under Measurement Type, added clarification phrase to "b) Average Demand"	015-1.17 Event Information	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	



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Review and develop business practice standards to support DR and DSM-EE programs

4. SUPPORTING DOCUMENTATION

a. Description of Request:

Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.

b. Description of Recommendation:

For the second phase, develop business practices to provide more clarity and granularity for the measurement and verification aspects of wholesale market demand response products.

c. Business Purpose:

The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.

e. Additional Background documentation

- DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>
- Presentation of the wholesale recommendation given on October 3: ISO presentation - <http://www.naesb.org/pdf3/dsmee100308w7.pdf>
- Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>

[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]

Formal Comments Submitted by the ISO/RTO's

Quadrant: Wholesale Electric Quadrant
Recommendations: 2010 WEQ AP Item 4(a) and 4(b) - Review and develop business practice standards to support DR and DSM-EE programs
Submitted By: ERCOT, IESO, ISO-NE, Midwest ISO, NYISO, PJM, SPP
Date: January 14, 2011

These comments are in response to the recommendations 2010 WEQ AP Item 4(a) and 4(b) - Review and develop business practice standards to support DR and DSM-EE.

Comments Specific to 2010 WEQ AP Item 4(a) and 4(b)

- We support the standard as written, with the exceptions noted below, and appreciate the work of the task force to develop the Phase Two standard. We are confident that this standard fulfills the expectations put forth by the FERC specific to providing the level of detail and transparency that the industry needs to go forward with to successfully implement Demand Response products and services.
- The definitions should be aligned between both the DR Phase Two standard and the EE standard. In particular, the Phase Two standards should reflect the definition given for "Demand Reduction Value" provided in the EE standard.

The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW.

- In section WEQ-015-1.22.6 - The requirement presently reads that the "Adjustment Window shall begin no more than four hours after deployment." We understand that the correct action is for the "Adjustment Window to begin no more than four hours **prior to** deployment."
- In the recommendation the references to "program" were changed to "products" and/or "services." Footnote 1 indicates the terms are may be used interchangeably. These are not defined terms though in some instances "products" and "services" are capitalized. "Products" and services should not be capitalized. We recommend making conforming changes throughout the document for "products" and "services."



Energy Curtailment Specialists, Inc.
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January 14, 2011

North American Energy Standard Board
Attn: Wholesale Electric Quadrant Executive Committee
801 Travis, Suite 1675
Houston, TX 77002

Re: 2010 WEQ Annual Plan Items 4(a) and 4(b): Review and Develop
Business Practice Standards to Support DR and DSM-EE Programs (DR Phase 2)

Dear WEQ Executive Committee Members:

Attached please find Energy Curtailment Specialists, Inc. (ECS) comments pertaining to the 2010 WEQ Annual Plan Items 4(a) and 4 (b), Review and Develop Business Practice Standards to Support DR and DSM-EE Programs (DR Phase 2). Should you have any questions, please do not hesitate to contact me directly. ECS thanks NAESB for the opportunity to submit these comments.

Warm Regards,

B. Marie Pieniazek
Authorized Agent for
Energy Curtailment Specialists, Inc.

Enclosure

January 14, 2011

North American Energy Standard Board
Attn: Wholesale Electric Quadrant Executive Committee
801 Travis, Suite 1675
Houston, TX 77002

Re: 2010 WEQ Annual Plan Items 4(a) and 4(b): Review and Develop
Business Practice Standards to Support DR and DSM-EE Programs (DR Phase 2)

Pursuant to the Request for Formal Comments, issued on December 8, 2010, Energy Curtailment Specialists, Inc. ("ECS") respectfully submits the following comments for the 2010 WEQ Annual Plan Items 4(a) and 4(b), Review and Develop Business Practice Standards to Support DR and DSM-EE Programs (DR Phase 2).

I. Introduction

On December 8, 2010 the NAESB Wholesale Electric Quadrant (WEQ) issued a request for formal comments on the NAESB Wholesale Electric Demand Response Phase Two Business Practices Standards. The 2010 NAESB WEQ Annual Plan directed NAESB to review the NAESB Business Practices for Measurement and Verification of Wholesale Electricity Demand Response (WEQ-15) in conjunction with the IRC developed Demand Response Matrix to identify business practice requirements that *could* be improved or made clearer through addition of specific technical detail.

ECS' comments will focus on, and address, the 2010 WEQ Annual Plan item 4(a), Review the NAESB Business Practices for Measurement and Verification of Wholesale Demand Response.

II. Overview of Energy Curtailment Specialists, Inc.

ECS is one of the nation's largest privately held full service demand response and energy management companies, and a leading demand response provider for commercial, industrial, and institutional customers. ECS is a market participant in several RTO/ISO markets and has additionally signed direct demand response contracts with several utilities.

III. Comments

ECS would like to first commend the DSM-EE Subcommittee for their vigorous work and further development of technical standards and recommendations. ECS participated in the DSM-EE Subcommittee, on a regular basis, assisting the Subcommittee in further development of technical details and recommendations, for the NAESB Business Practices for Measurement and Verification of Wholesale Electricity Demand Response Phase 2 efforts, through the utilization of the IRC Demand Response Matrix. The IRC Demand Response Matrix was used to identify demand response standards where additional technical details could be added for clarity, and improvement of the standard.

ECS agrees with the DSM-EE Subcommittee's Applicability of Measurement and Verification Standards, which states that "The standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services".¹ As ECS has expressed in their past comments, with regards to Phase 2 further development of technical standards, ISO/RTO governance structures are critical components in the development of market rules pertaining to demand response program design.

ISO/RTO's governance structures provide market participants with opportunities to participate in stakeholder meetings where issues regarding operation, implementation, and future demand response program designs are debated and voted on by all stakeholders within the ISO/RTO governance structure. ECS believes that ISO/RTO governance structures are a critical component in the underpinning of the wholesale markets. Side stepping this critical component of the market would call into question the need for governance structures in wholesale markets should issues such as compensation, program design, or operations associated with demand response services be developed outside an ISO/RTO's governance structure.

As FERC indicated in Docket No. RM05-5-017; Order No. 676-F, participation by several sectors of the market, including ISO/RTO's, demand response

¹ Business Practices for Measurement and Verification of Wholesale Electricity Demand Response, Recommendation to the NAESB WEQ Executive Committee, page #3

providers, trade organizations, and utilities, in the NAESB Phase 2 M&V Standards process will create an environment which is beneficial in creating transparent and consistent standards for the measurement and verification of demand response resources offered into wholesale electricity markets.

ECS believes that the Phase 2 Subcommittee working group encompassed a broad participation during working group meetings that were designed to propose, review, and fully vet proposed changes, including further technical detail for the Phase 2 Demand Response Wholesale Standards. During the Phase 2 development a broader group of participants, including several sectors of the wholesale market, assisted with valuable input and proposed changes to the Phase 1 standards.

While the Phase 1 Wholesale Demand Response Standards were largely developed through ISO/RTO participants, Phase 2 pursued additional input from several demand response providers throughout the development process. ECS believes, as stated in our previous comments, that the Phase II Wholesale Demand Response Standards should be an industry driven consensus process because the entire industry must conduct business under the current Phase I NAESB Wholesale Demand Response Standards and any further developed technical detail standards during the Phase 2 process.

IV. Support for Phase 2 Wholesale Demand Response Changes

ECS supports the proposed Phase II Wholesale Demand Response Standards as we believe they endeavor to establish business practice standards that facilitate the ability of demand response providers to participate in electricity markets and provide an opportunity for *more* customers to participate in demand response programs. As FERC has stated, these standards should reflect the widest possible support.²

The DSM-EE Subcommittee working group sought out and incorporated several sectors of participants, including additional demand response providers, during the Phase 2 development process. Proposed changes to the Phase 1 standards were brought forward by several members of the Subcommittee working group, fully vetted, debated, and discussed before changes were adopted through a consensus process within the group.

² FERC Docket No. RM05-5-017; Order No. 676-F, #56, page 30

Additionally, several working group members dedicated numerous time and resources to the development of more technical standards in Phase 2.

For all the reasons stated above ECS believes that the DSM-EE Subcommittee clearly accomplished their goal of reviewing, developing, and adding additional technical details to the Phase 1 Wholesale Demand Response Standards, while incorporating several working group members proposed changes.

V. Conclusion

In conclusion, ECS would like to thank NAESB for allowing us the opportunity to submit our comments, and support for, the Recommendations to the 2010 WEQ Annual Plan Items 4(a) and 4(b), Review and Develop Business Practice Standards to Support DR and DSM-EE Programs (DR Phase 2). The Phase 2 development has set forth additional technical details, where feasible, that will continue to support Demand Response programs throughout the wholesale markets.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "B Marie Pieniazek".

Marie Pieniazek
Authorized Agent for
Energy Curtailment Specialists, Inc.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

1. RECOMMENDED ACTION:

☐ Accept as requested
☒ Accept as modified below
☐ Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

☒ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The standards support the measurement and verification characteristics of Demand Response products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

WEQ-015 Business Practices for Wholesale Electricity Demand Response Programs - Please see attached documentation.



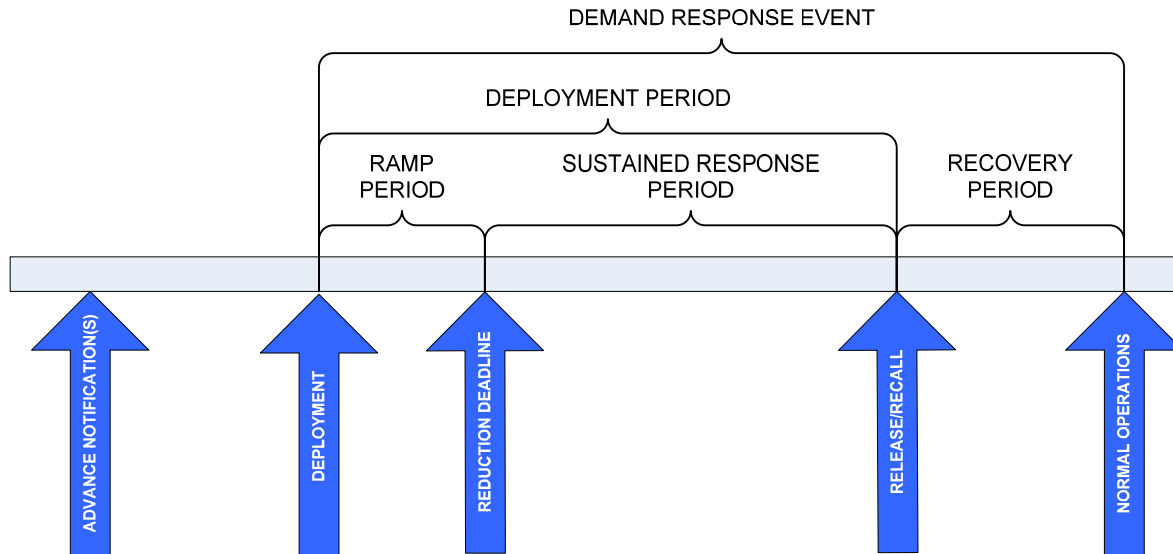
RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
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Business Practices for Measurement and Verification of Wholesale Electricity Demand Response

WEQ.000-1 Definition of Terms

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.



Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After-the-Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non-Interval Meter).

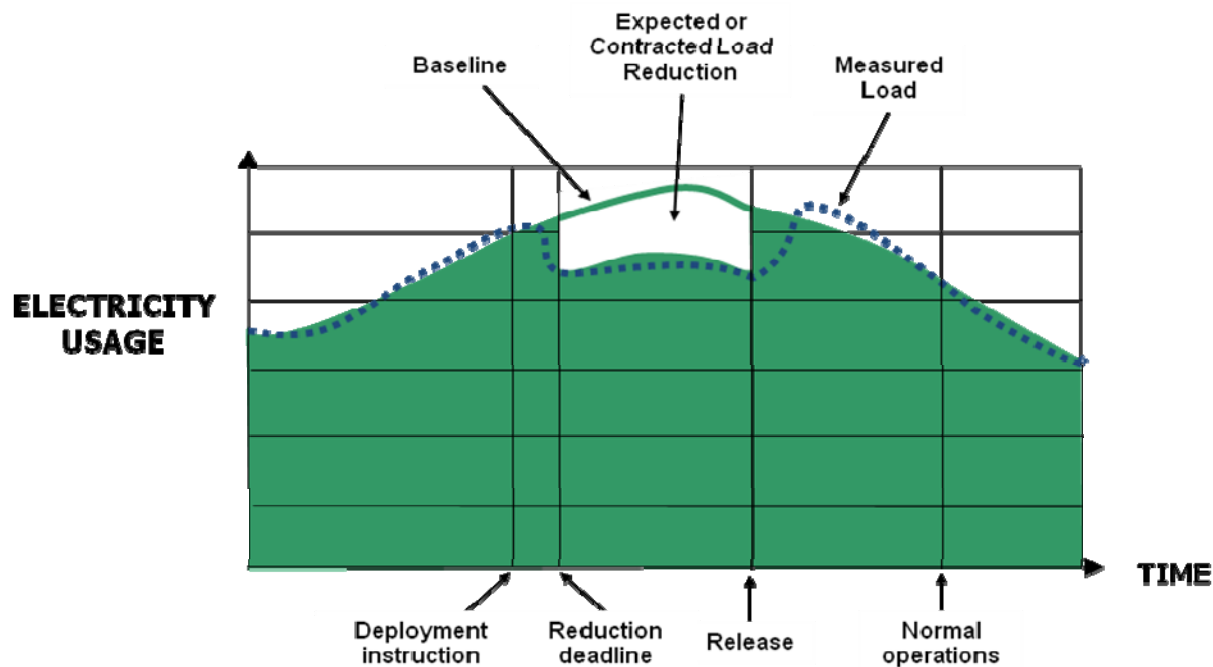
Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type-I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data which may also include other variables such as weather and calendar data.

Baseline Type-II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

Baseline Window: A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.

Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.

Demand: The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).



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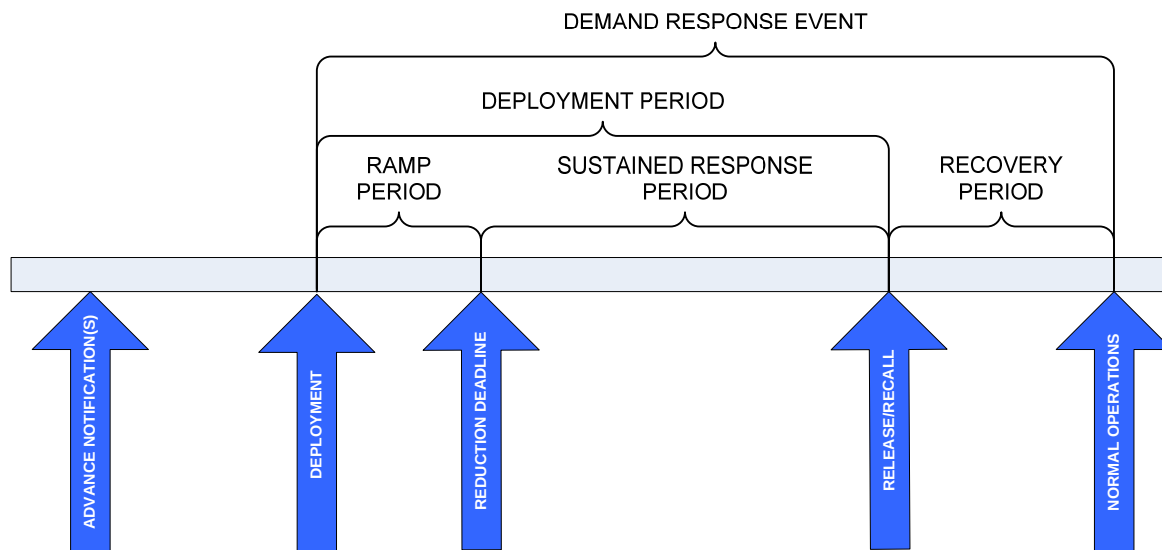
Demand Reduction Value: Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.

Demand Resource: A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response.

Demand Resource Availability: The potential Demand Reduction Value available to be dispatched for a Demand Response Event.

Demand Response: A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

Demand Response Event: A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be not applicable to all Demand Response products or services.



Demand Response Provider: The entity that is responsible for delivering Demand Response.

Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.

Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.



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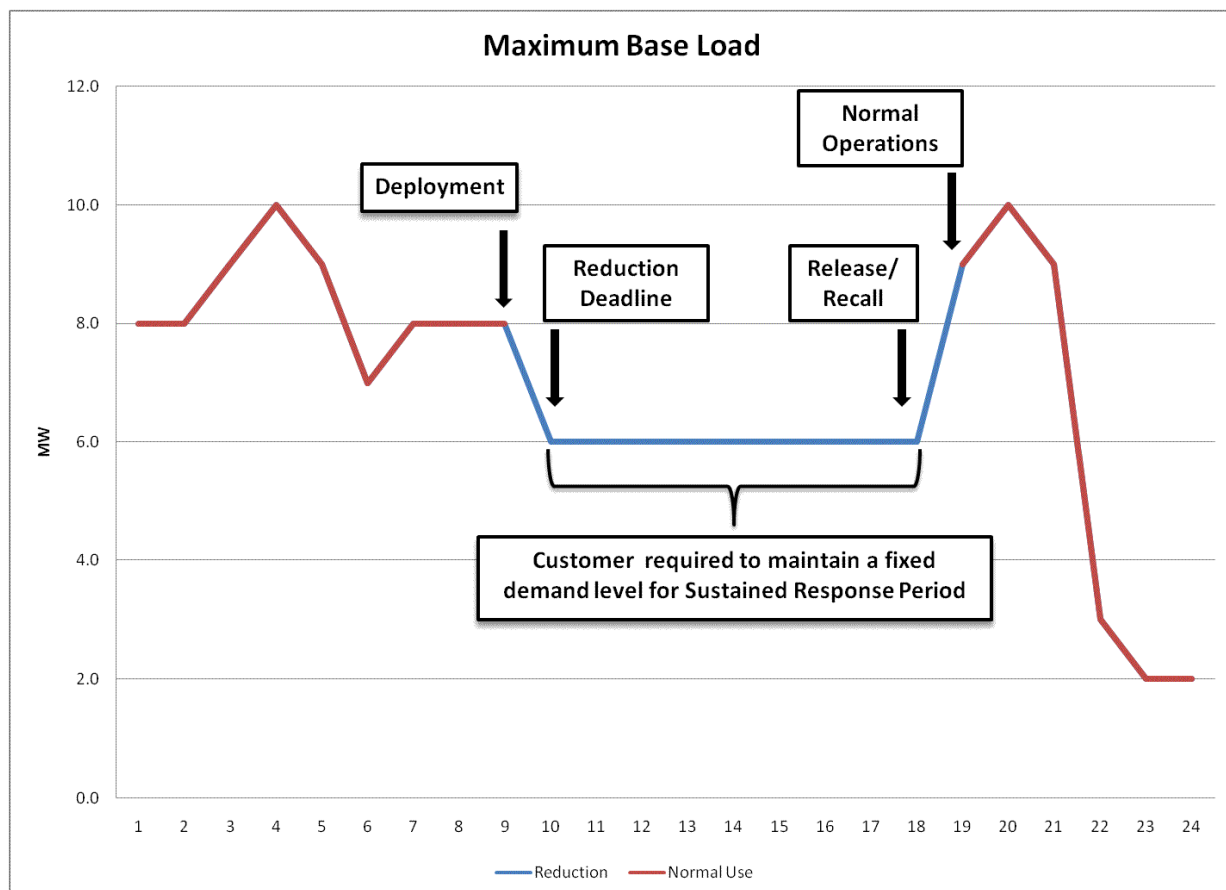
Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly-Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

Load: An end-use device or customer that receives power from the electric system (NERC Definition).

Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.

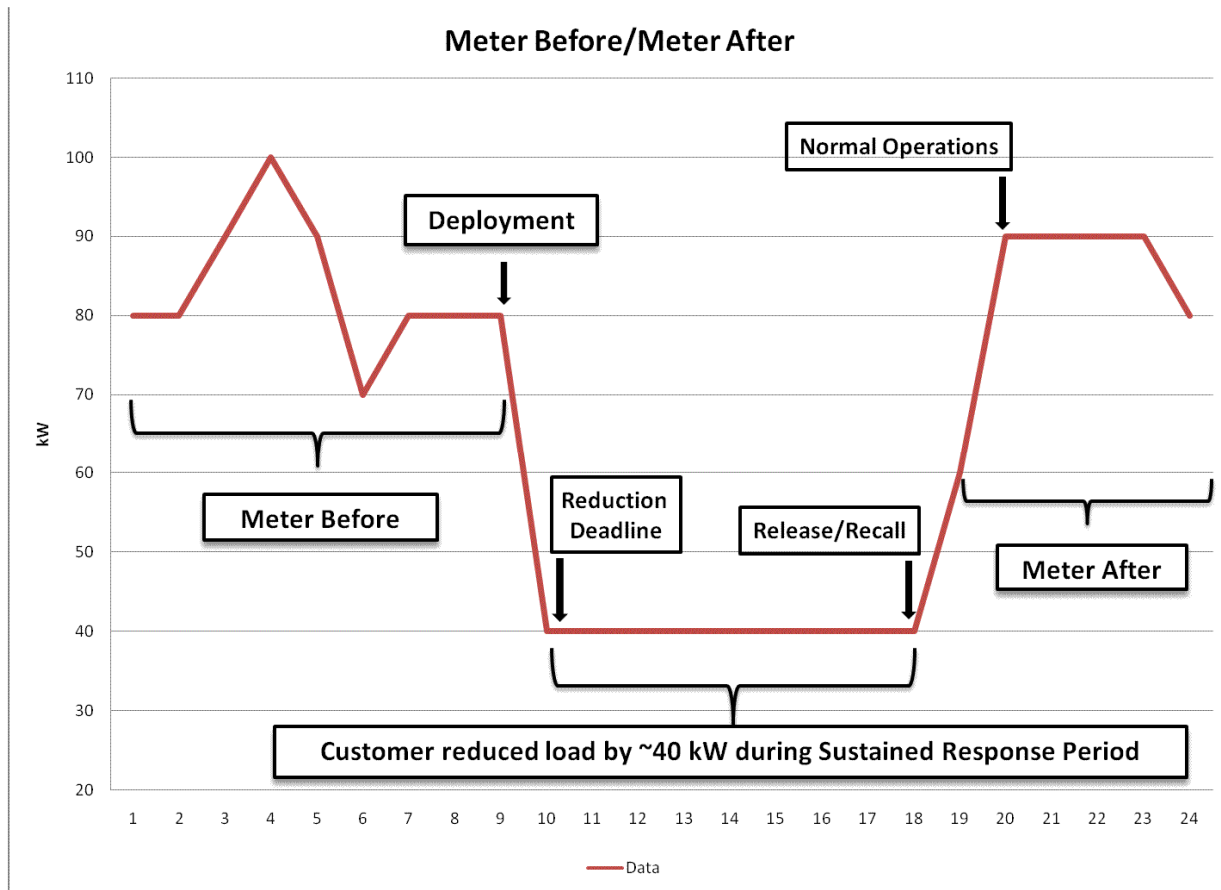


Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.



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Meter Data Recording Interval: The time between electricity meter usage recordings.

Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: ~~Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator. Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.~~

Telemetry Interval: The unit of time between communication of telemetered data.

Validation, Editing and Estimation: The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.



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Introduction

1. **Measurement and Verification Standards**

These Measurement and Verification (M&V) standards are intended to facilitate Demand Response in wholesale electricity markets by providing a common framework for the following:

- **Transparency:** accessible and understandable M&V requirements for Demand Response products;
- **Accountability:** criteria that will enable the System Operator to accurately measure performance of Demand Response resources; and
- **Consistency:** standards applicable across all wholesale electricity markets.

2. **Applicability of Measurement and Verification Standards:**

ISO/RTO Administered Markets

These standards are applicable only to Independent System Operator-Regional Transmission Organization administered markets in North America. The standards reflect business practices applicable to measurement and verification of wholesale market Demand Response services including the following four product/service categories¹:

Energy Service

A type of Demand Response service in which Demand Resources delivers a quantity of electricity measured in MWhs.

Capacity Service

A type of Demand Response service in which Demand Resources are obligated as a means of controlling Demand over a defined period of time measured in MW.

Reserve Service

A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements established to meet applicable reliability standards.

¹ The terms Product(s) or Service(s) may be used interchangeably in these standards.



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Regulation Service

A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.

These standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services. System Operators are not required to offer these Services and may not currently offer each of these Services. Terms that are capitalized in these standards have the meanings ascribed to them in the Definitions of Terms section.

Tariff Conflict ~~and NERC Standards:~~

In the event of a conflict between these business practices and a System Operator's Governing Documents, the ~~FERC shall have regulatory authority~~ Governing Documents shall have precedence. Terms defined in the Definition of Terms do not modify or supersede definitions in the Governing Documents that apply to the compensation, design, operation, or use of Demand Response services.

NERC Standards:

~~Additionally, a~~ All entities supplying Demand Response Services shall comply with applicable NERC reliability standards.

Non-ISO/RTO Markets:

Wholesale Demand Response standards do not apply in markets administered by non-ISO/RTOs; such standards s will be developed when required.



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3. Overview of the Standards

These M&V standards establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value. Commonalities may be found among the standards for the four product categories outlined in section 2 above. The following categories are applicable to each of these the four types of Demand Response products.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value corresponding to a specific Demand Resource. The standards include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each of the four types of Demand Response service. Criteria for performance evaluation methodologies apply to baseline information, Demand Response event information and special processing, as shown below.

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These standards provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services; they do not specify detailed characteristics of performance evaluation methodologies. The System Operator may offer multiple performance evaluation models and may assign a Demand Resource to a model based on the Load characteristics of the Demand Resource or allow the Demand Resource provider to choose a performance evaluation model consistent with its load characteristics from a predefined list. The following methodology types are applicable to wholesale Demand Response Services:

Maximum Base Load: A performance evaluation methodology based solely on the ability of a Demand Resource to maintain its electricity usage at or below a specified level during a Demand Response Event.

Meter Before / Meter After: A performance evaluation methodology in which electricity Demand over a prescribed period of time prior to resource Deployment is compared to similar readings during the Sustained Response Period.

Baseline Type-I: A Baseline performance evaluation methodology based on historical interval meter data for a Demand Resource that may also include other parameters such as weather and calendar data.

Baseline Type-II: A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the revenue meter for the Demand Resource.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	
Metering Generator Output	✓	✓	✓	✓



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Business Practice Standard Requirements:

Provision of Wholesale Electric Demand Response Energy Products

Applicability

The Standard applies to any entity that administers wholesale Demand Response Energy Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.0 GENERAL

- **Advance Notification**

The Governing Documents shall specify any requirements for an Advance Notification instruction.

- **Deployment Time**

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

- **Reduction Deadline**

The Governing Documents shall specify the Reduction Deadline.

- **Release/Recall**

The Governing Documents shall specify the time at which Demand Resources may begin returning to Normal Operations.

- **Normal Operations**

The Governing Documents shall specify Normal Operations.

- **Demand Resource Availability Measurement**

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

- **Aggregation**

The Governing Documents shall specify any requirements for aggregated Demand.

- **Transparency of Requirements**

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.



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015-1.1 TELEMETRY

- **Telemetry Requirement**

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data. For purposes of these standards Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator.

- **On-Site Generation Telemetry**

If on-site generation is present behind the primary Telemetry point, ~~real-time~~ the Governing Documents will specify the need for Telemetry data ~~shall be required~~ to measure performance of the generator ~~unless otherwise specified by the Governing Documents~~.

- **Telemetry Accuracy**

~~The Governing Documents shall specify the accuracy of the r~~Real-time Demand measurement ~~to shall~~ be expressed as a percentage of full scale, ~~not to exceed 3.0~~ accurate to at least 97%.

- **Telemetry Interval**

The ~~-~~Telemetry Interval shall not exceed a minimum of 5 minutes in delay from real time communications.

- **Other Telemetry Measurements**

The Governing Documents shall specify any additional Telemetry data requirements.

- **Communication Protocol**

The Governing Documents shall specify the Telemetry communication protocol.

- **Governor Control Equivalent**

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.2 AFTER-THE-FACT METERING

- **After-the-Fact Metering Requirement**

After-the-Fact Metering is required unless otherwise specified by the Governing Documents.

- **Meter Accuracy**

After-the-Fact Metering shall be accurate to at least within 98% 2% of full scale or relevant electric retail regulatory authority requirements,

- **Details of Meter/Equipment Standards**

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 ~~unless otherwise specified by the Governing Documents~~.

- **Meter Data Reporting Deadline**



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

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A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

Governing Documents

- **Meter Data Reporting Interval**

Meter Data Reporting Interval shall not exceed 1 hour.

- **Clock / Time Accuracy**

~~The Governing Documents shall specify the clock and time accuracy.~~ Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 ~~unless otherwise specified by the Governing Documents.~~

- **Validating, Editing & Estimating (VEE) Method**

The Governing Documents shall specify VEE requirements.

- **On-Site Generation Meter Requirement**

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.3 PERFORMANCE EVALUATION

- **Rules for Performance Evaluation**

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Capacity Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Capacity Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.4 GENERAL

- **Advance Notification**

Advance Notification instruction may be issued a maximum of one day ahead of the deployment event.

- **Deployment Time**

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

- **Reduction Deadline**

The Governing Documents shall specify the Reduction Deadline. The minimum Reduction Deadline is instantaneous and the maximum Reduction Deadline is two hours.

- **Release/Recall**

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

- **Normal Operations**

The Governing Documents shall specify Normal Operations.

- **Demand Resource Availability Measurement**

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

- **Aggregation**

The Governing Documents shall specify any requirements for aggregated Demand Resources for the purposes of Measurement and Verification.

- **Transparency of Requirements**

Any specific requirements shall be defined in governing the Governing Documents and shall be posted in a publicly accessible location.

015-1.5 TELEMETRY

- **Telemetry Requirement**

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

- **On-Site Generation Telemetry**

If on-site generation is present behind the primary Telemetry point, [the Governing Documents will specify the need for](#) real-time Telemetry data ~~shall be required~~ to measure performance of the generator ~~unless otherwise specified by the Governing Documents~~.

- **Telemetry Accuracy**



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, of at least 97%not to exceed 3.0%.

- **Telemetry Interval**

The -Telemetry Interval delay from real time shall not exceed 5 minutes.

- **Other Telemetry Measurements**

The Governing Documents shall specify any additional Telemetry data requirements.

- **Communication Protocol**

The Governing Documents shall specify the Telemetry communication protocol.

- **Governor Control Equivalent**

Not applicable to Capacity Service unless otherwise specified by the Governing Documents.

015-1.6 AFTER-THE-FACT METERING

- **After-the-Fact Metering Requirement**

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

- **Meter Accuracy**

After-the-Fact Metering shall be accurate to within 2%98% of full scale or relevant electric retail regulatory authority requirements.

- **Details of Meter/Equipment Standards**

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

- **Meter Data Reporting Deadline**

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

- **Meter Data Reporting Interval**

The Meter Data Reporting Interval shall not exceed 1 hour.

- **Clock / Time Accuracy**

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

- **Validating, Editing & Estimating (VEE) Method**

The Governing Documents shall specify VEE requirements, if applicable.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

**Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)**

Review and develop business practice standards to support DR and DSM-EE programs

- **On-Site Generation Meter Requirement**

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.7 PERFORMANCE EVALUATION

- **Rules for Performance Evaluation**

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Reserve Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Reserve Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.8 GENERAL

- **Advance Notification**

The Governing Documents shall specify any requirements for the Advance Notification instruction.

- **Deployment Time**

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

- **Reduction Deadline**

The Governing Documents shall specify the Reduction Deadline.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

- **Release/Recall**

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

- **Normal Operations**

The Governing Documents shall specify Normal Operations.

- **Demand Resource Availability Measurement**

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

- **Aggregation**

The Governing Documents shall specify any requirements for Aggregated Demand Resources.

- **Transparency of Requirements**

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.9 TELEMETRY

- **Telemetry Requirement**

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data

- **On-Site Generation Telemetry**

If on-site generation is present behind the primary telemetry point, the Governing Documents shall specify the need for real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

- **Telemetry Accuracy**

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, not to exceed 3.0 to at least 97%.

- **Telemetry Interval**

The Telemetry Interval delay from real time shall not exceed 5 minutes.

- **Other Telemetry Measurements**

The Governing Documents shall specify any additional Telemetry data requirements.

- **Communication Protocol**

The Governing Documents shall specify the Telemetry communication protocol.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

- **Governor Control Equivalent**

Not applicable to Reserve Service unless otherwise specified by the Governing Documents.

015-1.10AFTER-THE-FACT METERING

- **After-the-Fact Metering Requirement**

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

- **Meter Accuracy**

After-the-Fact Metering shall be accurate to ~~within 2%~~ at least 98% of full scale or relevant electric retail regulatory authority requirements.

- **Details of Meter/Equipment Standards**

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

- **Meter Data Reporting Deadline**

A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.

- **Meter Data Reporting Interval**

A Meter Data Reporting Interval shall not exceed 1 hour.

- **Clock / Time Accuracy**

The Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

- **Validating, Editing & Estimating (VEE) Method**

The Governing Documents shall specify VEE requirements.

- **On-Site Generation Meter Requirement**

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.11PERFORMANCE EVALUATION

- **Rules for Performance Evaluation**

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

**Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)**

Review and develop business practice standards to support DR and DSM-EE programs

- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Regulation Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Regulation Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these Products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.12GENERAL

- **Advance Notification**

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

- **Deployment Time**

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

- **Reduction Deadline**

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

- **Release/Recall**

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

- **Normal Operations**

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

- **Demand Resource Availability Measurement**

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

- **Aggregation**

The Governing Documents shall specify any requirements for aggregated Demand Resources.

- **Transparency of Requirements**



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.13TELEMETRY

- **Telemetry Requirement**

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

- **On-Site Generation Telemetry**

If on-site generation is present behind the primary Telemetry point, [the Governing Documents shall specify whether](#) real-time Telemetry data ~~shall be~~ required to measure performance of the generator ~~unless otherwise specified by the Governing Documents~~.

- **Telemetry Accuracy**

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, ~~not to exceed 3.0~~[of at least 97%](#).

- **Telemetry Interval**

The telemetry Interval shall not exceed six seconds (NERC BAL-005-0b, R8).

- **Other Telemetry Measurements**

The Governing Documents shall specify any additional Telemetry data requirements.

- **Communication Protocol**

The Governing Documents shall specify the Telemetry communication protocol.

- **Governor Control Equivalent**

Demand Resources providing Regulation Service shall respond to grid frequency deviations, similar to governor action provided by generation resources, unless otherwise specified by the Governing Documents.

015-1.14AFTER-THE-FACT METERING

- **After-the-Fact Metering Requirement**

After-the-fact Metering is **not** required unless otherwise specified by the Governing Documents.

- **Meter Accuracy**

After-the-Fact Metering shall be accurate to ~~within 2%~~[at least 98%](#) of full scale or relevant electric retail regulatory authority requirements.

- **Details of Meter/Equipment Standards**

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

- **Meter Data Reporting Deadline**

A Meter Data Reporting Deadline shall be a maximum of ~~55~~fifty-five calendar days after a Demand Response Event.

- **Meter Data Reporting Interval**

A Meter Data Reporting Interval shall not exceed 1 hour.

- **Clock / Time Accuracy**

In accordance with NERC Reliability Standards, the Governing Documents shall specify the clock and time accuracy. Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

- **Validating, Editing & Estimating (VEE) Method**

The Governing Documents shall specify VEE requirements, if applicable.

- **On-Site Generation Meter Requirement**

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.15 PERFORMANCE EVALUATION

- **Rules for Performance Evaluation**

Performance ~~shall~~may be evaluated using telemetry data, as specified by the Governing Documents, and additionally through the use of one of the following methods ~~unless otherwise specified by the Governing Documents~~ [MSOffice2]:

- Meter Before / Meter After
- Metering Generator Output

Business Practice Requirements

Maximum Base Load Evaluation

015-1.16 BASELINE INFORMATION

There are no Baseline calculations defined for Maximum Base Load evaluations. The Maximum Base Load Evaluation methodology shall be associated with a demand reduction obligation compared to the Demand Resource's average Load ~~or as specified by the Governing Documents~~.

015-1.17 EVENT INFORMATION

- **Use of Real-Time Telemetry**

The Governing Documents shall specify whether there is a need for real-time Telemetry to measure performance.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

~~The Governing Documents shall specify if real-time Telemetry data is to be used to measure performance.~~

- **Use of After-The-Fact Metering**

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

- **Performance Window**

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) ~~unless otherwise specified by the Governing Documents.~~

- **Measurement Type**

During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance shall be one of the following ~~unless otherwise specified by the Governing Documents:~~

- a) Peak Demand
- b) Average Demand - over a period of from 5 minutes to the entire Performance Window

015-1.18SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Meter Before / Meter After

015-1.19BASELINE INFORMATION

- **Baseline Window**

The Governing Documents shall specify the time interval associated with the meter read, prior to deployment, used to establish the Baseline Window.

- **Calculation Type**

During the Baseline Window, the energy consumption or Demand of the Demand Resource shall be evaluated using one of the following measurements ~~unless otherwise specified by the Governing Documents:~~

- a) Instantaneous
- b) Maximum
- c) Average

- **Sampling Precision and Accuracy**

~~The Governing Documents shall determine the application of sampling for collecting baseline information. Sampling is not permitted for this performance evaluation type, unless otherwise specified by the Governing Documents.~~

- **Exclusion Rules**



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

The Governing Documents shall specify any exclusion rules.

- **Baseline Adjustments**

Baseline Adjustments are not permitted for this performance evaluation type, ~~unless specified by the Governing Documents.~~

- **Adjustment Window**

No Adjustment Window is used for this model ~~unless otherwise specified by the Governing Documents.~~

015-1.20 EVENT INFORMATION

- **Use of real-time Telemetry**

The Governing Documents shall specify whether there is a need for real-time Telemetry to measure performance.

~~The Governing Documents specify that the need for real-time Telemetry data may or may not be utilized to measure performance.~~

- **Use of After-The-Fact Metering**

After-the-fact metering shall be used to measure performance, ~~unless otherwise specified by the Governing Documents.~~

- **Performance Window**

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) ~~unless otherwise specified by the Governing Documents.~~

- **Measurement Type**

During the Performance Window, the Demand Resource shall be evaluated using one of the following ~~measurements unless otherwise specified by the Governing Documents:~~

- a) Instantaneous
- b) Maximum
- c) Average

015-1.21 SPECIAL PROCESSING

- **Highly-Variable Load Logic**

The Governing Documents shall specify any performance evaluation requirements for Highly-Variable Loads.

- **On-Site Generation Requirements**

The Governing Documents shall specify any performance evaluation requirements for on-site generation.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

Business Practice Requirements

Baseline Type-I (Interval Meter)

015-1.22BASELINE INFORMATION

- **Baseline Window**

The Governing Documents shall specify the Baseline Window.

- **Calculation Type**

~~The Governing Documents shall specify that~~ The method of developing the Baseline value may include, but is not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

- **Sampling Precision and Accuracy**

~~Sampling is not permitted for this Performance Evaluation type, unless otherwise specified by the Governing Documents~~ shall determine the application of sampling for collecting baseline information.

- **Exclusion Rules**

~~The Governing Documents shall specify any rules for excluding data from the Baseline Window. - Exclusion rules~~ may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window

- **Baseline Adjustments**

~~The Governing Documents shall specify any rules for Baseline Adjustments.~~ Baseline Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

- **Adjustment Window**

The Adjustment Window shall begin no more than four hours after deployment.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.23EVENT INFORMATION

- **Use of Real-Time Telemetry**

The Governing Documents shall specify whether there is a need for real-time Telemetry to measure performance.

The Governing Documents shall specify if ~~the need for real time Telemetry is required to~~ measure performance.

- **Use of After-The-Fact Metering**

After-the-fact metering shall be used to measure performance unless telemetry is specified as the method of measurement.

- **Performance Window**

The Governing Documents shall specify the Performance Window.

- **Measurement Type**

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements ~~unless otherwise specified by the Governing Documents:~~

- a) Maximum
- b) Average
- c) Regression

015-1.24SPECIAL PROCESSING

- **Highly-Variable Load Logic**

The Governing Documents may specify performance evaluation requirements for Highly-Variable Loads.

- **On-Site Generation Requirements**

The Governing Documents may specify performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-II (Non-Interval Meter)

015-1.25BASELINE INFORMATION

- **Baseline Window**

The Governing Documents shall specify the Baseline Window.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

- **Calculation Type**

The ~~Governing Documents shall specify the~~ methods of developing the Baseline value ~~using, but may include, but are~~ not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

- **Sampling Precision and Accuracy**

~~The Governing Documents shall determine the application of sampling for collecting baseline~~ ~~information~~ ~~The Governing Documents shall specify sampling precision and accuracy requirements.~~

- **Exclusion Rules**

~~The Governing Documents shall specify any~~ ~~rules~~ for excluding data from the Baseline Window. ~~Exclusion rules~~ may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window

- **Baseline Adjustments**

~~The Governing Documents shall specify a~~ ~~Any rules~~ for Baseline Adjustments. ~~Adjustment rules~~ may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event day operating conditions

- **Adjustment Window**

The Adjustment Window shall begin no more than four hours prior to deployment.

015-1.26 EVENT INFORMATION

- **Use of Real-Time Telemetry**

The Governing Documents shall specify whether there is a need for real-time Telemetry to measure performance.

~~The Governing Documents shall specify if the need for real-time Telemetry data is required to measure performance.~~

- **Use of After-The-Fact Metering**

After-the-fact metering or other energy measurement technology meeting the requirements of the Governing Documents shall be used to measure performance.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

- **Performance Window**

The Governing Documents shall specify the Performance Window.

- **Measurement Type**

During the Performance Window, the performance of the Demand Resource shall be evaluated using one of the following ~~unless otherwise specified by the Governing Documents:~~

- a) Maximum
- b) Average
- c) Regression

015-1.27SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Metering Generator Output

015-1.28BASELINE INFORMATION

The Governing Documents shall specify Baseline calculations for Metering Generator Output.

015-1.29EVENT INFORMATION

- **Use of Real-Time Telemetry**

~~The Governing Documents shall specify whether there is a need for real-time Telemetry to measure performance.~~

~~The Governing Documents shall specify if the need for real-time Telemetry data is to be used to measure performance.~~

- **Use of After-The-Fact Metering**

After-the-fact metering on the generator and optionally on the associated Load shall be used to measure performance unless otherwise specified by the Governing Documents.

- **Performance Window**

The Governing Documents shall specify the Performance Window.

- **Measurement Type**

During the Performance Window, the Demand Resource shall be evaluated using the total measured generation output unless otherwise specified by the Governing Documents.

015-1.30SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Business Practice Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with " Market Rules pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.0 through 015-1.10	
06/11/2010	Modified language to provide additional enhancement.	015-1.12 through 015-1.14	
06/18/2010	Changed the Telemetry Accuracy and Meter Accuracy per the IRC Matrix update.	015-1.1 through 015-1.2 and 015-1.9 through 015-1.10	
06/23/2010	Modified language to include parameters in IRC Matrix.	015-1.4 through 015-1.6.	
7/23/2010	Added definition for "Governing Documents" and modified text accordingly throughout business practice standards.	Definition section addition and modified all applicable locations in document.	
7/30/2010	In Regulation, under Telemetry Accuracy, changes to 95% from 97.3% .	015-1.13 Telemetry	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	
9/16/2010	Replaced glossary with glossary approved in May 2010.	Glossary	



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Performance Evaluation Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with "Governing Documents pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.11 through 015-1.30	
7/17/2010	Added clarifications in Use of ATF Metering and inserted additional Measurement Type.	015-1.26	
7/23/2010	Modified language to provide additional enhancement	015-1.19, 015-1.20, 015-1.22 and 015-1.23	
7/30/2010	In Max Base Load, under Measurement Type, added clarification phrase to "b) Average Demand"	015-1.17 Event Information	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	



RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee
Request No.: 2010 AP Item 4(a) and 4(b)
Review and develop business practice standards to support DR and DSM-EE programs

4. SUPPORTING DOCUMENTATION

a. Description of Request:

Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.

b. Description of Recommendation:

For the second phase, develop business practices to provide more clarity and granularity for the measurement and verification aspects of wholesale market demand response products.

c. Business Purpose:

The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.

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e. Additional Background documentation

- DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>
- Presentation of the wholesale recommendation given on October 3: ISO presentation - <http://www.naesb.org/pdf3/dsmee100308w7.pdf>
- Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>

[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]

Late Comments Submitted by G. Fry, Northeast Utilities
Recommendations: WEQ 2010 AP Item 4(a) and 4(b)
WEQ 2010 AP Item 4(d)

From: Gene Fry
To: Galik, Cory
Sent: Fri Jan 21 09:36:44 2011
Subject: NAESB DR & EE Draft Standards Comments

Cory,
I neglected to file the following comments on behalf of Northeast Utilities by the stated time. They support the standards.

"NAESB has drafted two Business Practice Standards. They are available for comment through January 14, 2011. One is for Demand Response (DR) and DSM-EE programs (DR Phase 2), almost all about DR. The second is for Measurement and Verification (M&V) of Energy Efficiency (EE) Products.

Northeast Utilities supports these draft Standards, once they are revised, where necessary, to define target accuracy to within X% instead of no more than X%, as stated in our initial comments on January 4, 2011.

The major benefit of the draft Standards is that they give much useful guidance for System Operators who will soon establish rules so that DR and EE products can bid into capacity markets. At the same time, they are consistent with rules now in use by System Operators that already use DR and EE products in capacity markets. That is, they do no harm to current practice. Finally, they provide that in the event of conflict between these Standards and System Operator rules, the latter prevail. That is good.

They provide numerical guidance in a few places. In the EE M&V Standard, the summary of methods is very useful, especially for newcomers. The statistical precision and default assumptions for coefficient of variation are reasonable and consistent with general practice in our region and for our System Operator.

For the DR Standard, the definitions are quite useful and consistent with standard practice. The standards for meter accuracy and reading intervals are reasonable and consistent with standard practice. We note that the Standard's permitted telemetry interval is shorter than our System Operator's requirement. But the overall wording of the Standard does not require a rule change; it merely suggests one. The number of days until reporting, the notification period, and the ramp time deadline are all reasonable and consistent with our System Operator's rules."

Gene Fry
Northeast Utilities
Conservation & Load Management
Program Evaluation

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Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

1. RECOMMENDED ACTION:

☐ Accept as requested
☒ Accept as modified below
☐ Decline

**EFFECT OF EC VOTE TO ACCEPT
RECOMMENDED ACTION:**

☒ Change to Existing Practice
☐ Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:

☐ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

Per Recommendation:

☒ Initiation
☒ Modification
☐ Interpretation
☐ Withdrawal

☒ Principle
☒ Definition
☒ Business Practice Standard
☒ Document
☐ Data Element
☐ Code Value
☐ X12 Implementation Guide
☒ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The standards support the measurement and verification characteristics of Demand Response products and services administered for application in the wholesale market and may be the subject of individual tariffs filed with and approved by the Federal Energy Regulatory Commission.

RECOMMENDED STANDARDS:

DISCLAIMER: This document contains draft information on standards for wholesale electricity Demand Response products and services in markets administered by Independent System Operators and Regional Transmission Organizations (hereinafter referred to as "System Operator"). The information contained within this draft is not intended to replace applicable Governing Documents, for wholesale Demand Response, and in the event of a conflict, the Governing Documents shall have precedence.

WEQ-015 Business Practices for Wholesale Electricity Demand Response Programs - Please see attached documentation.



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Requesters: DSM-EE Subcommittee
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Review and develop business practice standards to support DR and DSM-EE programs

WEQ-000 Changes

The following Terms and Definitions are being moved from WEQ-015 to WEQ-000-2 Terms and Definitions.

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

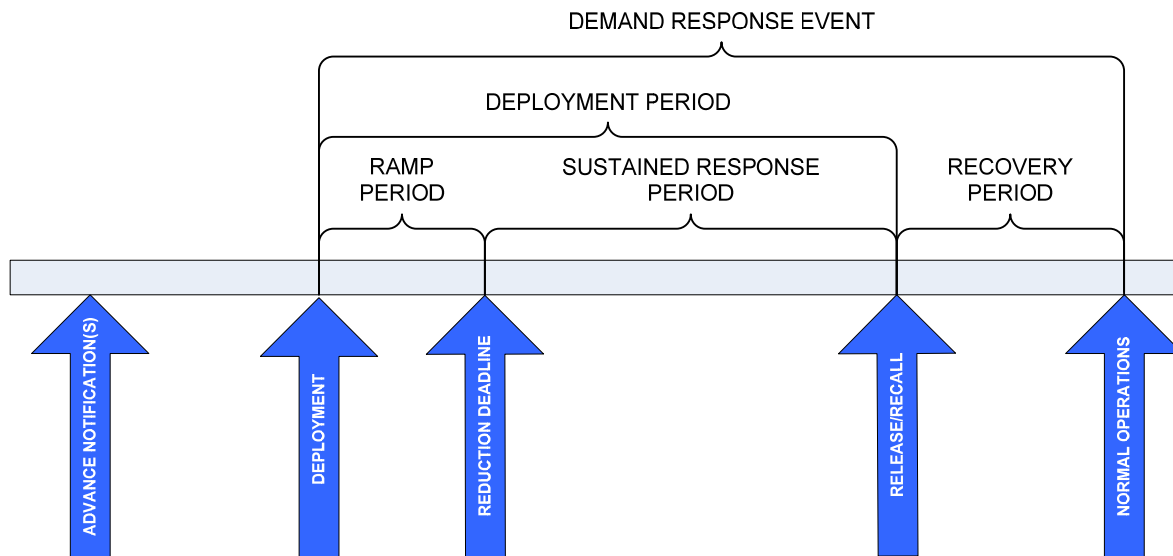


Figure 1. Timing of a Demand Response Event

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After-the-Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non-Interval Meter).

Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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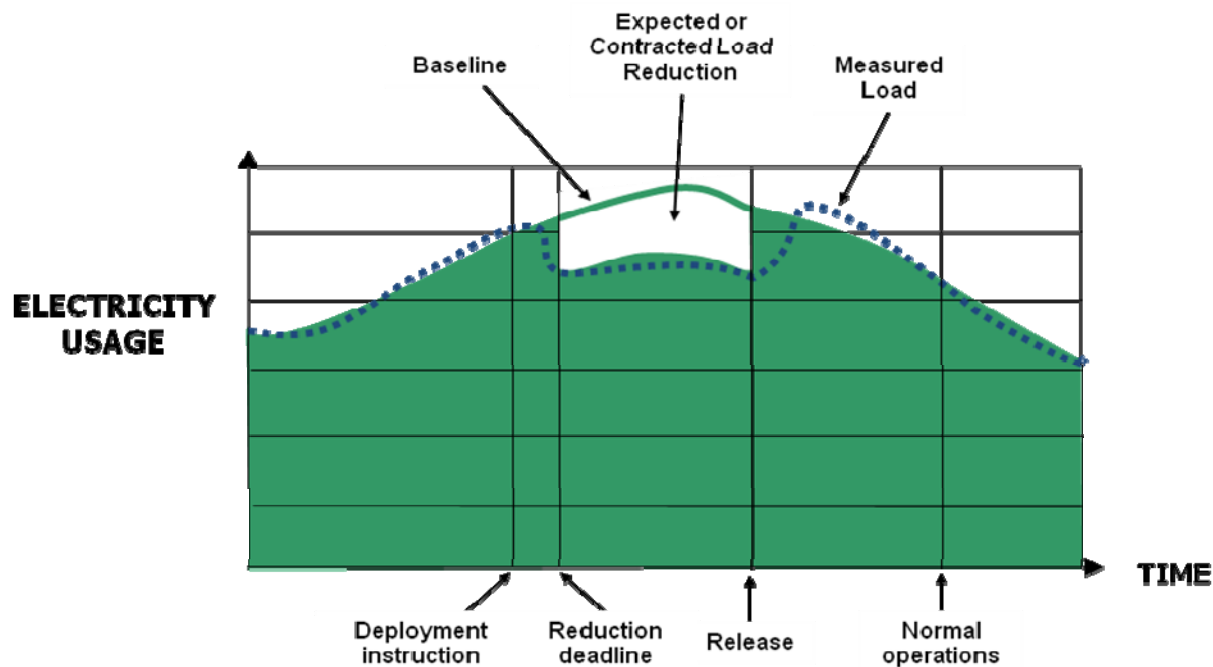


Figure 2. Illustration of Baseline Concept.

Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type-I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data, which may also include other variables such as weather and calendar data.

Baseline Type-II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.

Baseline Window: A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type-I and Type-II.

Capacity Service: A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.



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Demand: The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).

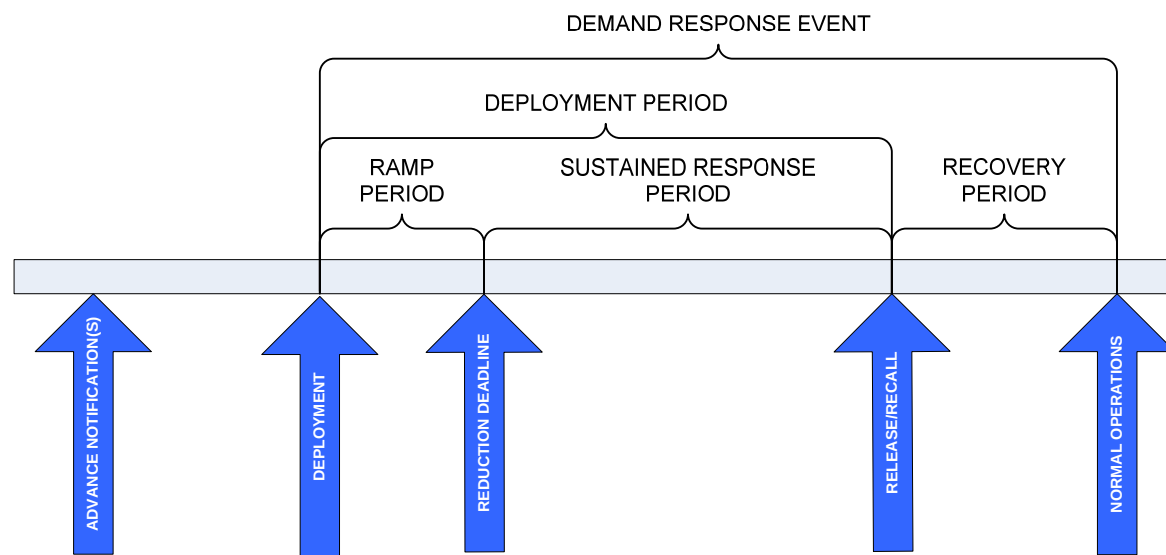
Demand Reduction Value: The measurement of reduced electricity usage by a Demand Resource during a Demand Response Event or Energy Efficiency performance hours expressed in MW. ~~Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.~~

Demand Resource: A Load or aggregation of Loads capable of providing measureable and verifiable Demand Response.

Demand Resource Availability: The potential Demand Reduction Value available to be dispatched for a Demand Response Event.

Demand Response: A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.

Demand Response Event: A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be ~~not~~ applicable to all Demand Response products or services.



Demand Response Provider: The entity that is responsible for delivering Demand Response.



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Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.

Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly-Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

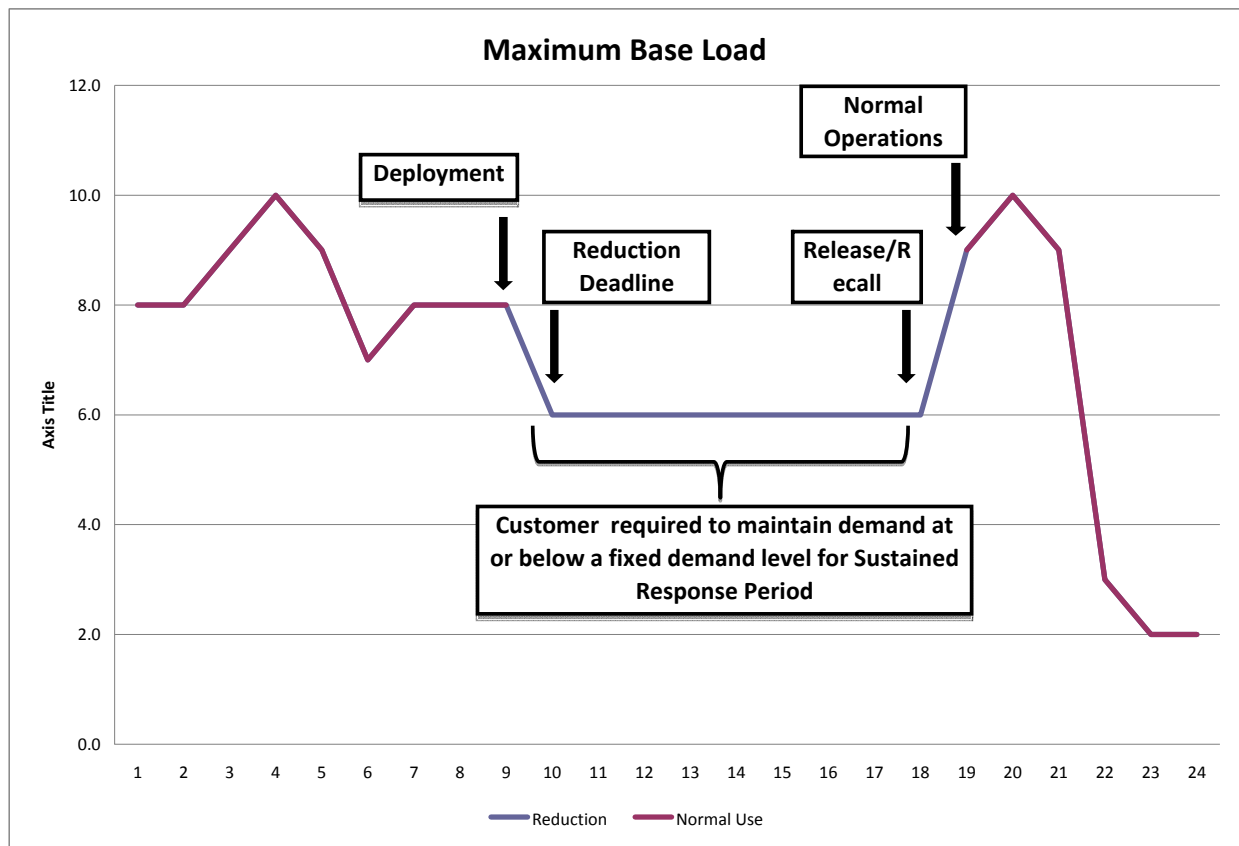
Load: An end-use device or customer that receives power from the electric system (NERC Definition).



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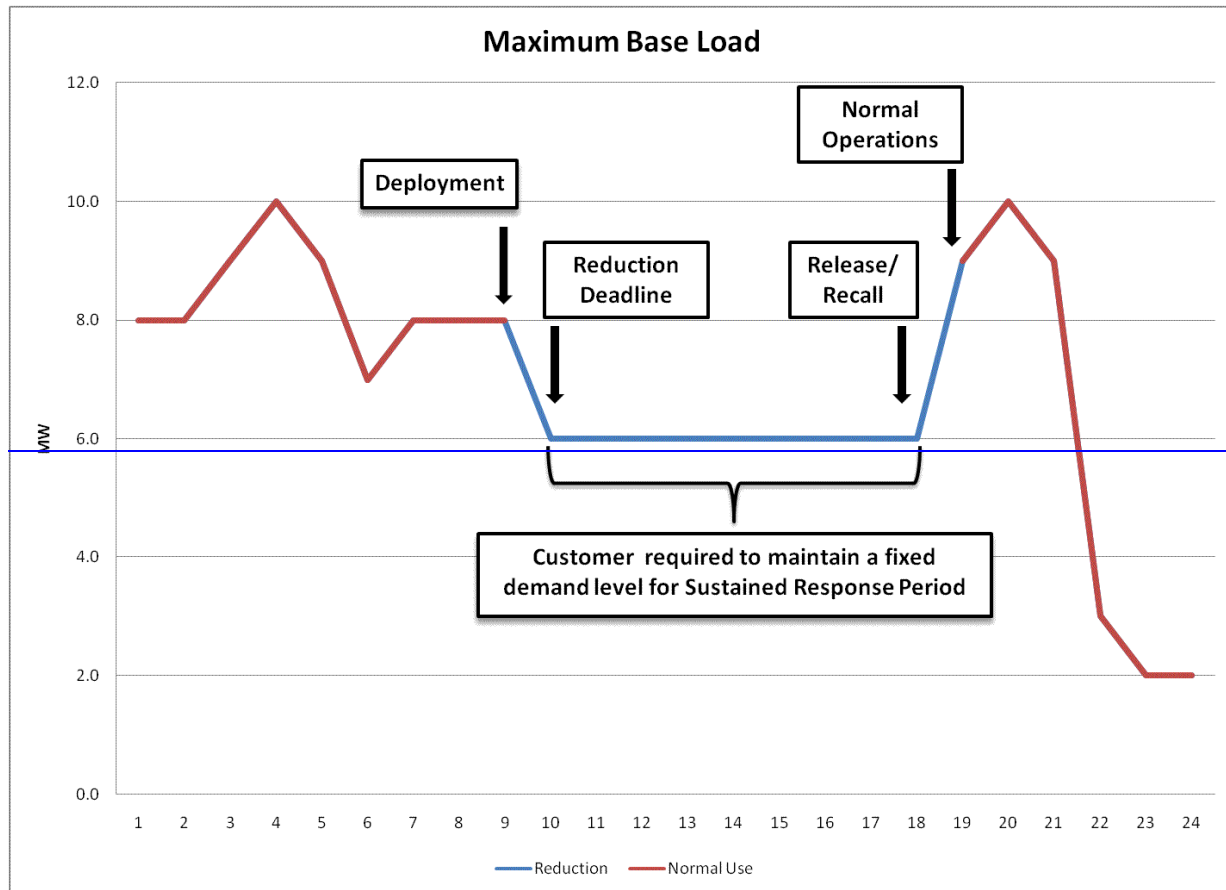
Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.





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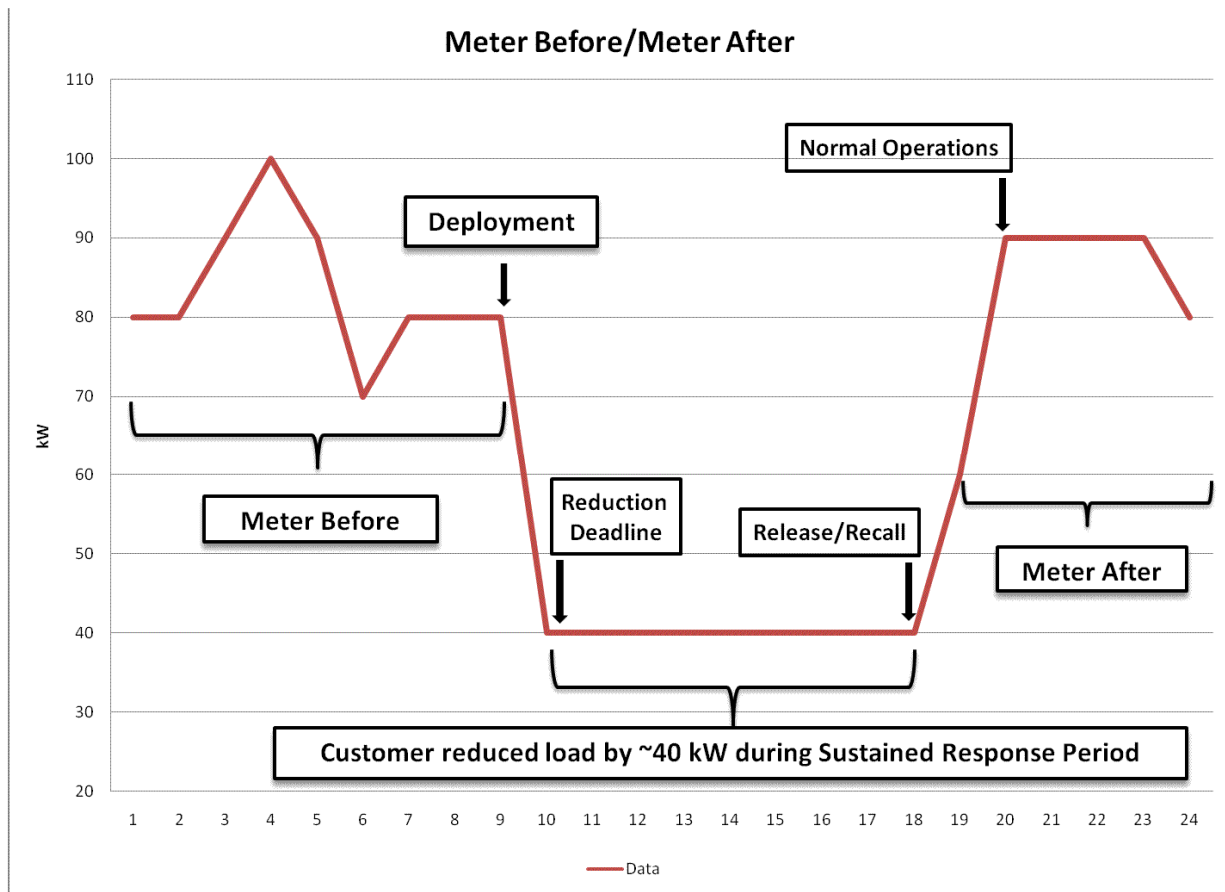




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Meter Before / Meter After: A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.



Meter Data Recording Interval: The time between electricity meter usage recordings.

Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources ~~are~~ may be required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.

Telemetry Interval: The unit of time between communication of telemetered data.

Validation, Editing and Estimation: The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.



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WEQ-015 Changes

**Business Practices for Measurement and Verification of Wholesale Electricity
Demand Response**

Introduction

1. Measurement and Verification Standards

These Measurement and Verification (M&V) standards are intended to facilitate Demand Response in wholesale electricity markets by providing a common framework for the following:

- Transparency: accessible and understandable M&V requirements for Demand Response products;
- Accountability: criteria that will enable the System Operator to accurately measure performance of Demand Response resources; and
- Consistency: standards applicable across all wholesale electricity markets.

2. Applicability of Measurement and Verification Standards:

ISO/RTO Administered Markets

These standards are applicable only to Independent System Operator-Regional Transmission Organization administered markets in North America. The standards reflect business practices applicable to measurement and verification of wholesale market Demand Response services including the following four product/service categories¹:

Energy Service

A type of Demand Response service in which Demand Resources delivers a quantity of electricity measured in MWhs.

Capacity Service

A type of Demand Response service in which Demand Resources are obligated as a means of controlling Demand over a defined period of time measured in MW.

Reserve Service

A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements established to meet applicable reliability standards.

¹ The terms Product(s) or Service(s) may be used interchangeably in these standards.



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Review and develop business practice standards to support DR and DSM-EE programs

Regulation Service

A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

For purposes of these Measurement and Verification standards, Demand Response does not include Measurement and Verification of energy efficiency or permanent Load reduction.

These standards establish Demand Response M&V criteria. They do not establish requirements related to the compensation, design, operation, or use of Demand Response services. System Operators are not required to offer these Services and may not currently offer each of these Services. Terms that are capitalized in these standards have the meanings ascribed to them in the [Definitions of Terms section WEQ-000-2 Definition of Terms](#).

Tariff Conflict and NERC Standards:

In the event of a conflict between these business practices and a System Operator's Governing Documents, the Governing Documents shall have precedence. Terms defined in the Definition of Terms do not modify or supersede definitions in the Governing Documents that apply to the compensation, design, operation, or use of Demand Response services. ~~Additionally, a~~All entities supplying Demand Response Services shall comply with applicable NERC reliability standards.

Non-ISO/RTO Markets:

Wholesale Demand Response standards do not apply in markets administered by non-ISO/RTOs; such standards ~~s~~will be developed when required.



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Review and develop business practice standards to support DR and DSM-EE programs

3. Overview of the Standards

These M&V standards establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value. Commonalities may be found among the standards for the four product categories outlined in section 2 above. The following categories are applicable to each of ~~these~~ the four types of Demand Response products.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation



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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value corresponding to a specific Demand Resource. The standards include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each of the four types of Demand Response service. Criteria for performance evaluation methodologies apply to baseline information, Demand Response event information and special processing, as shown below.

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These standards provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services; they do not specify detailed characteristics of performance evaluation methodologies. The System Operator may offer multiple performance evaluation models and may assign a Demand Resource to a model based on the Load characteristics of the Demand Resource or allow the Demand Resource provider to choose a performance evaluation model consistent with its load characteristics from a predefined list. The following methodology types are applicable to wholesale Demand Response Services:

Maximum Base Load: A performance evaluation methodology based solely on the ability of a Demand Resource to maintain its electricity usage at or below a specified level during a Demand Response Event.

Meter Before / Meter After: A performance evaluation methodology in which electricity Demand over a prescribed period of time prior to resource Deployment is compared to similar readings during the Sustained Response Period.

Baseline Type-I: A Baseline performance evaluation methodology based on historical interval meter data for a Demand Resource that may also include other parameters such as weather and calendar data.

Baseline Type-II: A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the revenue meter for the Demand Resource.

Performance Evaluation Type	Valid For Service Type			
	Energy	Capacity	Reserves	Regulation
Maximum Base Load	✓	✓	✓	
Meter Before / Meter After	✓	✓	✓	✓
Baseline Type-I	✓	✓	✓	
Baseline Type-II	✓	✓	✓	
Metering Generator Output	✓	✓	✓	✓



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WEQ 000-2 DEFINITION OF TERMS

Adjustment Window: The period of time prior to a Demand Response Event used for calculating a Baseline adjustment.

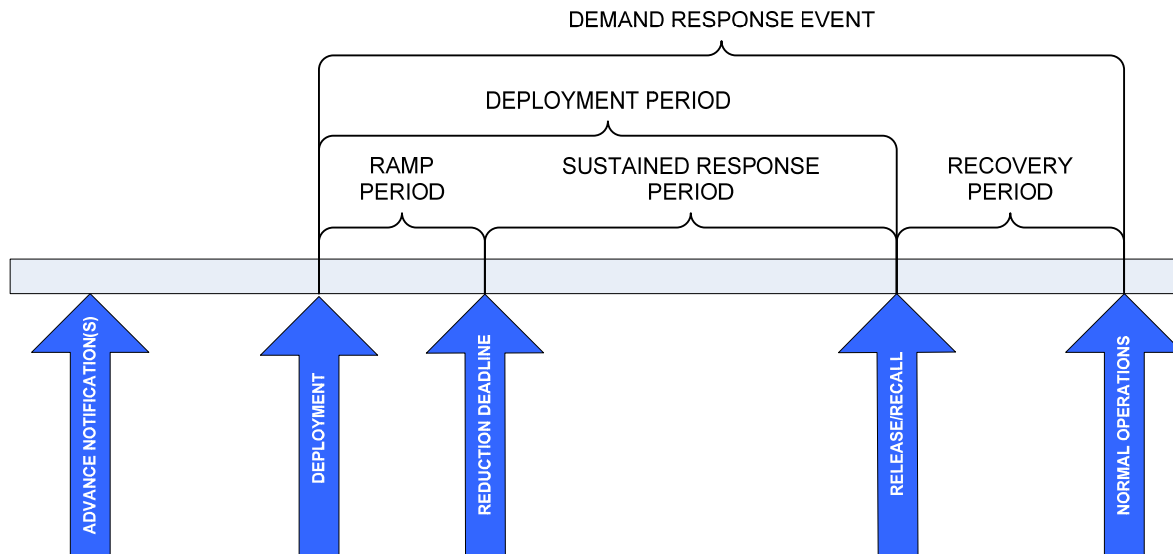


Figure 1. Timing of a Demand Response Event

Advance Notification(s): One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

After the Fact Metering: Interval meter data used to measure Demand Response. May not apply to Demand Resources under Baseline Type II (Non Interval Meter).

Aggregated Demand Resource: A group of independent Load facilities that provide Demand Response services as a single Demand Resource.

Baseline: A method of estimating the electricity that would have been used by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering (Baseline Type 1) and/or statistical sampling (Baseline type II). The figure below illustrates the concept of Baseline relative to a Demand Response Event.



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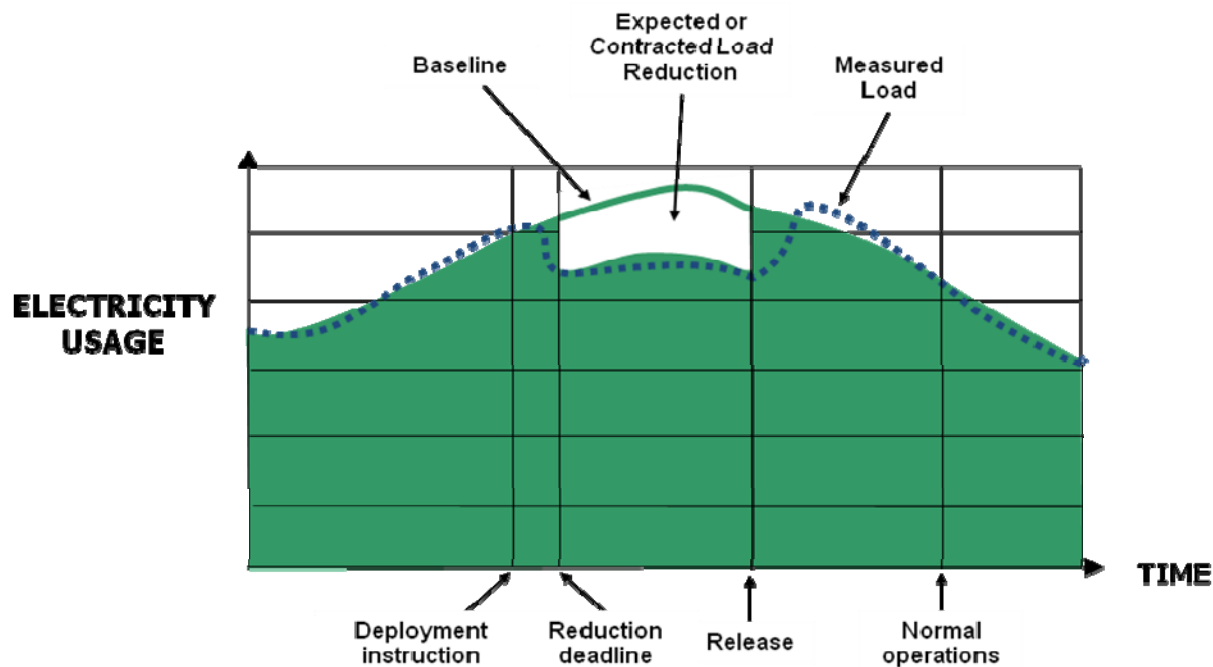


Figure 2. Illustration of Baseline Concept.

Baseline Adjustment: A modification to a Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have used but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the System Operator's requirements.

Baseline Type I (Interval Metered): A Baseline performance evaluation methodology based on a Demand Resource's historical interval meter data, which may also include other variables such as weather and calendar data.

Baseline Type II (Non-Interval Metered): A Baseline performance evaluation methodology that uses statistical sampling to estimate the electricity usage of an Aggregated Demand Resource where interval metering is not available on the entire population.



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~~**Baseline Window:** A period of time preceding and optionally following a Demand Response Event over which electricity usage data is collected for the purpose of establishing a Baseline. The applicability of this term is limited to Meter Before/Meter After, and Baseline Type I and Type II.~~

~~**Capacity Service:** A type of Demand Response service in which Demand Resources are obligated to control demand over a defined period of time measured in MW.~~

~~**Demand:** The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer (NERC Definition).~~

~~**Demand Reduction Value:** Measurement of reduced electricity usage by a Demand Resource during a Demand Response Event.~~

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~~**Demand Resource Availability:** The potential Demand Reduction Value available to be dispatched for a Demand Response Event.~~

~~**Demand Response:** A temporary change in electricity usage by a Demand Resource in response to market or reliability conditions. For purposes of these standards, Demand Response does not include energy efficiency or permanent Load reduction.~~

~~**Demand Response Event:** A period of time defined by the System Operator, including notifications, deadlines, and transitions, during which Demand Resources provide Demand Response. All notifications, deadlines, and transitions may not be not applicable to all Demand Response products or services.~~



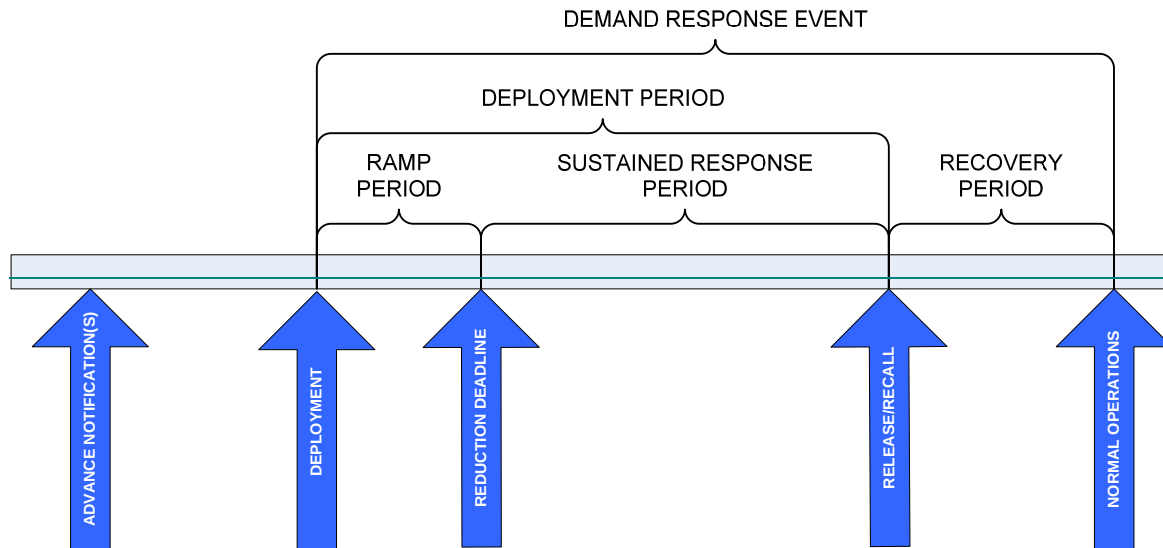
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Demand Response Provider: The entity that is responsible for delivering Demand Response.

Deployment: The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.

Deployment Period: The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

Energy Service: A type of Demand Response service in which a Demand Resource provides a quantity of electricity measured in MWhs.

Governing Documents: Documents that determine the interactions between a System Operator and other parties, including but not limited to, applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, operational manuals, and other relevant models and operational procedures.

Highly Variable Load: A Load with a fluctuating or unpredictable electricity usage pattern.

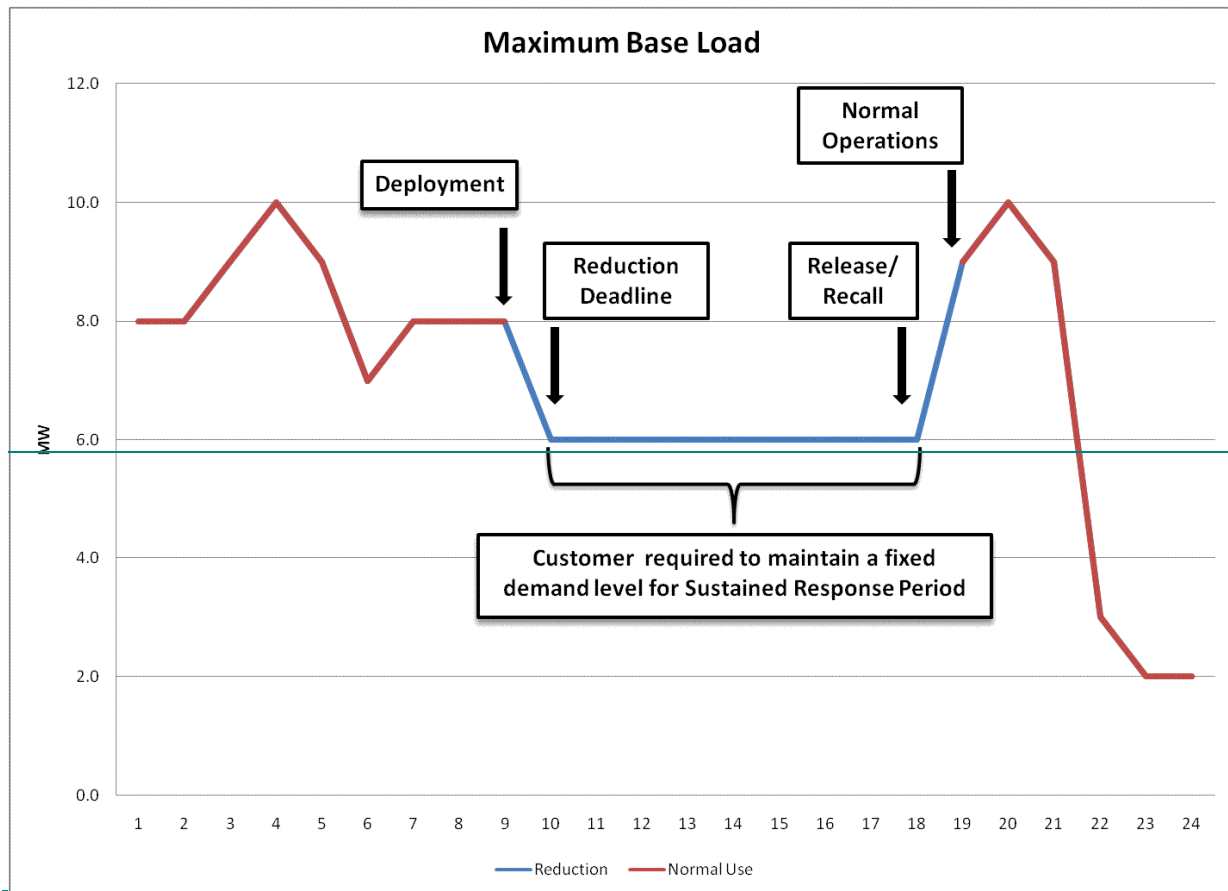
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Maximum Base Load: A performance evaluation methodology based solely on a Demand Resource's ability to maintain its electricity usage at or below a specified level during a Demand Response Event.



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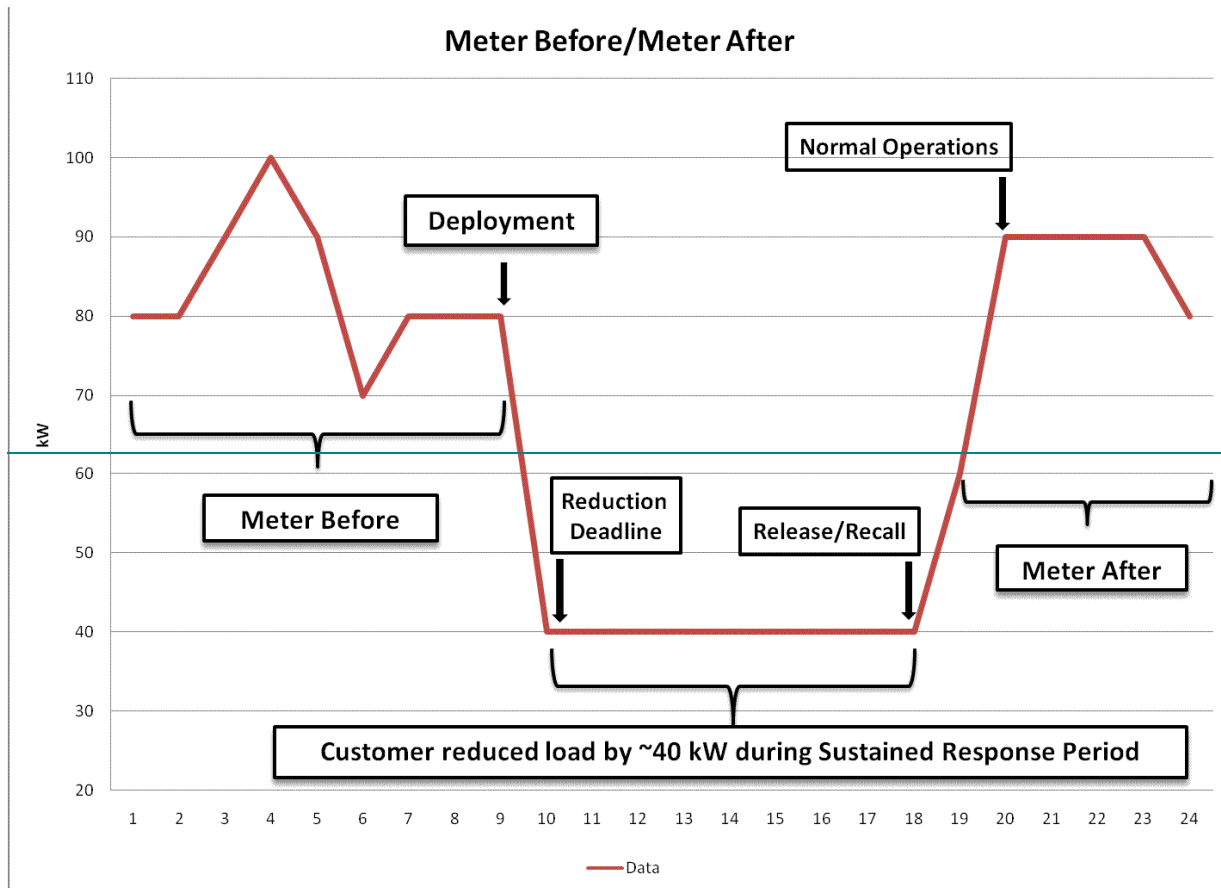
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Meter Data Reporting Deadline: The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end of month).

Metering Generator Output: A performance evaluation methodology in which the Demand Reduction Value is based on the output of a generator located behind the Demand Resource's revenue meter.

Normal Operations: The time following Release/Recall at which a System Operator may require a Demand Resource to have returned its Load usage to normal levels, and to be available again for Deployment.



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Performance Window: The period of time in a Demand Response Event analyzed by the System Operator to measure and verify the Demand Reduction Value for a Demand Resource.

Ramp Period: The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand.

Ramp Rate: The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

Recovery Period: The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load.

Reduction Deadline: The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation.

Regulation Service: A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real time signals from the System Operator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to the time periods, deadlines and transitions in the Demand Response Event definition.

Release/Recall: The time when the System Operator specifies a Deployment Period has ended or will end.

Reserve Service: A type of Demand Response service in which Demand Resources are obligated to be available to provide Demand reduction upon deployment by the System Operator, based on reserve capacity requirements that are established to meet applicable reliability standards.

Sustained Response Period: The period of time between Reduction Deadline and Release/Recall over which a Demand Resource is required to deliver its obligated Demand Reduction Value.

System Operator: A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator responsible for monitoring and controlling an electric system in real time. (Based on NERC definitions)

Telemetry: Equipment for measuring a quantity and transmitting the result to a remote location for measurement, monitoring, display or recording.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Telemetry Interval: ~~The unit of time between communication of telemetered data.~~

Validation, Editing and Estimation: ~~The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.~~



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Energy Products

Applicability

The [Business Practice](#) Standard applies to any entity that administers wholesale Demand Response Energy Products.

Purpose

The purpose of this [Business Practice](#) Standard is to ensure that participants in wholesale electric markets in which these [Products](#) are administered receive uniform access to information that will enable them to participate in said markets.

015-1.0 GENERAL

015-1.0.1 Advance Notification

The Governing Documents shall specify any requirements for an Advance Notification instruction.

015-1.0.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.0.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.

015-1.0.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources may begin returning to Normal Operations.

015-1.0.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.0.6 Demand Resource Availability Measurement

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.0.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand.

015-1.0.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.1 TELEMETRY

015-1.1.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data. For purposes of these standards, Telemetry refers to equipment providing communication signals between a Demand Resource or Demand Response Provider and the System Operator.

015-1.1.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.1.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, ~~not to exceed~~ to within 3.0%.

015-1.1.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.1.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.1.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.1.7 Governor Control Equivalent

Not applicable to Energy Service unless otherwise specified by the Governing Documents.

015-1.2 AFTER-THE-FACT METERING

015-1.2.1 After-the-Fact Metering Requirement

After-the-Fact Metering is required unless otherwise specified by the Governing Documents.

015-1.2.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements,

015-1.2.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.2.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.2.5 Meter Data Reporting Interval

Meter Data Reporting Interval shall not exceed 1 hour.

015-1.2.6 Clock / Time Accuracy

~~The Governing Documents shall specify the clock and time accuracy.~~ Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.2.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements.

015-1.2.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.3 PERFORMANCE EVALUATION

015-1.3.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Capacity Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Capacity Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these ~~P~~products are administered receive uniform access to information that will enable them to participate in said markets.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.4 GENERAL

015-1.4.1 Advance Notification

Advance Notification instruction may be issued a maximum of one day ahead of the deployment event.

015-1.4.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.4.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline. The minimum Reduction Deadline is instantaneous and the maximum Reduction Deadline is two hours.

015-1.4.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.4.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.4.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.4.7 Aggregation

-The Governing Documents shall specify any requirements for aggregated Demand Resources for the purposes of Measurement and Verification.

15-1.4.8 Transparency of Requirements

Any specific requirements shall be defined in governing the Governing Documents and shall be posted in a publicly accessible location.

015-1.5 TELEMETRY

015-1.5.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.5.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.5.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, ~~not to exceed~~ within 3.0%.

15-1.5.4 Telemetry Interval

The -Telemetry Interval shall not exceed 5 minutes.

015-1.5.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.5.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.5.7 Governor Control Equivalent

Not applicable to Capacity Service unless otherwise specified by the Governing Documents.

015-1.6 AFTER-THE-FACT METERING

015-1.6.1 After-the-Fact Metering Requirement

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

015-1.6.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.6.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.4 Meter Data Reporting Deadline

A -Meter Data Reporting Deadline shall be- a minimum of one day and a maximum of 103 days after a Demand Response Event.

015-1.6.5 Meter Data Reporting Interval

The Meter Data Reporting Interval shall not exceed 1 hour.

015-1.6.6 Clock / Time Accuracy

~~The Governing Documents shall specify the clock and time accuracy.~~ Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.6.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.6.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.7 PERFORMANCE EVALUATION

015-1.7.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Reserve Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Reserve Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these ~~P~~products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.8 GENERAL

015-1.8.1 Advance Notification

The Governing Documents shall specify any requirements for the Advance Notification instruction.

015-1.8.2 Deployment Time

The Governing Documents shall specify the time at which Demand Resources must begin reducing Demand on the system.

015-1.8.3 Reduction Deadline

The Governing Documents shall specify the Reduction Deadline.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.8.4 Release/Recall

The Governing Documents shall specify the time at which Demand Resources shall be instructed to begin restoring Load.

015-1.8.5 Normal Operations

The Governing Documents shall specify Normal Operations.

015-1.8.6 Demand Resource Availability Measurement

The Governing Documents shall specify any requirements for measuring the capability of a Demand Resource to meet its obligation.

015-1.8.7 Aggregation

The Governing Documents shall specify any requirements for Aggregated Demand Resources.

015-1.8.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.9 TELEMETRY

015-1.9.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data

015-1.9.2 On-Site Generation Telemetry

If on-site generation is present behind the primary telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.9.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, ~~not to exceed~~ to within 3.0%.

015-1.9.4 Telemetry Interval

The Telemetry Interval shall not exceed 5 minutes.

015-1.9.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.9.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.9.7 Governor Control Equivalent

Not applicable to Reserve Service unless otherwise specified by the Governing Documents.

015-1.10 AFTER-THE-FACT METERING

015-1.10.1 After-the-Fact Metering Requirement

After-the-fact Metering is required unless otherwise specified by the Governing Documents.

015-1.10.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.10.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.10.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.

015-1.10.5 Meter Data Reporting Interval

A Meter Data Reporting Interval shall not exceed 1 hour.

015-1.10.6 Clock / Time Accuracy

~~The Governing Documents shall specify the clock and time accuracy.~~ Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.10.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements.

015-1.10.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.11 PERFORMANCE EVALUATION

015-1.11.1 Rules for Performance Evaluation

Performance shall be evaluated through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Maximum Base Load
- Meter Before / Meter After
- Baseline Type-I
- Baseline Type-II
- Metering Generator Output

Business Practice Requirements:

Provision of Wholesale Electric Demand Response Regulation Products

Applicability

The Standard applies to any entity that administers the wholesale Demand Response Regulation Products.

Purpose

The purpose of this Standard is to ensure that participants in wholesale electric markets in which these products are administered receive uniform access to information that will enable them to participate in said markets.

015-1.12 GENERAL

015-1.12.1 Advance Notification

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.2 Deployment Time

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.3 Reduction Deadline

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.4 Release/Recall

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.12.5 Normal Operations

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.6 Demand Resource Availability Measurement

Not applicable to Regulation Service unless otherwise specified by the Governing Documents.

015-1.12.7 Aggregation

The Governing Documents shall specify any requirements for aggregated Demand Resources.

015-1.12.8 Transparency of Requirements

Any specific requirements shall be defined in the Governing Documents and shall be posted in a publicly accessible location.

015-1.13 TELEMETRY

015-1.13.1 Telemetry Requirement

The Governing Documents shall specify any requirements for real-time Telemetry, including, but not limited to: the use of real-time Telemetry, the entity or entities responsible for installing and maintaining Telemetry equipment and collecting and communicating Telemetry data.

015-1.13.2 On-Site Generation Telemetry

If on-site generation is present behind the primary Telemetry point, real-time Telemetry data shall be required to measure performance of the generator unless otherwise specified by the Governing Documents.

015-1.13.3 Telemetry Accuracy

The Governing Documents shall specify the accuracy of the real-time Demand measurement to be expressed as a percentage of full scale, ~~not to exceed~~ to within 3.0%.

015-1.13.4 Telemetry Interval

The telemetry Interval shall not exceed six seconds (NERC BAL-005-0b, R8).

015-1.13.5 Other Telemetry Measurements

The Governing Documents shall specify any additional Telemetry data requirements.

015-1.13.6 Communication Protocol

The Governing Documents shall specify the Telemetry communication protocol.

015-1.13.7 Governor Control Equivalent

Demand Resources providing Regulation Service shall respond to grid frequency deviations, similar to governor action provided by generation resources, unless otherwise specified by the Governing Documents.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.14 AFTER-THE-FACT METERING

015-1.14.1 After-the-Fact Metering Requirement

After-the-fact Metering is ~~not~~ required unless otherwise specified by the Governing Documents.

015-1.14.2 Meter Accuracy

After-the-Fact Metering shall be accurate to within 2% of full scale or relevant electric retail regulatory authority requirements.

015-1.14.3 Details of Meter/Equipment Standards

Meter/Equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.4 Meter Data Reporting Deadline

A Meter Data Reporting Deadline shall be a maximum of 55 days after a Demand Response Event.

015-1.14.5 Meter Data Reporting Interval

A Meter Data Reporting Interval shall not exceed 1 hour.

015-1.14.6 Clock / Time Accuracy

~~In accordance with NERC Reliability Standards, the Governing Documents shall specify the clock and time accuracy.~~ Clock and time meter/equipment standards shall meet or exceed industry standards equivalent to ANSI C12 unless otherwise specified by the Governing Documents.

015-1.14.7 Validating, Editing & Estimating (VEE) Method

The Governing Documents shall specify VEE requirements, if applicable.

015-1.14.8 On-Site Generation Meter Requirement

The Governing Documents shall specify additional metering requirements if on-site generation is present behind the primary metering point.

015-1.15 PERFORMANCE EVALUATION

015-1.15.1 Rules for Performance Evaluation

Performance shall be evaluated using telemetry data and additionally through the use of one of the following methods unless otherwise specified by the Governing Documents:

- Meter Before / Meter After
- Metering Generator Output



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Business Practice Requirements

Maximum Base Load Evaluation

015-1.16 BASELINE INFORMATION

There are no Baseline calculations defined for Maximum Base Load evaluations. The Maximum Base Load Evaluation methodology shall be associated with a demand reduction obligation compared to the Demand Resource's average Load or as specified by the Governing Documents.

015-1.17 EVENT INFORMATION

015-1.17.1 Use of Real-Time Telemetry

The Governing Documents shall specify ~~if whether~~ real-time Telemetry data ~~is to shall~~ be used to measure performance.

015-1.17.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.17.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.17.4 Measurement Type

During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance shall be one of the following unless otherwise specified by the Governing Documents:

- a) Peak Demand
- b) Average Demand - over a period of from 5 minutes to the entire Performance Window.

015-1.18 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Meter Before / Meter After

015-1.19 BASELINE INFORMATION

015-1.19.1 Baseline Window

The Governing Documents shall specify the time interval associated with the meter read, prior to deployment, used to establish the Baseline Window.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.19.2 Calculation Type

During the Baseline Window, the energy consumption or Demand of the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average.

015-1.19.3 Sampling Precision and Accuracy

Sampling is not permitted for this performance evaluation type, unless otherwise specified by the Governing Documents.

015-1.19.4 Exclusion Rules

The Governing Documents shall specify any exclusion rules.

015-1.19.5 Baseline Adjustments

Baseline Adjustments are not permitted for this performance evaluation type, unless specified by the Governing Documents.

015-1.19.6 Adjustment Window

No Adjustment Window is used for this model unless otherwise specified by the Governing Documents.

015-1.20 EVENT INFORMATION

015-1.20.1 Use of real-time Telemetry

The Governing Documents shall specify ~~that whether there is a need for~~ real-time Telemetry ~~data may or may not shall be be utilized~~ to measure performance.

015-1.20.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance, unless otherwise specified by the Governing Documents.

015-1.20.3 Performance Window

The Performance Window shall be the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Governing Documents.

015-1.20.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Instantaneous
- b) Maximum
- c) Average.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.21 SPECIAL PROCESSING

015-1.21.1 Highly-Variable Load Logic

The Governing Documents shall specify any performance evaluation requirements for Highly-Variable Loads.

015-1.21.2 On-Site Generation Requirements

The Governing Documents shall specify any performance evaluation requirements for on-site generation.

Business Practice Requirements

Baseline Type-I (Interval Meter)

015-1.22 BASELINE INFORMATION

015-1.22.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.22.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression

015-1.22.3 Sampling Precision and Accuracy

Sampling is not permitted for this ~~p~~Performance ~~e~~Evaluation type, unless otherwise specified by the Governing Documents.

015-1.22.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.22.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event -day operating conditions.

015-1.22.6 Adjustment Window

The Adjustment Window shall begin no more than four hours after-prior to deployment.

015-1.23 EVENT INFORMATION

015-1.23.1 Use of Real-Time Telemetry

The Governing Documents shall specify if whether there is a need for real-time Telemetry is shall ~~be required~~ to measure performance.

015-1.23.2 Use of After-The-Fact Metering

After-the-fact metering shall be used to measure performance unless telemetry is specified as the method of measurement.

015-1.23.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.23.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using one of the following measurements unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression.

015-1.24 SPECIAL PROCESSING

015-1.24.1 Highly-Variable Load Logic

The Governing Documents may specify performance evaluation requirements for Highly-Variable Loads.

015-1.24.2 On-Site Generation Requirements

The Governing Documents may specify performance evaluation requirements for on-site generation.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Business Practice Requirements

Baseline Type-II (Non-Interval Meter)

015-1.25 BASELINE INFORMATION

015-1.25.1 Baseline Window

The Governing Documents shall specify the Baseline Window.

015-1.25.2 Calculation Type

The Governing Documents shall specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- a) Maximum
- b) Average
- c) Regression.

015-1.25.3 Sampling Precision and Accuracy

The Governing Documents shall specify sampling precision and accuracy requirements.

015-1.25.4 Exclusion Rules

The Governing Documents shall specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- a) Historical Demand Response Events
- b) Testing/Audit Periods
- c) Calendar data
- d) Outages
- e) Weather emergencies or force majeure events
- f) Usage threshold
- g) Known, discrete load additions or reductions that have occurred during the Baseline Window.

015-1.25.5 Baseline Adjustments

The Governing Documents shall specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- a) Temperature
- b) Humidity
- c) Calendar data
- d) Sunrise/Sunset time
- e) Event -day operating conditions.

015-1.25.6 Adjustment Window

The Adjustment Window shall begin no more than four hours prior to deployment.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.26 EVENT INFORMATION

015-1.26.1 Use of Real-Time Telemetry

The Governing Documents shall specify ~~if-whether~~ there is a need for real-time Telemetry ~~data~~ is shall be required to measure performance.

015-1.26.2 Use of After-The-Fact Metering

After-the-fact metering or other energy measurement technology meeting the requirements of the Governing Documents shall be used to measure performance.

015-1.26.3 Performance Window

The Governing Documents shall specify the Performance Window.

015-1.26.4 Measurement Type

During the Performance Window, the performance of the Demand Resource shall be evaluated using one of the following unless otherwise specified by the Governing Documents:

- a) Maximum
- b) Average
- c) Regression.

015-1.27 SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.

Business Practice Requirements

Metering Generator Output

015-1.28 BASELINE INFORMATION

The Governing Documents shall specify Baseline calculations for Metering Generator Output.

015-1.29 EVENT INFORMATION

015-1.29.1 Use of Real-Time Telemetry

The Governing Documents shall specify ~~if-whether~~ there is a need for real-time Telemetry ~~data is to be used~~ shall be measured to measure performance.

015-1.29.2 Use of After-The-Fact Metering

After-the-fact metering on the generator and optionally on the associated Load shall be used to measure performance unless otherwise specified by the Governing Documents.

015-1.29.3 Performance Window

The Governing Documents shall specify the Performance Window.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

015-1.29.4 Measurement Type

During the Performance Window, the Demand Resource shall be evaluated using the total measured generation output unless otherwise specified by the Governing Documents.

015-1.30

SPECIAL PROCESSING

The Governing Documents shall specify any special processing rules.



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Business Practice Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with "Market Rules pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.0 through 015-1.10	
06/11/2010	Modified language to provide additional enhancement.	015-1.12 through 015-1.14	
06/18/2010	Changed the Telemetry Accuracy and Meter Accuracy per the IRC Matrix update.	015-1.1 through 015-1.2 and 015-1.9 through 015-1.10	
06/23/2010	Modified language to include parameters in IRC Matrix.	015-1.4 through 015-1.6.	
7/23/2010	Added definition for "Governing Documents" and modified text accordingly throughout business practice standards.	Definition section addition and modified all applicable locations in document.	
7/30/2010	In Regulation, under Telemetry Accuracy, changes to 5% from 3%.	015-1.13 Telemetry	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	
9/16/2010	Replaced glossary with glossary approved in May 2010.	Glossary	



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

Revision History

Performance Evaluation Sub-Working Group

Date	Revision Description	Categories Changed	Approved
3/12/2010	Removed "System Operator" and replaced it with "Governing Documents pertaining to demand response" to more accurately reflect that rules are developed by markets not the System Operator.	015-1.11 through 015-1.30	
7/17/2010	Added clarifications in Use of ATF Metering and inserted additional Measurement Type.	015-1.26	
7/23/2010	Modified language to provide additional enhancement	015-1.19, 015-1.20, 015-1.22 and 015-1.23	
7/30/2010	In Max Base Load, under Measurement Type, added clarification phrase to "b) Average Demand"	015-1.17 Event Information	
8/13/2010	Removed "Market Rules" and replaced it with "Governing Documents."	Throughout document.	



Late Comments Submitted by the Wholesale Electric Demand Response Working Group

RECOMMENDATION TO THE NAESB WEQ EXECUTIVE COMMITTEE

Requesters: DSM-EE Subcommittee

Request No.: 2010 WEQ AP Item 4(a) and 4(b)

Review and develop business practice standards to support DR and DSM-EE programs

4. SUPPORTING DOCUMENTATION

a. Description of Request:

Develop business practices to support demand side management and energy efficiency programs in the wholesale and retail electric markets.

b. Description of Recommendation:

For the second phase, develop business practices to provide more clarity and granularity for the measurement and verification aspects of wholesale market demand response products.

c. Business Purpose:

The business practices may be used by the administrators of wholesale demand response programs to add market transparency and understanding in the application of the measurement and verification characteristics of those programs.

e. Additional Background documentation

- DSM-EE NAESB page for meetings and materials: <http://www.naesb.org/dsm-ee.asp>
- Presentation of the wholesale recommendation given on October 3: ISO presentation - <http://www.naesb.org/pdf3/dsmee100308w7.pdf>
- Presentation on the NAESB process to be used – given on October 3: <http://www.naesb.org/pdf3/dsmee100308w8.pdf>
- [Final Action, Version 1:](#)

[At a later time a supporting document with clarifying information will be provided as a Technical Implementation Business Practice]



North American Energy Standards Board

801 Travis, Suite 1675, Houston, Texas 77002
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Home Page: www.naesb.org

January 18, 2011
Via email and posting

TO: NAESB Executive Committee (EC) Members, posting for interested parties
FROM: NAESB Office
cc: EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below
RE: NAESB Triage Disposition for R10010 and R10011

Dear Triage Subcommittee and EC members,

Two requests were triaged on November 23, 2010 – R10010 and R10011 -- provided below as hyperlinks. There were no requests for conference call for discussion. The requests were triaged as follows:

For [R10010](#), submitted by [Mike Schisler](#) on behalf of Kinder Morgan:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request for Add data elements “Nominated Receipt Point Quantity” and “Nominated Delivery Point Quantity” to the (shipper) Scheduled Quantity document, the request should be assigned to the WGQ Business Practices Subcommittee (BPS). While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the WGQ BPS.

For [R10011](#), submitted by [Mike Schisler](#) on behalf of Kinder Morgan:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to change the length of the GS02 “Application Sender’s Code” and GS03 “Application Receiver’s Code” from the current 12 characters to the ANSI standard 15 characters, the request should be assigned to the WGQ Information Requirements Subcommittee/Technical Subcommittee (IR/Tech). While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the WGQ IR/Tech.

If you have any questions on a specific request, please contact the requestor directly -- the email address is provided as a link with the request. The noted disposition for the requests including the requests were forwarded to the Triage Subcommittee and the EC members on November 9, 2010. There were no dissenting comments received. As such, the requests are considered in scope and assigned to the indicated subcommittees for development. Please note that this communication also serves as notice to the subcommittee chairs of the subcommittees to which the requests are assigned.



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January 19, 2010
Via email and posting

TO: NAESB Executive Committee (EC) Members, posting for interested parties
FROM: NAESB Office
cc: EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below
RE: NAESB Triage Actions Pending for Requests No. R10012, R11001 – R11006

Dear Triage Subcommittee and EC members,

We have seven requests to triage – R10012, and R11001 through R11006 -- provided below as hyperlinks. The NAESB office recommends the following actions:

For [R10012](#), submitted by [Mary Zientara](#) on behalf of Reliant Energy:

This request is (1) found within scope; (2) to be assigned to the Retail Electric Quadrant (REQ); and (3) because it is a request to develop retail electric model business practices for third party access to consumer smart grid data with considerations for data privacy practices those third parties should employ, it should be assigned to a REQ task force of the REQ portion of the Smart Grid PAP 10 subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the task force.

For [R11001](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add a Reservation and AOS Charge code value to the data element "Rate Form/Type Code" under NAESB WGQ Standard Nos. 5.4.24 Offer, 5.4.25 Bids and 5.4.26 Award Download, it will be processed as a minor correction. The office will forward the request as a minor correction to the Information Requirements Subcommittee.

For [R11002](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add several non-indexed based release code values to the data element Bidder Designation of Bidding Basis for NAESB WGQ Standard No. 5.4.25 Bid, it will be processed as a minor correction. The office will forward the request as a minor correction to the Information Requirements Subcommittee.

For [R11003](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add several non-indexed based release code values to the data element "Bidder Designation of Bidding Basis for Standard 5.4.26 Award Download, it will be processed as a minor correction. The office will forward the request as a minor correction to the Information Requirements Subcommittee.

For [R11004](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add Negotiated Non-Renewal Charge and AOS Charge data elements to the transactional reports including Firm Transportation, Capacity Release, and IT, it is assigned to the WGQ Business Practices Subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the task force.



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For [R11005](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add a code value for the Affiliate Indicator for NAESB WGQ Standard Nos. 5.4.20 Capacity Release, 5.4.24 Offer, 5.4.25 Bid and 5.4.26 Award Download, it will be processed as a minor correction. The office will forward the request as a minor correction to the Information Requirements Subcommittee.

For [R11006](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add non-negotiated based release code values to the data element "Releaser Designation of Acceptable Bidding Basis" for NAESB WGQ Standard No. 5.4.24 - Offer, it will be processed as a minor correction. The office will forward the request as a minor correction to the Information Requirements Subcommittee.

If you have any questions on a specific request, please contact the requestor directly -- the email address is provided as a link with the request. For additional information, the R10012 request was discussed at the December 2010 Board meeting in a presentation given by Ms. Zientara. If you have any concerns on the above actions, please respond via email with your concern stated, and we will convene a conference call for its resolution. Comments may certainly be provided and will be posted on the [Triage Subcommittee](#) page of the NAESB web site. If no concerns are raised, then on February 2, the dispositions as noted above will be considered approved.



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January 19, 2010
Via email and posting

TO: NAESB Executive Committee (EC) Members, posting for interested parties
FROM: NAESB Office
cc: EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below
RE: NAESB Triage **REVISED** Actions Pending for Requests No. R10012, R11001 – R11006

Dear Triage Subcommittee and EC members,

We have seven requests to triage – R10012, and R11001 through R11006 -- provided below as hyperlinks. There are amendments to the recommended actions for R11001, R11002, R11003 and R11006 based on discussions with WGQ leadership, as the requested code value changes may not be supported by existing business practice standards. The NAESB office recommends the following revised actions highlighted in yellow:

For [R10012](#), submitted by [Mary Zientara](#) on behalf of Reliant Energy:

This request is (1) found within scope; (2) to be assigned to the Retail Electric Quadrant (REQ); and (3) because it is a request to develop retail electric model business practices for third party access to consumer smart grid data with considerations for data privacy practices those third parties should employ, it should be assigned to a REQ task force of the REQ portion of the Smart Grid PAP 10 subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the task force.

For [R11001](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add a Reservation and AOS Charge code value to the data element "Rate Form/Type Code" under NAESB WGQ Standard Nos. 5.4.24 Offer, 5.4.25 Bids and 5.4.26 Award Download, it will be reviewed by the Business Practices Subcommittee for determination that the standards support the code value changes requested, and if so, it will then processed as a minor correction by the Information Requirements Subcommittee. There is nothing in the request that indicates a high priority, so if business practices changes are needed, the BPS will process in the normal course of business of the subcommittee.

For [R11002](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add several non-indexed based release code values to the data element Bidder Designation of Bidding Basis for NAESB WGQ Standard No. 5.4.25 Bid, it will be reviewed by the Business Practices Subcommittee for determination that the standards support the code value changes requested, and if so, it will then processed as a minor correction by the Information Requirements Subcommittee. There is nothing in the request that indicates a high priority, so if business practices changes are needed, the BPS will process in the normal course of business of the subcommittee.

For [R11003](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add several non-indexed based release code values to the data element "Bidder Designation of Bidding Basis for Standard 5.4.26 Award Download, it will be reviewed by the Business Practices Subcommittee for determination that the standards support the code value changes requested, and if so, it will then processed as a minor correction by the Information Requirements Subcommittee. There is nothing in the request that indicates a high priority, so if business practices changes are needed, the BPS will process in the normal course of business of the subcommittee.



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For [R11004](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add Negotiated Non-Renewal Charge and AOS Charge data elements to the transactional reports including Firm Transportation, Capacity Release, and IT, it is assigned to the WGQ Business Practices Subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the subcommittee.

For [R11005](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add a code value for the Affiliate Indicator for NAESB WGQ Standard Nos. 5.4.20 Capacity Release, 5.4.24 Offer, 5.4.25 Bid and 5.4.26 Award Download, it will be processed as a minor correction. The office will forward the request as a minor correction to the Information Requirements Subcommittee.

For [R11006](#), submitted by [Brian Troicuk](#) on behalf of Alliance Pipeline L.P.:

This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add non-negotiated based release code values to the data element "Releaser Designation of Acceptable Bidding Basis" for NAESB WGQ Standard No. 5.4.24 - Offer, it will be reviewed by the Business Practices Subcommittee for determination that the standards support the code value changes requested, and if so, it will then processed as a minor correction by the Information Requirements Subcommittee. There is nothing in the request that indicates a high priority, so if business practices changes are needed, the BPS will process in the normal course of business of the subcommittee.

If you have any questions on a specific request, please contact the requestor directly -- the email address is provided as a link with the request. For additional information, the R10012 request was discussed at the December 2010 Board meeting in a presentation given by Ms. Zientara. If you have any concerns on the above actions, please respond via email with your concern stated, and we will convene a conference call for its resolution. Comments may certainly be provided and will be posted on the [Triage Subcommittee](#) page of the NAESB web site. If no concerns are raised, then on February 2, the dispositions as noted above will be considered approved.

Business Practices Subcommittee Update

February 1, 2011

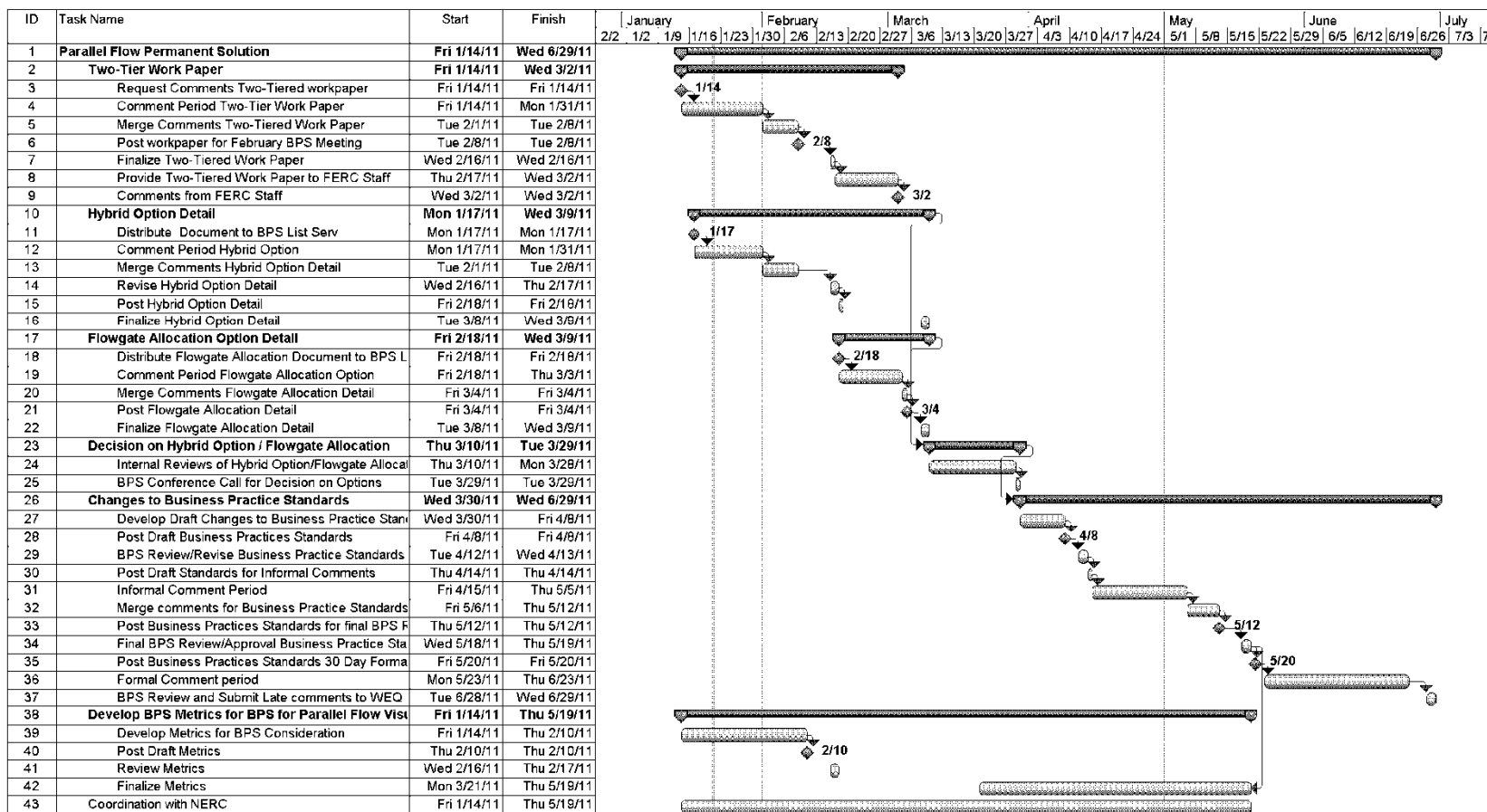
WEQ BPS Update - Meetings

- Recent meetings
 - November 10-11, 2010
 - December 1-2, 2010 (Joint Meeting with IDCWG)
 - January 11-12, 2011
- Scheduled meetings
 - February 16-17, 2011, hosted by NAESB, in Houston, TX
 - March 8-9, 2011, Location TBD
 - March 29, Conference Call
 - April 12-13, 2011, Location TBD
- Monthly meetings scheduled through 2011 (looking for host locations)

Parallel Flow Visualization

- Looking at two options
 - Hybrid Option (merges Generator Prioritization and Tag All Non-Firm)
 - Flowgate Allocation Option
- Key Items to be resolved prior to selecting option
 - Two-tier firm curtailments/seams agreements – Policy (both options)
 - Credit for re-dispatch to meet relief obligations (Hybrid Option)
 - Can an entity use a combination of Generator Prioritization and Tag All Non-Firm components (Hybrid Option)
 - Maintaining historic allocations
- Whatever option is selected will require coordination with NERC
 - IDC Change Order 310
 - INT-012
 - Additional IDC Change Order(s)
 - Study results
- Developing metrics for Permanent Solution

Parallel Flow Visualization – Schedule (Draft)



Project: PFV Permanent Solution.mpp Date: Fri 1/21/11	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

Joint NERC TLR SDT / NAESB BPS Update

- TLR standards IRO-006.5 and IRO-006-EAST.1 were approved by the NERC Board of Trustees on November 4, 2010
- TLR Standards were submitted by NERC to the Commission on January 13, 2011

Joint NERC BACSDT / NAESB TIMTF Update

- Balancing Authority Reliability-based Control (Project 2010-14) - “Status Coming Soon”
- Still foresee some coordination required with NERC Standards Drafting Team and TIMTF
- NERC Standards Committee approved a Time Error Correction Field Test, contingent on NERC Operating Committee approval and appropriate waivers from NERC compliance and NAESB Business Practice Standards
 - Field test to last for a year, with possible extensions
 - Results of the field test may have an impact on the NAESB Business Practices
 - Field test start date has not been finalized
- NERC Operating Committee directed its Resources Subcommittee to draft a field trial for the elimination of manual time error corrections
 - Earliest likely date of a field trial is June
 - TIMTF chair will monitor activity

Questions/Feedback



Standards Review Subcommittee Scope of Work

I. Scope of Work:

Overview

The SRS reviews and analyzes NERC standards, communication protocols, practices and annual plans for their potential impact on commercial activity and NAESB business standards. Based upon the aforementioned review and analysis, the SRS will recommend whether new or revised WEQ Business Practices are needed to complement the NERC standards. The SRS performs activities assigned to it through the WEQ Annual Plan or through the NAESB Triage process. The SRS reviews recommendations on new or existing NAESB Business Practices and may submit Standards Request, minor corrections, and/or formal comments to improve uniformity of the Business Practices.

A) Review Standards Under Development by North American Electric Reliability Corporation (NERC)

- 1) The SRS is the NAESB primary point of contact for review and assessment of existing or proposed NERC standards. The SRS determines if complementary WEQ Business Practice Standards are needed or if existing business practices require revision.
- 2) Based upon its review, the SRS may draft and submit a Standards Request for consideration
- 3) In some cases, the SRS may recommend NERC and NAESB joint standard development activities.

A detailed process flow diagram can be found in section II, Process Flows.

B) Review Annual Plans Developed by NERC

The SRS reviews draft annual plans developed by NERC and submits the SRS' assessment to the WEQ EC. The assessment may include adding line items to the WEQ Annual Plan or drafting Standards Requests.

C) Perform review of triaged Standard or Business Practice requests

The SRS shall review all requests triaged by NAESB for a Standard or Model Business Practice. The SRS shall review the disposition of each request. Disposition shall mean scope, priority consistent with the Annual Plan, and assignment to the Quadrant(s) and subcommittee(s) for action. If appropriate, the SRS may provide a recommendation to the NAESB office to modify the disposition of a request. When recommending modifications to the disposition, the SRS will provide an explanation for its recommended modifications.

D) Address WEQ Annual Plan items assigned to the SRS

The SRS will address WEQ Annual Plan items assigned to the SRS. The SRS priority will be to focus on annual plan items which are not listed as Provisional Items. The SRS will recommend Annual Plan changes, as needed, to the WEQ EC at their quarterly meeting. The SRS will work on Provisional Items listed in the Annual Plan as time permits. Other activities assigned to the SRS by the WEQ EC will have priority over Provisional Items in the Annual Plan.

E) Address Standards Requests assigned to the SRS by the Executive Committee

The SRS will take one of the following actions on each Standards Request assigned to it by the WEQ EC:

- 1) Develop and approve a Recommendation. The Recommendation may be to not proceed with the Standards Request.
- 2) Conduct initial analysis of the Standards Request and recommend the transfer of all or part of the Standards Request to a different subcommittee, working group, or task force for development of a Recommendation(s) for the EC.

Standards Review Subcommittee Scope of Work

- 3) Notify the EC that it is deferring the development and approval of a Recommendation until a future point in time when it has the information to do so. This situation can occur if the Standards Request requires both commercial and reliability standards to be developed concurrently.

F) Review existing or proposed changes to the WEQ Business Practices

The SRS will provide advisory comments to the WEQ EC for changes, not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices.

1) Existing Business Practices

The SRS from time to time may make recommendations to the WEQ EC (via Standards Requests or minor corrections) to improve the flow or organization structure of existing WEQ Business Practices (ministerial changes).

2) Recommendations

The SRS will review all Recommendations for changes to existing WEQ Business Practices during the 30-day formal comment period for consistency with the existing WEQ Business Practices. The SRS will determine if the proposed change will have an impact on WEQ Business Practices which are not referenced in the Recommendation. The SRS will also review the Recommendation to determine if it follows the criteria in the Recommendation Development Overview at http://www.naesb.org/weq_request.asp. Based on this assessment, the SRS may decide to submit advisory comments to the EC, during the formal comment period.

3) Proposed Changes (Minor Corrections)

The SRS will review proposed minor corrections approved by the WEQ EC during the two-week comment period and submit advisory comments if deemed appropriate. In the event the SRS does not meet during the two-week comment period, the SRS co-chairs may discuss and submit comments on behalf of the SRS. Such comments will note that they are the result of a discussion of the SRS co-chairs.

4) New Business Practices

The SRS will review each Recommendation for a Business Practice during the 30-day formal comment period to determine if the proposed business practice:

- Is consistent with the existing business practices structure
- Follows the Business Practice Template developed and posted on the NAESB Request and Standards Development Activity Applicable to the WEQ located at http://www.naesb.org/weq_request.asp
- Follows the criteria included in the Recommendation Development Overview and posted on the NAESB Request and Standards Development Activity Applicable to the WEQ located at http://www.naesb.org/weq_request.asp.
- Impacts WEQ Business Practices not referenced in the Recommendation.

Based on their assessment, the SRS may submit advisory comments to the WEQ EC, during the formal comment period.

G) Harmonization of Terms and Definitions

The SRS will review and approve all terms and proposed definitions it receives from the WEQ subcommittees and task forces and the Retail Glossary Subcommittee to ensure consistency and eliminate any conflicts with other definitions and terms.

- 1) All terms and definitions created, modified or deleted by the WEQ subcommittees and task forces shall be submitted to the WEQ SRS so that any conflicts can be resolved prior to the subcommittee or task force sending the recommendations to the Executive Committee for consideration.

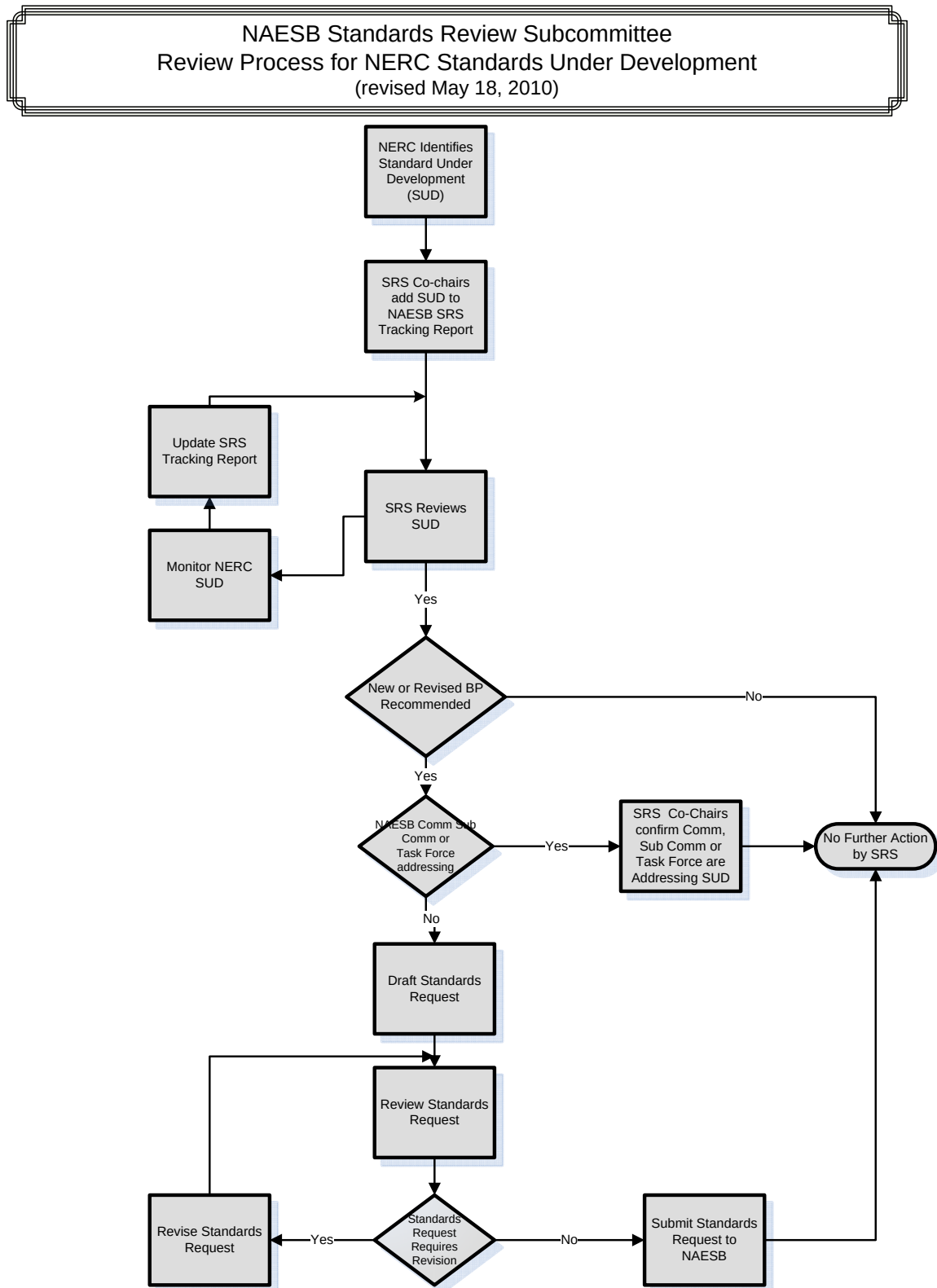
Standards Review Subcommittee Scope of Work

- 2) The WEQ SRS Chairs upon receiving a request for a term and/or proposed definition addition, change, or deletion from a WEQ subcommittee or task force Chairs shall notify the other WEQ subcommittee and task force Chairs, The WEQ SRS Chairs will also notify the Retail Glossary Subcommittee Chairs.
- 3) The WEQ SRS Chairs upon receiving a request for a term and/or proposed definition addition, change, or deletion from Retail Glossary Chairs shall notify the WEQ subcommittee and task force Chairs,
- 4) In the event there is a conflict between the Retail and WEQ proposed terms and/or definitions, the WEQ SRS Chairs and Retail Glossary Subcommittee Chairs will schedule a joint meeting/conference call including the impacted subcommittees and/or task forces to resolve the conflict or document the contextual reasons for the differences.

Standards Review Subcommittee Scope of Work

II. Process Flows:

A) Review Process for NERC Standards Under Development



Standards Review Subcommittee Scope of Work

~~I. Background:~~

~~The Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) was initially established by the WEQ Executive Committee (EC) on December 12, 2002. An initial work paper outlining the scope and mission statement for the SRS and process flow were developed and reviewed at the SRS kickoff meeting held February 6, 2003. The intent of this document is to finalize the SRS scope of work and process flow.~~

I. Scope of Work:

Overview

The SRS reviews and analyzes NERC standards, communication protocols, practices and annual plans for impacts their potential impact on commercial activity and NAESB business standards. The Based upon the aforementioned review and analysis, the SRS analyzes and recommends will recommend whether new or revised WEQ Business Practices are needed to complement the NERC standards. The SRS performs activities assigned to ~~the SRS~~ through the WEQ Annual Plan or by through the NAESB Triage process. The SRS reviews recommendations on new or existing NAESB Business Practices and may submit Standards Request, minor corrections, and/or formal comments to improve uniformity of the Business Practices.

A) Review Standards Under Development by North American Electric Reliability Corporation-~~(NERC)~~

- 1) The SRS is the NAESB primary point of contact for review and assessment of existing or proposed NERC standards. The SRS determines if complementary WEQ Business Practice Standards are needed. ~~The following high level activities will be performed by the SRS when reviewing NERC standards. Assess new or existing NERC standards under development, or if existing business practices require revision.~~
- 2) ~~Submit Standards Requests.~~
- 2) Recommend Based upon its review, the SRS may draft and submit a Standards Request for consideration
- 3) In some cases, the SRS may recommend NERC and NAESB joint standard development activities.

A ~~more~~ detailed SRS process flow diagram can be found in ~~the Review Process for NERC Standards Under Development document. See section III. A., Process Flows.~~

B) Review Annual Plans Developed by NERC

The SRS reviews draft annual plans developed by NERC and submits the ~~SRS~~SRS' assessment to the WEQ EC. The assessment may include adding line items to the WEQ Annual Plan or drafting Standards Requests.

GC) Perform review of triaged Standard or Business Practice requests

The SRS shall review all requests triaged by NAESB for a Standard or Model Business Practice. The SRS shall review the disposition of each request. Disposition shall mean scope, priority consistent with the Annual Plan, and assignment to the Quadrant(s) and subcommittee(s) for action. If appropriate, the SRS may provide a recommendation to the NAESB office to modify the disposition of a request. When recommending modifications to the disposition, the SRS will provide an explanation for its recommended modifications.

D) Address WEQ Annual Plan items assigned to the SRS

The SRS will address WEQ Annual Plan items assigned to the SRS. The SRS priority will be to focus on annual plan items which are not listed as Provisional Items. The SRS will recommend

Standards Review Subcommittee Scope of Work

Annual Plan changes, as needed, to the WEQ EC at their quarterly meeting. The SRS will work on Provisional Items listed in the Annual Plan as time permits. Other activities assigned to the SRS by the WEQ EC will have priority over Provisional Items in the Annual Plan.

DE) Address Standards Requests assigned to the SRS by the ~~Triage Subcommittee~~Executive Committee

~~From time to time the Triage Subcommittee may assign Standards Requests to the SRS.~~ The SRS will take one of the following actions on each Standards ~~Requests~~Request assigned to it by the WEQ EC:

- 1) Develop and approve a ~~recommendation for Standards Requests. Such recommendation~~Recommendation. The Recommendation may be to not proceed with the Standards Request.
- 2) Conduct initial analysis of the Standards Request and recommend the transfer of all or part of the Standards Request to a different subcommittee, working group, or task force for development of a Recommendation(s) for the final recommendation~~EC~~.
- 3) ~~Defer~~Notify the EC that it is deferring the development and approval of a recommendationRecommendation until a future point in time when it has the information to do so. This situation can occur if the Standards Request requires both commercial and reliability standards to be developed concurrently.

EF) Review existing or proposed changes to the WEQ Business Practices

The SRS will provide advisory comments to the WEQ EC for changes, not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices.

1) Existing Business Practices

The SRS from time to time may make recommendations to the WEQ EC (via Standards Requests or minor corrections) to improve the flow ~~or~~ organization structure of existing WEQ Business Practices (ministerial changes).

2) Recommendations

The SRS will review all Recommendations for changes to existing WEQ Business Practices during the 30-day formal comment period for consistency with the existing WEQ Business Practices. The SRS will determine if the proposed change will have an impact on WEQ Business Practices which are not referenced in the Recommendation. The SRS will also review the Recommendation to determine if it follows the criteria in the Recommendation Development Overview at http://www.naesb.org/weq_request.asp. Based on this assessment, the SRS may decide to submit advisory comments to the EC, during the formal comment period.

3) Proposed Changes (Minor Corrections)

The SRS will review proposed minor corrections approved by the WEQ EC during the two-week comment period and submit advisory comments if deemed appropriate. In the event the SRS does not meet during the two-week comment period, the SRS co-chairs may discuss and submit comments on behalf of the SRS. Such comments will note that they are the result of a discussion of the SRS co-chairs.

4) New Business Practices

The SRS will review each Recommendation for a Business Practice during the 30-day formal comment period to determine if the proposed business practice:

- Is consistent with the existing business practices structure

Standards Review Subcommittee Scope of Work

- Follows the Business Practice Template developed and posted on the NAESB Request and Standards Development Activity Applicable to the WEQ located at http://www.naesb.org/weq_request.asp
- Follows the criteria included in the Recommendation Development Overview and posted on the NAESB Request and Standards Development Activity Applicable to the WEQ located at http://www.naesb.org/weq_request.asp.
- Impacts WEQ Business Practices not referenced in the Recommendation.

Based on their assessment, the SRS may submit advisory comments to the WEQ EC, during the formal comment period.

G) Harmonization of Terms and Definitions

The SRS will review and approve all terms and proposed definitions it receives from the WEQ subcommittees and task forces and the Retail Glossary Subcommittee to ensure consistency and eliminate any conflicts with other definitions and terms.

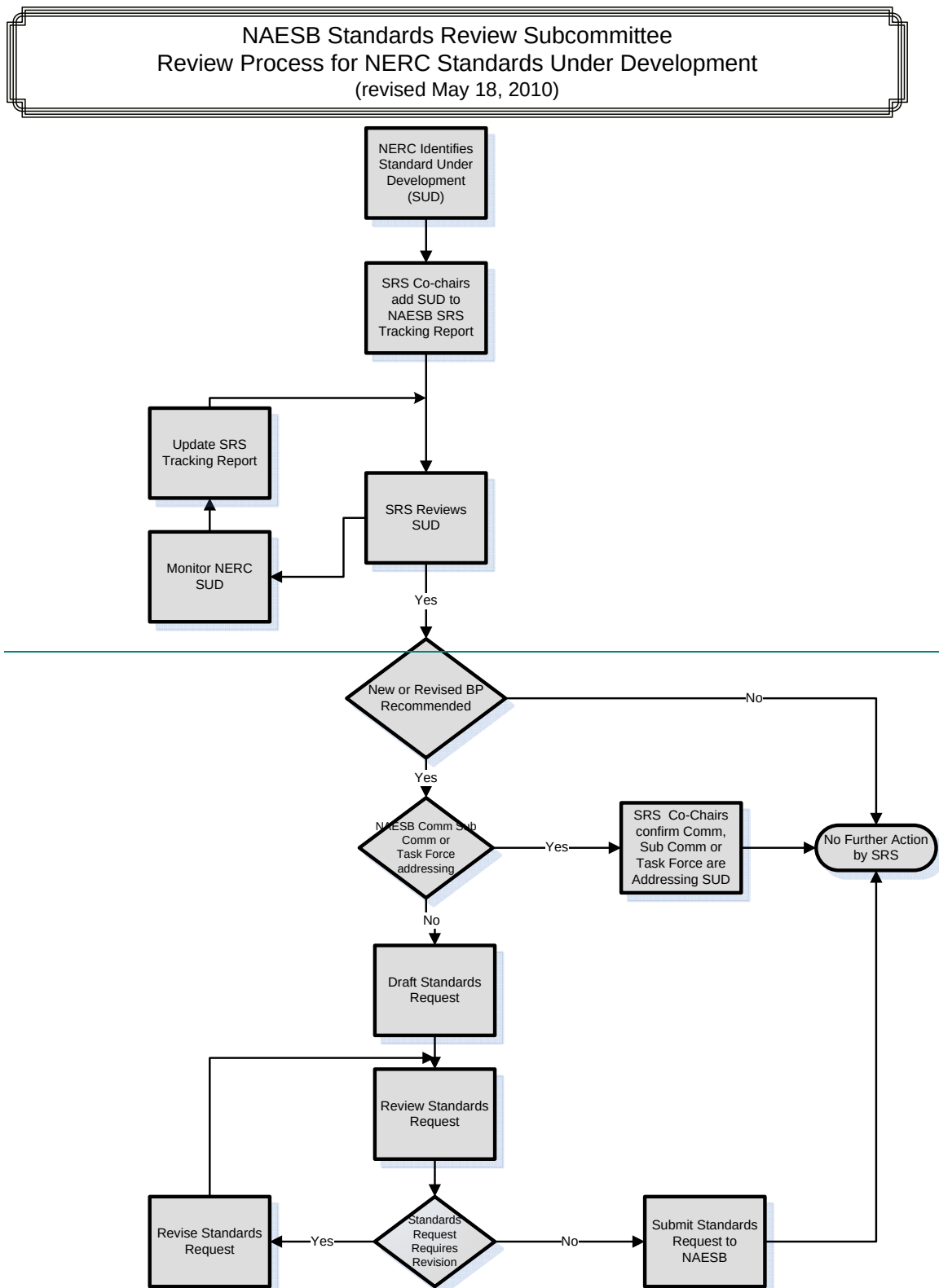
- 1) All terms and definitions created, modified or deleted by the WEQ subcommittees and task forces shall be submitted to the WEQ SRS so that any conflicts can be resolved prior to the subcommittee or task force sending the recommendations to the Executive Committee for consideration.
- 2) The WEQ SRS Chairs upon receiving a request for a term and/or proposed definition addition, change, or deletion from a WEQ subcommittee or task force Chairs shall notify the other WEQ subcommittee and task force Chairs. The WEQ SRS Chairs will also notify the Retail Glossary Subcommittee Chairs.
- 3) The WEQ SRS Chairs upon receiving a request for a term and/or proposed definition addition, change, or deletion from Retail Glossary Chairs shall notify the WEQ subcommittee and task force Chairs.
- 4) In the event there is a conflict between the Retail and WEQ proposed terms and/or definitions, the WEQ SRS Chairs and Retail Glossary Subcommittee Chairs will schedule a joint meeting/conference call including the impacted subcommittees and/or task forces to resolve the conflict or document the contextual reasons for the differences.

Standards Review Subcommittee Scope of Work

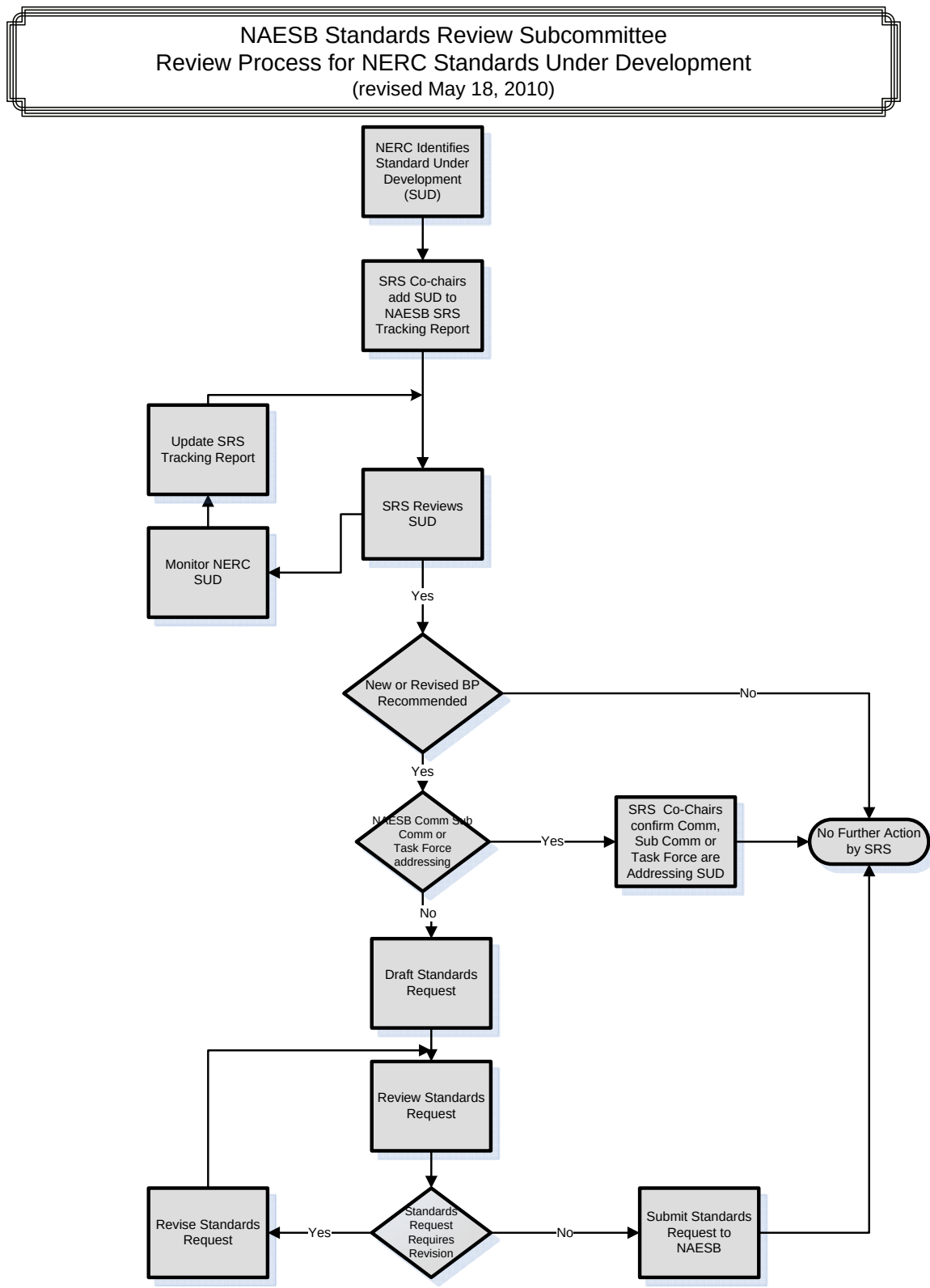
II. Process Flows:

A) Review Process for NERC Standards Under Development

Standards Review Subcommittee Scope of Work



Standards Review Subcommittee Scope of Work



Standards Review Subcommittee Update

February 1, 2011

Meetings

- Recent Meetings:
 - November 16, 2010
 - December 21, 2010
 - January 18, 2011
- Upcoming Meetings
 - February 22, 2011
 - March 15, 2011
 - April 19, 2011

Recent Activities

- Ongoing Activities
 - Review and submitted comments on the recommendations:
 - 2010 WEQ Annual Plan Item 6(a): Phase Two Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03
 - 2010 WEQ Annual Plan Item 6(b): Phase Two Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04
 - 2010 WEQ Annual Plan Item 6(c): Phase Two Requirements Specifications for Wholesale Standard DR Signals – for NIST PAP09
 - 2010 WEQ Annual Plan Item 6: Smart Grid Data Elements Table
 - 2010 WEQ Annual Plan Items 4(a) and 4(b): Review and develop business practice standards to support Demand Response (Phase 2)
 - 2010 WEQ Annual Plan Item 4(d): Business Practice Standards for Measurement and Verification of Energy Efficiency Products

Recent Activities

- Ongoing Activities (continued)
 - Review of minor corrections posted for comments
 - Minor Correction MC10041 Corrections to the WEQ/WGQ Implementation Guide for Electronic Tariff Filing to correspond to modifications made by FERC to its Implementation Guide for Electronic Filing of Parts 35, 154, 284, 300, and 341 Tariff Filings on October 8, 2010
 - Glossary Activities
 - Notified Retail Glossary Subcommittee Chair of differences in definition for Demand Reduction Value
 - Notified DSM EE co-chairs of slight difference between NERC and NAESB definitions for System Operator
 - Monthly Review of NERC Activities
 - Added Annual Plan Item 1.e to coordinate definition of Bulk Electric System with NERC (NERC Project 2010-017)
- Specific Activities
 - Revised Scope of Work to support harmonization of terms motion approved by the WEQ Executive Committee on December 20, 2010

Requested EC Action

- Approval of Revised Scope of Work including changes:
 - Submitted to the Executive Committee for consideration in October 2010
 - To support Executive Committee motion to harmonize definitions of terms
- Guidance on criteria for minor corrections
 - NERC Project 2010-17 Definition of Bulk Electric System
 - NERC Project 2010-08 Functional Model Glossary of Terms
 - Change reference of TSIN and/or Electric Industry Registry to new name when implemented

Questions/Feedback

- Request others also to look at the NERC activities to assess whether they think NAESB should be developing complementary standards
- Seek continued participation in monthly conference call meetings



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NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)
DECEMBER 17, 2010

ACTIONS TO BE APPLIED TO WGQ VERSION 1.9 TO CREATE WGQ VERSION 2.0:

Version 1.9 was published on September 30, 2009.

2009-10:

Final Actions:

2009 Annual Plan Item 3/2009 Annual Plan Item 2(a)/R07009 – Update Model ISDA North American Gas Annex, November 2004 to correspond to the updated Base Contract for Sale and Purchase of Natural Gas, dated September 5, 2005, in accordance with NAESB WGQ Request No. R07009 as adopted by the WGQ Executive Committee on October 29, 2009 - http://naesb.org/member_login_check.asp?doc=model_isda_addendum102909.pdf *(This is a model and does not require member ratification)*

R08020 – Provide for enhanced granularity for public utilities in identifying critical operational flow orders, - Approved by the WGQ EC on February 4, 2010.

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08020.doc *(Ratified June 23, 2010)*

R09001 – Add two data elements to the Transactional Reporting – Interruptible Transportation Document (5.4.22) – Approved by the WGQ EC on February 4, 2010.

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r09001.doc *(Ratified June 23, 2010)*

R09011 - Change the term Power Plant Operator to Power Plant Gas Coordinator in WEQ-011 – Revised and approved by the WGQ EC on May 4, 2010.

Final Action: http://naesb.org/pdf4/r09011_rec.doc *(Ratified July 15, 2010)*

R08028/2010 WGQ Annual Plan Item 3/2009 WGQ Annual Plan Item 4/2008 WGQ Annual Plan Item 5 – Eliminate Standards 5.4.4. (Replacement Capacity);

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3.doc ,

Attachment 1 Offer:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3_attach1.doc ,

Attachment 2 Bid:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3_attach2.doc ,

Attachment 3 Award Download:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3_attach3.doc ,

Attachment 4 Withdrawal Download:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3_attach4.doc ,

Attachment 5 Business Documentation:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3_attach5.doc , and

Attachment 6 Principles/Standards/Interpretations as modified in redline:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08028_wgq_2010_api_3_attach6.doc – revised by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R99033/R96018/R04028 – Redesign of Operationally Available and Unsubscribed data set

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r99033_r96018_r04038.doc ,

Attachment 1 Data Dictionary:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r99033_r96018_r04038_attach1.doc , and



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Attachment 2 EDI Technical:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r99033_r96018_r04038_attach2.doc

Attachment 3 EDISM G873OACY:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r99033_r96018_r04038_attach3.rtf

Attachment 4 EDISM G873UNSC:

http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r99033_r96018_r04038_attach4.rtf - approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R08008 - Develop customer security administration standards

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r08008.doc - Approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R09006 - Add a new data element “Contract” in the following Transaction Datasets for the NAESB WGQ Version 1.8 release: NAESB WGQ Standard No. 3.4.2, Payment Remittance and NAESB WGQ Standard No. 3.4.4, Service Requester / Charge Allowance Invoice.

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r09006.doc - Approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R09021/R09022 – Change Charge Type conditionality in NAESB WGQ Standard No. 3.1.14.1 Transportation/Sales Invoice.

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r09021_r09022.doc - Approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R09025 – Create a new WGQ EDM standard

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r09025.doc - Approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

2010 WGQ Annual Plan Item 5 – the NAESB WGQ EDM subcommittee reviews and updates to the NAESB WGQ technical standards per NAESB WGQ Standard No. 4.3.59.

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_2010_api_5.doc - Approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R10001 - Update the NAESB Wholesale Gas Quadrant (WGQ) Quadrant Electronic Delivery Mechanism (QEDM) Manual to add the ability to provide Informational Postings reports downloads in a CSV file format

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r10001.doc - Approved by the WGQ EC on August 19, 2010 – *(Ratified September 27, 2010)*

R09014 / 2010 WGQ Annual Plan Item 6 – Create a section/heading under Informational Postings called Regulatory to include all filings made to the FERC –

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r09014_wgq_2010_ap_6.doc – revised/approved by the WGQ Executive Committee on October 5, 2010 *(Ratified November 5, 2010)*

Recommendations:

None



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NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ) DECEMBER 17, 2010

Minor Corrections:

MC10036 – Submitted by D. Davis, Williams Gas Pipeline – Minor corrections for the version 2.0 publication resulting from editorial review: http://www.naesb.org/pdf4/wgq_mc10036_rec_100710.doc - approved by the WGQ EC via notational ballot on October 17, 2010 - (*Effective date November 30, 2010*)

MC10030 – Submitted by Williams Gas Pipeline – Correction (Errata) to WGQ Version 1.9 – Standard No. 5.4.7 (Offer Upload) data dictionary for the condition of the data element Special Terms and Miscellaneous Notes – Storage Inventory Conditions: http://www.naesb.org/pdf4/wgq_mc10030_rec_081810.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC10018 – Submitted by D. Davis and C. Burden, Williams Gas Pipeline for NAESB WGQ Version 2.0, NAESB WGQ Standard 2.4.3 – Allocation, NAESB WGQ Standard 2.4.4 – Shipper Imbalance and NAESB WGQ Standard 3.4.1 – Transportation/Sales Invoice: http://www.naesb.org/pdf4/wgq_mc10018_rec_081910.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC10022 – Version 2.0 Add code value description “Deferred Asset Surcharge” with code value “DAS” to the list of standardized code values for the following datasets and data elements: 3.4.1, 5.4.1, 5.4.2, 5.4.3, 5.4.7, 5.4.8, 5.4.18, 5.4.19, 5.4.20, 5.4.21, 5.4.22, Submitted by T. Gwilliam, Iroquois Gas Transmission System, L.P. - http://www.naesb.org/pdf4/wgq_mc10022_rec_081910.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC10024 – Version 2.0 Add additional Reduction Reason code value(s) to NAESB WGQ Standard No. 1.4.6, Submitted by R. Hogge, Dominion Transmission - http://www.naesb.org/pdf4/wgq_mc10024_rec_081910.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC10026 – Version 2.0 Addition of a Code Value for the data element “Transaction Type” to the following data element “Transaction Type” to the following Transaction Data Sets: Nomination (1.4.1), Scheduled Quantity (1.4.5), Per-determined Allocation (2.4.1), Allocation (2.4.3), Shipper Imbalance (2.4.4), and Transportation/Sales Invoice (3.4.1), Submitted by K. Brooks, Williston Basin Interstate Pipeline Company - http://www.naesb.org/pdf4/wgq_mc10026_rec_081910.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC10028 – This request proposes adding back the Code Value for the data element “Surcharge Indicator” to the following Transaction Data Sets: Offer Download (5.4.1), Bid Download (5.4.2) and Award Download (5.4.3), Submitted by M. Mahle, Transcanada - http://www.naesb.org/pdf4/wgq_mc10028_rec_081910.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC10029 – NAESB WGQ Standards 4.3.54, Submitted by K. Brooks, Williston Basin Interstate Pipeline Company - http://www.naesb.org/pdf4/wgq_mc10029_rec_081910.doc - approved by the WGQ EC on August 19, 2010 - (*Effective date October 7, 2010*)

MC09034 Correct references in 3 lines of Section 4.12 of the NAESB WGQ Standard No. 6.3.3 – Electronic Data Trading Partner Agreement (Version 1.8), Submitted by C. Burden, Williams Gas Pipeline - http://www.naesb.org/pdf4/wgq_retail_mc09034_rec_011510.doc – approved by the WGQ EC via notational ballot January 15, 2010. (*Effective date September 27, 2010*)



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MC09035 Information Requirements/Technical Subcommittee – corrections to Transaction set Tables and ANSI X12 mapping in NAESB WGQ Standard Nos. 5.4.1 – Offer Download and 5.4.3 – Award Download (Version 1.9) http://www.naesb.org/pdf4/wgq_mc09035_rec_011510.doc – approved by the WGQ EC via notational ballot January 15, 2010. *(Effective date September 27, 2010)*

MC10009 – Version 1.9 (Errata) for: NAESB WGQ Standard No.5.4.1 (Offer Download), NAESB WGQ Standard No.5.4.2 (Bid Download) and NAESB WGQ Standard No.5.4.3 (Award Download), Submitted by D. Davis, Williams Gas Pipeline - Recommendation: http://www.naesb.org/pdf4/wgq_mc10009_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10010 – Version 1.9 (Errata) for NAESB WGQ Standard No.5.4.20 (Transactional Reporting – Capacity Release), Submitted by D. Davis, Williams Gas Pipeline - Recommendation: http://www.naesb.org/pdf4/wgq_mc10010_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10011 – Version 1.9 (Errata) for NAESB WGQ Standard Nos.3.4.1 (Transportation/Sales Invoice), Submitted by D. Davis, Williams Gas Pipeline - Recommendation: http://www.naesb.org/pdf4/wgq_mc10011_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10014 – Version 1.9 (Errata) for NAESB WGQ Standard No.5.4.18 (Bid Upload), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee – Recommendation: http://www.naesb.org/pdf4/wgq_mc10014_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10015 – Version 1.9 (Errata) to NAESB WGQ Standard No.5.4.15 (Response to Upload of Request for Download of Posted Datasets), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee – Recommendation http://www.naesb.org/pdf4/wgq_mc10015_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10016 – Version 1.9 (Errata) for NAESB WGQ Version 1.9 Standard No.3.4.1 (Transportation/Sales Invoice), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee – Recommendation http://www.naesb.org/pdf4/wgq_mc10016_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10017 - Version 1.9 (Errata) to NAESB WGQ Standard No. 2.4.6 – Measurement Volume Audit Statement, Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee – Recommendation http://www.naesb.org/pdf4/wgq_mc10017_rec_080610.doc - approved by the WGQ EC on August 6, 2010. *(Effective date September 27, 2010)*

MC10019 - Minor Correction Submitted by D. Davis, Williams Gas Pipeline for NAESB WGQ Version 1.9: Joint NAESB WEQ Version 002.1 Standard WEQ-014-A and WGQ Version 1.0 Standard No. 11.4.1 (Implementation Guide for Electronic Tariff Filing): http://www.naesb.org/pdf4/wgq_weq_mc10019_revised.doc - revised/approved by the WEQ EC on August 17, 2010 and the WGQ EC on August 19, 2010. *(Effective date October 7, 2010)*



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MC10020 – Version 1.9 (Errata) for NAESB WGQ Capacity Release, Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee – Recommendation: http://www.naesb.org/pdf4/wgq_mc10020_rec_080610.doc - approved by the WGQ EC on August 6, 2010. (Effective date September 27, 2010)

MC10021 – Version 1.9 (Errata) to NAESB WGQ Standard 5.4.22, Submitted by K. Brooks, Williston Basin Interstate Pipeline, Company – Recommendation: http://www.naesb.org/pdf4/wgq_mc10021_rec_080610.doc - approved by the WGQ EC on August 6, 2010. (Effective date September 27, 2010)

MC10023 – Version 1.9 (Errata) to the offer Download – NAESB WGQ Standard No. 5.4.1 – PID Segment and Correct the Technical Implementation of Business Process for Confirmation Response – NAESB WGQ Standard No. 1.4.4, Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee - http://www.naesb.org/pdf4/wgq_mc10023_rec_080610.doc - approved by the WGQ EC on August 6, 2010. (Effective date September 27, 2010)

MC10025 – Version 1.9 (Errata) for NAESB WGQ Internet Electronic Transport (Internet ET) Manual and NAESB RXQ Internet ET Manual, Version 1.2, Submitted by C. Burden, Joint WGQ Information Requirements/Technical Subcommittee - http://www.naesb.org/pdf4/wgq_req_rgq_mc10025_rec_080610.doc - approved by the WGQ EC on August 6, 2010. (Effective date September 27, 2010)

MC10027 - Errata to NAESB WGQ Version 1.9: Correct the condition for the data element Amendment Reporting in the following data sets: Transactional Reporting - Capacity Release (NAESB WGQ Standard No. 5.4.20), Transactional Reporting – Firm Transportation (NAESB WGQ Standard No. 5.4.21) and Transactional Reporting – Interruptible Transportation (NAESB WGQ Standard No. 5.4.22), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee - http://www.naesb.org/pdf4/wgq_mc10027_rec_080610.doc - approved by the WGQ EC on August 6, 2010. (Effective date September 27, 2010)

MC10012 –Errata for NAESB WGQ Internet Electronic Transport (Internet ET) Manual, Version 1.9 and NAESB RXQ Internet ET Manual Version 1.2: http://www.naesb.org/pdf4/wgq_req_rgq_mc10012_rec_030510.doc - approved by the WGQ and Retail ECs on March 5, 2010 (Effective date July 7, 2010)

MC10001 - Revised - Minor Correction Submitted by M. Stender, El Paso Natural Gas to NAESB standard 5.4.1, 5.4.2 and 5.4.17 version 1.9: http://www.naesb.org/pdf4/wgq_mc10001_rec_020410.doc - approved by the WGQ EC on February 4, 2010. (Effective date April 19, 2010)

MC10002/R09019 - Minor Correction (errata to Version 1.9) to modify three and add one new Allocation Transaction Type Code Values and modify the Allocation Transaction Type Matrix accordingly in the following data set: Allocation, NAESB WGQ Standard No. 2.4.3 (Note: This recommendation corrects the actions taken for R05028 which were published in Version 1.9.): http://www.naesb.org/pdf4/wgq_mc10002_rec_020410.doc - approved by the WGQ EC on February 4, 2010. (Effective date April 19, 2010)

MC10003 - Minor Correction to Version 1.9 NAESB WGQ Standard No. 2.2.4 – Shipper Imbalance (EDI Implementation: ASC X12 Mapping Guidelines and Data Element Cross Reference): http://www.naesb.org/pdf4/wgq_mc10003_rec_020410.doc - approved by the WGQ EC on February 4, 2010. (Effective date April 19, 2010)



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NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ) DECEMBER 17, 2010

MC10005 - Recommendation – Submitted by C. Burden, Williams Gas Pipeline – This request proposes the correction of language for the NAESB WGQ Version 1.9 release: NAESB WGQ Standard 4.3.16:
http://www.naesb.org/pdf4/wgq_mc10005_rec_020410.doc - approved by the WGQ EC on February 4, 2010.
(Effective date April 19, 2010)

MC10006 Recommendation – Submitted by C. Burden, Williams Gas Pipeline – This request proposes corrections to NAESB WGQ Standards Booklet 1 of 2, NAESB WGQ QEDM Standards Manual and NAESB WGQ Capacity Release Standards Manual to correct an error in wording:
http://www.naesb.org/pdf4/wgq_mc10006_rec_020410.doc - approved by the WGQ EC on February 4, 2010.
(Effective date April 19, 2010)

MC10007 Recommendation – Submitted by C. Burden, Williams Gas Pipeline – This request proposes corrections to NAESB WGQ QEDM Standards Manual, Version 1.9 to correct browser and plug-in information and a spelling correction: http://www.naesb.org/pdf4/wgq_mc10007_rec_020410.doc - approved by the WGQ EC on February 4, 2010. (Effective date April 19, 2010)

MC10008 Recommendation – Submitted by D. Davis / M. Stender, Chair / Co-Chair WGQ Information Requirements / WGQ Technical Subcommittees – This request proposes corrections to NAESB WGQ Standard Nos. 3.4.1 (Transportation/Sales Invoice) and 3.4.4 (Service Requester Level Charge/Allowance Invoice, Version 1.9 to correct the code values in the Code Values Dictionaries:
http://www.naesb.org/pdf4/wgq_mc10008_rec_020410.doc - approved by the WGQ EC on February 4, 2010.
(Effective date April 19, 2010)

MC09024 Recommendation - Submitted by M. Schmitz, Northern Natural Gas - This request proposes the addition of 1 code values for the data element "Validation Code (Detail)" in the following datasets for the NAESB WGQ Version 1.9 release: NAESB WGQ Standard 1.4.2 - Nomination Quick Response
http://www.naesb.org/pdf4/wgq_mc09024_rec_011810.doc - approved by the WGQ EC on February 4, 2010.
(Effective date April 19, 2010)

MC09033 Recommendation - Submitted by M. Schmitz, Northern Natural Gas - This request proposes the addition of 4 code values for the data element "Charge Type" in the following datasets for the NAESB WGQ Version 1.9 release: NAESB WGQ Standard 3.4.1 – Transportation / Sales Invoice:
http://www.naesb.org/pdf4/wgq_mc09033_rec_011910.doc - approved by the WGQ EC on February 4, 2010.
(Effective date April 19, 2010)

MC09032 Minor Correction to the Canadian Addendum, dated August 2, 2007 (NAESB Standard 6.3.1.CA) as submitted by K. Sappenfield, Chair, WGQ Contracts Subcommittee -
http://www.naesb.org/pdf4/wgq_mc09032_rec_102909.doc - approved by the WGQ EC on October 29, 2009
(Effective date December 14, 2009)

Minor Corrections to published Version 2.0 after November 30, 2010:

MC10035 Minor Correction for the Version 1.9 Internet Electronic Transport (Internet ET) Manual and NAESB RXQ Internet ET Manual Version 1.2 as submitted by T. Roza, GXS -
http://www.naesb.org/pdf4/wgq_retail_mc10035_rec_102210.doc - approved by the NAESB Retail ECs on October 27, 2010 and NAESB WGQ EC on October 28, 2010 (Effective date December 17, 2010)



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NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ) DECEMBER 17, 2010

MC10037 Minor Correction for the Version 2.0 publication resulting from editorial review as submitted by D. Davis, Williams Gas Pipeline - http://www.naesb.org/pdf4/wgq_mc10037_rec_110410.doc - approved by the WGQ EC via notational ballot on November 16, 2010 (*Effective date January 2, 2011*)

MC10039 Minor Correction Errata for NAESB WGQ Version 2.0 - NAESB WGQ Standard No. 4.3.29, NAESB WGQ Standard No. 5.4.16 – System-Wide Notices, Data Element Cross Reference, EDI X12 Mapping Guidelines as submitted by D. Davis and C. Burden, Williams Gas Pipeline - http://www.naesb.org/pdf4/wgq_mc10039_rec_111010.doc - approved by the WGQ EC via notational ballot on November 17, 2010 (*Effective date January 2, 2011*)

MC10041 Minor Correction Errata for NAESB WGQ Version 2.0 - Joint WEQ/WGQ Minor Correction to the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing to correspond to modifications made by FERC to its Implementation Guide for Electronic Filing of Parts 25, 154, 284, 300, and 241 Tariff Filings as noted in the FERC eTariff RSS Feed(s), dated October 8, 2010 (<http://www.ferc.gov/docs-filing/etariff/implementation-guide.pdf>) as submitted by D. Rager, NAESB - http://www.naesb.org/pdf4/weq_wgq_mc10041_122010.doc - approved by the WEQ and WGQ ECs via Notational Ballot on December 20, 2010 (*Effective date February 3, 2011*)

TIMELINE:

- Version 2.0 is scheduled for publication no earlier than November 1, 2010 and no later than November 30, 2010.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.



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NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)
DECEMBER 17, 2010

Items not to be included:

R09017 – Develop a new ISDA Gas Confirmation Form for use with the ISD Gas Annex based on the current Confirmation Form under the NAESB Base Contract for Sale and Purchase of Natural Gas –
http://naesb.org/member_login_form.asp?doc=wgq_rat011310_r09017_rec.doc - Ratification on February 12, 2010.

Attachment (Exhibit A):

http://naesb.org/member_login_form.asp?doc=wgq_rat011310_r09017_rec_attachment.doc



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NAESB UPDATE: VERSION 2.1 – WHOLESALE GAS QUADRANT (WGQ)
JANUARY 12, 2011

ACTIONS TO BE APPLIED TO WGQ VERSION 2.0 TO CREATE WGQ VERSION 2.1:

Version 2.0 was published on November 30, 2010.

2011-12:

Final Actions:

None

Recommendations:

R10007 - Change the Offer, Bid and Award downloads to have the ability to communicate multiple indexed rates for a given offer.

Recommendation: http://www.naesb.org/pdf4/wgq_r10007_rec_123010.doc

Request for Formal Comments - http://www.naesb.org/pdf4/wgq_010311reqcom.doc - comment period ends February 2, 2011

No comments received as of 01/12/2011

R09018 - Add MA data element Path Rank in the Nominations data set and corresponding error message in the Nom QR.

Recommendation: http://www.naesb.org/pdf4/wgq_r09018_rec_123010.doc

Request for Formal Comments - http://www.naesb.org/pdf4/wgq_010311reqcom.doc - comment period ends February 2, 2011

No comments received as of 01/12/2011

Minor Corrections:

MC10038 - For NAESB WGQ Version 2.1, additional code values for the data elements Transaction Type and Reduction Reason Code in the following data sets as appropriate: Nomination (1.4.1), Confirmation Response (1.4.4), Scheduled Quantity (1.4.5), Scheduled Quantity for Operators (1.4.6), and Confirmation Response data sets as needed to support these requirements.

Recommendation: http://www.naesb.org/pdf4/wgq_mc10038_rec_123010.doc - WGQ EC Notational Ballot Due January 18, 2011

MC10040 - For NAESB WGQ Version 2.1, NAESB WGQ Standard No. 0.4.2 – Operational Capacity, NAESB WGQ Standard No. 1.4.1 – Nomination, NAESB WGQ Standard No. 1.4.3 – Request for Confirmation, NAESB WGQ Standard No. 1.4.4 – Confirmation Response, NAESB WGQ Standard No. 1.4.5 – Scheduled Quantity, NAESB WGQ Standard No. 1.4.6 – Scheduled Quantity for Operator, NAESB WGQ Standard No. 5.4.20 – Transactional Reporting – Capacity Release, NAESB WGQ Standard No. 5.4.21 – Transactional Reporting – Firm Transportation, NAESB WGQ Standard No. 5.4.24 – Offer, NAESB WGQ Standard No. 5.4.25 – Bid, and NAESB WGQ Standard No. 5.4.26 – Award Download.

Recommendation: http://www.naesb.org/pdf4/wgq_mc10040_rec_123010.doc - WGQ EC Notational Ballot Due January 18, 2011



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NAESB UPDATE: VERSION 2.1 – WHOLESALE GAS QUADRANT (WGQ) JANUARY 12, 2011

TIMELINE:

- Version 2.1 is scheduled for publication no earlier than November 1, 2011 and no later than November 30, 2011.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.



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**NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
JANUARY 12, 2011**

ACTIONS TO BE APPLIED TO WEQ VERSION 002.1 TO CREATE WEQ VERSION 002.2:

Version 002.1 was published on March 11, 2009.

2009-10:

Final Actions:

2008 WEQ Annual Plan Item 5(a) – Review and develop business practice standards to support DR and DSM-EE programs – Ratified March 16, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2008_api5a.doc (New WEQ-015)

2009 WEQ Annual Plan Item 3(d) – Order 717, Standards of Conduct – Ratified June 15, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_api_3d.doc (WEQ-001, WEQ-002, WEQ-003)

2009 WEQ Annual Plan Item 2(a)(ii)(3) – Rollover Rights on Redirect on a Firm Basis – Ratified July 27, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_ap_2aii3.doc (WEQ-001, WEQ-002, WEQ-003, WEQ-013)

2009 WEQ Annual Plan Item 1(a), 3(a)(vii)/R05020 – Modifications to WEQ-004 Coordinate Interchange as approved by the WEQ EC on October 27, 2009 – Ratified December 14, 2009 - http://naesb.org/member_login_form.asp?doc=fa_weq_2009_api_1a_3avii_r05020.doc (WEQ-001, WEQ-002, WEQ-003, WEQ-004, WEQ-013)

Attachment: http://naesb.org/member_login_form.asp?doc=fa_weq_2009_api_1a_3avii_r05020_attach.doc

2009 WEQ Annual Plan Item 5(b) – Modify NAESB definition to address internal inconsistencies and inconsistencies with the NERC glossary – approved by the WEQ EC on February 2, 2010 – Ratified March 24, 2010 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_api5b.doc

2009 WEQ Annual Plan Items 5(a)(2), 5(i)/R08004/R09011 – Multiple Annual Plan Items affecting WEQ-011 Gas/Electric Coordination – Approved by the WEQ EC on June 11, 2010 via Notational Ballot. – Ratified July 15, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2009_api_5a2_5i_r08004_r09011.doc

Attachments:

http://www.naesb.org/member_login_form.asp?doc=fa_weq_2009_api_5a2_5i_r08004_r09011_attach1.doc

2009 WEQ Annual Plan Items 3(a)(ii)(1)/R07013 - Develop a Confidentiality Agreement - http://www.naesb.org/pdf4/weq_2009_api_3aii1_r07013_rec.doc - Approved by the WEQ EC on May 4, 2010 (**No further action needed**)

2010 WEQ Annual Plan Item No. 6.a - Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03 as revised by the WEQ EC on July 7, 2010 – Ratified August 21, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_6a.doc



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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ) JANUARY 12, 2011

2010 WEQ Annual Plan Item No. 6.b - Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04 as revised by the WEQ EC on July 7, 2010 – Ratified August 21, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_6b.doc

2010 WEQ Annual Plan Item No. 6.c - Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09 as revised by the WEQ EC on July 7, 2010 – Ratified August 21, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_6c.doc

2010 WEQ Annual Plan Item 6d – Business Practices and Information Models to Support Priority Action Plan 10 – Standardized Energy Usage Information as approved by the WEQ EC on October 29, 2010 – Ratified November 29, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_ap_6d.doc

2010 WEQ Annual Plan Item 1.a.i – Interim Solution for Parallel Flow Visualization as revised by the WEQ EC on October 26, 2010 and approved via notational ballot on November 3, 2010 – Ratified December 6, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_1ai.doc

Recommendations:

2009 WEQ Annual Plan Item 2(a)(i)(1-8) – Develop business practice standards to better coordinate the use of the transmission system among neighboring transmission providers. Such business practice standards would be based on recommendations from NERC’s Long Term ATC/AFC Task Force and would involve revised procedures for the ATC calculation and/or revised protocols as determined by the final order. Development is using joint standards development process with NERC. Request R050004 was expanded to include the Order No. 890 ([Docket Nos. RM05-25-000 and RM05-17-000](#)) and Order No. 890-A ([Docket Nos. RM05-17-001, 002 and RM05-25-001, 002](#)), “Preventing Undue Discrimination and Preference in Transmission Services,” issued April 11, 2007). Group 3: Network Service on OASIS – Recommendation currently under development by the WEQ OASIS Subcommittee http://naesb.org/weq/weq_oasis.asp

2009 Annual Plan Item 2.a.i.1 through 2.a.i.8 and 3.a.i - Network Service on OASIS – Recommendation currently under development by the WEQ OASIS Subcommittee.

Draft Recommendation: http://www.naesb.org/pdf4/weq_oasis062110reqcom_a1.doc

Request for Informal Comments - http://www.naesb.org/pdf4/weq_oasis062110reqcom.doc - ended July 12, 2010

2010 WEQ Annual Plan Item 1.d – Monitor and develop NAESB business practices as needed to complement NERC reliability standards for FAC-012 and FAC-013

Recommendation: http://www.naesb.org/pdf4/weq_2010_api_1d_rec.doc

Request for Formal Comments - http://www.naesb.org/pdf4/weq_092410_reqcom.doc - comment period ended October 25, 2010

2010 WEQ Annual Plan Item 6 – Master Data Requirements List for Standards associated with NIST PAP03 and PAP09

Recommendation: http://www.naesb.org/pdf4/weq_2010_ap6_rec_101510.doc

Request for Formal Comments - http://www.naesb.org/pdf4/weq_101510_reqcom.doc - comment period ended November 15, 2010



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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ) JANUARY 12, 2011

2010 WEQ Annual Plan Item 6a – Phase 2: Requirements Specifications for Common Electricity Product and Pricing Definition for NIST PAP03
Recommendation Phase 2: http://www.naesb.org/pdf4/weq_2010_ap6a_rec_101510.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_101510_reqcom.doc - *comment period ended November 15, 2010*

2010 WEQ Annual Plan Item 6b – Phase 2: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions for NIST PAP04
Recommendation Phase 2: http://www.naesb.org/pdf4/weq_2010_ap6b_rec_101510.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_101510_reqcom.doc - *comment period ended November 15, 2010*

2010 WEQ Annual Plan Item 6c – Phase 2: Requirements Specifications for Wholesale Standard DR Signals for NIST PAP09
Recommendation Phase 2:
redline: http://www.naesb.org/pdf4/weq_2010_ap_6c_rec_101510_redline.pdf
clean: http://www.naesb.org/pdf4/weq_2010_ap_6c_rec_101510_clean.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_101510_reqcom.doc - *comment period ended November 15, 2010*

2010 WEQ Annual Plan Item 4d - Business Practice Standards for Measurement Verification of Energy Efficiency Products
Recommendation: http://www.naesb.org/pdf4/weq_2010_api_4d_rec_redline.doc (Redline),
http://www.naesb.org/pdf4/weq_2010_api_4d_rec_clean.doc (Clean)
Request for Formal Comments - http://www.naesb.org/pdf4/weq_120810_reqcom.doc - *comment period ends January 14, 2011*

2010 WEQ Annual Plan Items 4a and 4b - Review and develop business practice standards to support DR and DSM-EE programs (DR Phase 2)
Recommendation: http://www.naesb.org/pdf4/weq_2010_api_4a_4b_rec_redline.doc (Redline),
http://www.naesb.org/pdf4/weq_2010_api_4a_4b_rec_clean.doc (Clean)
Request for Formal Comments - http://www.naesb.org/pdf4/weq_120810_reqcom.doc - *comment period ends January 14, 2011*

Minor Corrections:

Minor Correction MC10041, Submitted by D. Rager, NAESB - Joint WEQ/WGQ Minor Correction to the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing to correspond to modifications made by FERC to its Implementation Guide for Electronic Filing of Parts 25, 154, 284, 300, and 241 Tariff Filings as noted in the FERC eTariff RSS Feed(s), dated October 8, 2010: http://www.naesb.org/pdf4/weq_wgq_mc10041_122010.doc - approved by the WEQ and WGQ ECs via Notational Ballot on December 20, 2010 (*Effective date February 3, 2011*)

Minor Correction MC10033, Submitted by Y. Coleman, Bonneville Power Administration – Book 2.1, WEQ-003 Data Dictionary and WEQ-013 Implementation Guide: http://www.naesb.org/pdf4/weq_mc10033_102610.doc - approved by the WEQ EC on October 26, 2010 (*Effective date January 3, 2011*)



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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ) JANUARY 12, 2011

Minor Correction MC10032, Submitted by E. Skiba, JT. Wood, N. Saini, M.Otondo – WEQ 2010 AP Item 1.a.i – Interim Solution for Parallel Flow Visualization: http://www.naesb.org/pdf4/weq_mc10032_102610.doc - revised/approved by the WEQ EC on October 26, 2010 (*Effective date January 3, 2011*)

Minor Correction MC10019, Submitted by D. Davis, Williams Gas Pipeline for NAESB WGQ Version 1.9: Joint NAESB WEQ Version 002.1 Standard WEQ-014-A and WGQ Version 1.0 Standard No. 11.4.1 (Implementation Guide for Electronic Tariff Filing): http://www.naesb.org/pdf4/wgq_weq_mc10019_revised.doc - revised/approved by the WEQ EC on August 17, 2010 and the WGQ EC on August 19, 2010 – (*Effective date October 7, 2010*)

Minor Correction MC10031, WEQ-001 Minor Correction to be applied to Version 002.2, Submitted by M. Goldberg, ISO New England Inc.: http://www.naesb.org/pdf4/weq_mc10031_revised.doc - revised/approved by the WEQ EC on August 17, 2010 - (*Effective date October 7, 2010*)

Minor Correction for WEQ-001 to be applied to versions 002.1 and 002.2 submitted by JT Wood, Southern Company: http://www.naesb.org/pdf4/weq_mc111209_attach1_revised.doc - approved by the WEQ Executive Committee on October 27, 2009 - (*Effective date December 14, 2009*)

TIMELINE:

- Version 002.2 is scheduled for publication end of second quarter 2011.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.



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NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ) DECEMBER 16, 2010

ACTIONS TO BE APPLIED TO RETAIL VERSION 1.2 TO CREATE RETAIL VERSION 1.3:

Version 1.2 was published on December 31, 2009.

2009-10:

Final Actions:

2010 Retail Annual Plan Item No. 9.a (REQ Final Action) - Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03 as approved by the REQ EC on June 16, 2010 -
http://www.naesb.org/member_login_check.asp?doc=fa_req_2010_retail_api_9a.doc – Ratified July 30, 2010

2010 Retail Annual Plan Item No. 9.b (REQ Final Action) - Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04 as approved by the REQ EC on June 16, 2010 -
http://www.naesb.org/member_login_check.asp?doc=fa_req_2010_retail_api_9b.doc – Ratified July 30, 2010

2010 Retail Annual Plan Item No. 9.c (REQ Final Action) - Requirements Specifications for Retail Standard DR Signals - for NIST PAP09 as approved by the REQ EC on June 16, 2010 -
http://www.naesb.org/member_login_check.asp?doc=fa_req_2010_retail_api_9c.doc – Ratified July 30, 2010

2009 Retail Annual Plan Item 1/R05016 – Develop Technical Electronic Implementation Standards and Data Dictionaries (*Book 9: Customer Billing and Payment Notification via Uniform Electronic Transaction*) – approved by the Retail ECs on February 3, 2010.

Final Action – Part A with Revised Attachments -

http://www.naesb.org/member_login_form.asp?doc=fa_retail_2009_api1_r05016.doc – Ratified August 30, 2010

Revised Attachment 1 – Data Dictionaries -

http://www.naesb.org/member_login_form.asp?doc=fa_retail_2009_api1_r05016_attach1.doc – Ratified August 30, 2010

Revised Attachment 2 – X12 Technical Implementation Guidelines -

http://www.naesb.org/member_login_form.asp?doc=fa_retail_2009_api1_r05016_attach2.rtf – Ratified August 30, 2010

2010 Retail Annual Plan Item 4 (Final Action) – Billing and Payments as approved by the Retail EC's on September 7, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_retail_2010_ap4.doc - Ratified November 8, 2010
Attachment: http://www.naesb.org/pdf4/retail_2009_ap_10a_10c_rec_attach.ppt (Models)

2009 Retail Annual Plan Items 10.a and 10.c (Final Action) – Service Request, Disconnection and Reconnection in the Registration Agent Model as approved by the Retail EC's on September 7, 2010 -

http://www.naesb.org/member_login_form.asp?doc=fa_retail_2009_ap_10a_10c.doc - Ratified November 8, 2010

Attachment: http://naesb.org/pdf4/retail_2010_ap4_rec_attachment.ppt (Models)

2010 Retail Annual Plan Item 9d (REQ Final Action) – Business Practices and Information Models to Support Priority Action Plan 10 – Standardized Energy Usage Information as approved by the REQ Executive Committee on October 22, 2010 - http://www.naesb.org/pdf4/req_2010_ap_9d_rec.doc - Ratified November 29, 2010



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NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ) DECEMBER 16, 2010

Retail 2010 Annual Plan Item 5a (Final Action) – Users Guide for Book 0 as approved by the Retail Executive Committees on October 27, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_retail_2010_ap_5a.doc – Ratified December 10, 2010

Retail 2010 Annual Plan Item 11 (Final Action) – Revised Master List of Defined Terms as approved by the Retail Executive Committees on October 27, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_retail_2010_ap_11.doc – Ratified December 10, 2010

Recommendations:

Retail 2010 Annual Plan Item 9 – Master Data Requirements List for Standards associated with NIST PAP03 and PAP09

Recommendation: http://www.naesb.org/pdf4/req_2010_ap9_rec_101510.doc

Request for Formal Comments - http://www.naesb.org/pdf4/req_101510_reqcom.doc - comment period ended November 15, 2010

Retail 2010 Annual Plan Item 9a – Phase 2: Requirements Specifications for Common Electricity Product and Pricing Definition for NIST PAP03

Recommendation Phase 2: http://www.naesb.org/pdf4/retail_2010_ap9a_rec_101510.doc

Request for Formal Comments - http://www.naesb.org/pdf4/req_101510_reqcom.doc - comment period ended November 15, 2010

Retail 2010 Annual Plan Item 9b – Phase 2: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions for NIST PAP04

Recommendation Phase 2: http://www.naesb.org/pdf4/retail_2010_ap9b_rec_101510.doc

Request for Formal Comments - http://www.naesb.org/pdf4/req_101510_reqcom.doc - comment period ended November 15, 2010

Retail 2010 Annual Plan Item 9c – Phase 2: Requirements Specifications for Retail Standard DR Signals for NIST PAP09

Recommendation Phase 2: http://www.naesb.org/pdf4/retail_2010_ap_9c_rec_101510.doc

Request for Formal Comments - http://www.naesb.org/pdf4/req_101510_reqcom.doc - comment period ended November 15, 2010



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NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ) DECEMBER 16, 2010

Minor Corrections:

MC10035 – Minor Corrections to Internet Electronic Transport Related Standards, Submitted by T. Roza, GXS - http://www.naesb.org/pdf4/wgq_retail_mc10035_rec_102210.doc - approved by the Retail EC on October 27, 2010 and WGQ EC on October 28, 2010 (*Effective date December 17, 2010*)

MC09034 Correct references in 3 lines of Section 4.12 of the NAESB WGQ Standard No. 6.3.3 – Electronic Data Trading Partner Agreement (Version 1.8), Submitted by C. Burden, Williams Gas Pipeline - http://www.naesb.org/pdf4/wgq_retail_mc09034_rec_011510.doc – approved by the WGQ EC via notational ballot January 15, 2010. (*Effective date September 27, 2010*)

MC10025 – Version 1.9 (Errata) for NAESB WGQ Internet Electronic Transport (Internet ET) Manual and NAESB RXQ Internet ET Manual, Version 1.2, Submitted by C. Burden, Joint WGQ Information Requirements/Technical Subcommittee - http://www.naesb.org/pdf4/wgq_req_rgq_mc10025_rec_080610.doc - approved by the WGQ EC on August 6, 2010. (*Effective date September 27, 2010*)

MC10012 –Errata for NAESB WGQ Internet Electronic Transport (Internet ET) Manual, Version 1.9 and NAESB RXQ Internet ET Manual Version 1.2: http://www.naesb.org/pdf4/wgq_req_rgq_mc10012.doc - approved by the WGQ and Retail ECs on March 5, 2010. (*Effective Date June 24, 2010*)

TIMELINE:

- Version 1.3 is scheduled for publication in first quarter 2011.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.



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NAESB UPDATE: VERSION 1.4 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ) JANUARY 12, 2011

ACTIONS TO BE APPLIED TO RETAIL VERSION 1.3 TO CREATE RETAIL VERSION 1.4:

Version 1.3 will be published on March 31, 2011.

2011-12:

Final Actions:

Recommendations:

Retail 2010 Annual Plan Item 3c – Phase 2: M&V for Demand Response Programs

Recommendation Phase 2: http://www.naesb.org/pdf4/retail_2010_api_3c_rec_redline.doc (Redline),

http://www.naesb.org/pdf4/retail_2010_api_3c_rec_clean.doc (Clean)

Request for Formal Comments - http://www.naesb.org/pdf4/req_120810_reqcom.doc - *comment period ended January 14, 2011*

Comments Submitted by B. Sailors, Duke Energy: http://www.naesb.org/pdf4/req_120810_duke_energy.doc

Minor Corrections:

TIMELINE:

- Version 1.4 is scheduled for publication in 2012.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.



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January 14, 2010

TO: NAESB Board of Directors, Executive Committee (EC) Members, EC Alternates, and Invited Guests
FROM: Cory Galik Cummings, NAESB Staff Attorney
RE: Draft Minutes of the NAESB Board Meeting –December 9, 2010

**NAESB BOARD OF DIRECTORS MEETING
Marriott IAH Airport Hotel, Houston, Texas
Thursday, December 9, 2010 – 9:00 a.m. to 1:00 pm Central
DRAFT MINUTES**

1. Administration and Welcome

Ms. York welcomed the Board members and guests in the room and on the phone. Mr. Booe provided the antitrust guidance. Ms. Cummings called the roll of the NAESB Board members. Quorum was established.

2. Adoption of the Agenda and Minutes

Mr. True moved, seconded by Mr. Desselle, to approve the consent agenda. The motion passed unanimously.

3. Membership and Financial Report

Membership Report: Ms. McQuade reviewed the [membership report](#). This year NAESB experienced a net gain in membership, largely in response to the creation of the new WEQ segment, the reorganization of the retail quadrants and smart grid activities.

Financial Report: Ms. McQuade provided the [financial report](#). She noted that there will be a comparison between 2009 and 2010 financials at the next board meeting.

Financial Review Report: Ms. McQuade reviewed the [financial audit](#) performed by Dishongh, Jankowski & Eubank, PC. There were no issues found in the report.

Review, Discuss and Approve 2011 Budget: Ms. McQuade reviewed the [2011 budget](#), which is within 1 to 2% of the 2010 budget. NAESB expects to see an increase in revenue in 2011. Mr. Hurley moved, seconded by Mr. Young, to approve the 2011 budget. The motion unanimously passed a simple majority vote.

4. Reports from Board Committees

Resources: Mr. Brown provided the [report](#) of the Resources Committee. He noted the increase in membership due to NAESB's smart grid and demand response efforts. The Resource Committee remains committed to growing membership.

Critical Infrastructure Committee: Mr. Hurley provided an [update](#) of the activities of the Critical Infrastructure Committee. He provided a review of the November 16 Critical Infrastructure Committee, where there was discussion on the Lieberman Bill moving through Capital Hill, which is getting larger and more relevant as it becomes more bipartisan. The U.S. China Economic and Security Review Commission Report was released on November 17, which focused on the computer network exploitation and noted that Chinese military policy targets U.S. critical infrastructure in an event of a conflict. The report is available on the U.S. Commissions website. He also provided a review of STUXNET, which has proven to be the first example of a nation state created malware targeted to disrupt critical infrastructure.

Retail Restructuring Update: Ms. McKeever noted that the committee's review was complete in the Resource report.



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Managing Committee: Mr. Desselle provided an [update](#) of the Managing Committee, which met this morning in anticipation of this meeting. Since the last Board meeting the committee prepared via email a resolution with respect to notational ballots. A Parliamentary Committee meeting will be scheduled to review an issue that is applicable to all quadrants: how to manage the type of work NAESB may develop that does not rise to the level of standards. Mr. Cargas asked how the notational ballot resolution would be memorialized. Mr. Boswell answered that a one page document puts all existing procedures regarding notational ballots in one place in the hope that future confusion can be prevented by making that information easily accessible. It does not create new procedures, but rather consolidates the procedures that currently exist. Mr. Cargas moved that the Parliamentary Committee consider incorporating the text into the operating procedures and present it to the Board for adoption at the next meeting. Mr. Phillips seconded the motion. The motion unanimously passed a simple majority vote.

5. Updates on Specific Efforts

Publications: Ms. McQuade provided an update of the NAESB publication schedule. [WGQ Version 2.0](#) was published on November 30. She thanked Ms. Davis and Ms. Rager for their hard work on this effort. Ms. Davis noted that the publication included the clean up of all the capacity release data sets and added additional detail to communications between the pipelines and WEQ operators to make it notifications easily understandable. The [WEQ Version 2.2](#) will be published in mid-2011. In the meantime, NAESB will be filing the Demand Response, Energy Efficiency and Smart Grid standards to the Commission prior to the Version 2.2 publication. The [Retail Quadrants](#) will publish in the first quarter of 2011 and will contain Demand Response, Smart Grid and considerable changes to the Customer Choice standards.

WEQ, Update on FERC Order No. 890 efforts: Ms. York provided an update on the Order No. 890 efforts. The OASIS Subcommittee met a total of 8 times, including next week's scheduled 3-day meeting, since the last Board meeting for a total of 17 days in an effort to complete the Network Integrated Transmission Service (NITS) including all the technical standards. There are separate groups working on pieces of the standards offline in an effort to complete this project. A technical team from OATI is working with the subcommittee to complete the technical aspects of the standards and plan to deliver that work product during the meeting next week to be incorporated into WEQ standards 002 and 003. The team plans to incorporate other work products into WEQ 01 next week as well. There is another work group that is working on a concept for provisionally denied service which should be delivered in January. At that time, the subcommittee will determine whether to include it in the final product or whether it is a change of scope that was previously set. The NITS standards will be voted out of the subcommittee in January for a 30-day formal comment period. At that time, the team will focus its attention on completing the standards that will cover the Coordination of Transmission Service across Multiple Transmission Systems to be completed in first quarter of 2011.

WEQ/Retail Electric, Update on Demand Response and Demand Side Management: Mr. True provided an update of the DR and DSM activities. The Retail and Wholesale DR groups completed work to harmonize Glossary terms and complete phase 2 of the development. There are some slight differences, however, which relate to differences between the two industries. The recommendation was sent out for an informal comment period in July and one comment was received in support of the recommendation. The recommendation was voted out of the DSM-EE subcommittee on December 1, 2010 and will be sent out for formal comments this week. It is anticipated that this recommendation will be voted on by the REQ EC during the February EC meeting held in Phoenix, AZ.

Work continues on R10002, a request to develop the processes for enrolling Retail Customers in Demand Response programs. At the work group's last meeting, the participants felt that the WEQ Phase 2 PAP 09 Recommendation which lays out the WEQ Enrollment process in detail could be used to satisfy the request. However, the original requestor, James Tillett, had expectations that the PAP 09 recommendation would be more comprehensive. The retail DR work group will continue to meet to discuss this request.

The retail energy efficiency group continues to draft its recommendation. They currently have a draft glossary and several participants have begun to draft language for the model business practices, including sections on baseline estimates for measurement burnout vs. early retirement, energy efficiency programs, general evaluation plan



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requirements and select gross savings approaches. The next Retail EE call is scheduled for Friday, December 17 from 10-12 Central.

The wholesale demand response work group completed its phase 2 recommendation on Measurement and Verification of Demand Response products, which was sent out for informal comments were due October 29. Three sets of comments were received from The ISOs, Southern California Edison and EnerNOC. The wholesale DR work group reviewed the comments on November 5 and November 12, making several changes to the recommendation based on the comments received. The recommendation was voted out of the DSM-EE subcommittee on December 1, 2010. The recommendation will be sent out for formal comments this week, with comments due January 14, 2010. After the formal comments are received, the wholesale DR work group will meet to discuss the formal comments and prepare late comments for the WEQ ECs review. It is anticipated that the WEQ EC will vote on this recommendation during the February EC meeting in Phoenix, AZ. EnerNOC has stated, and will likely continue to state, that the standards fall short of what they believe was requested by ERC. The types of changes that EnerNOC would like to see would impact the design of the programs currently in place. The wholesale DR work group has stated that their understanding of the FERC Order was to provide as much granularity as possible. The work group stopped short of requiring the ISOs to modify their programs because they did not want to undermine the stakeholder process in place.

The wholesale energy efficiency group completed their recommendation on the Measurement and Verification of Energy Efficiency products. The wholesale energy efficiency recommendation was submitted for an informal comment period, which ended Monday, November 8. Comments were received from WPPI Energy, Westar Energy, EM&V Forum and the ISOs. The recommendation and comments were reviewed by the wholesale energy efficiency work group on Monday, November 15 and Thursday November 18 and several changes were made to the recommendation. The recommendation was voted out of the DSM-EE subcommittee meeting on December 1. It will be sent out for formal comments this week, with comments due January 14, 2010. It is anticipated that the WEQ EC will vote on this recommendation at the February EC meeting held in Phoenix, AZ.

RFP Status for the Electric Industry Registry: Ms. Cummings provided the update. On September 30, 2010, NAESB and OATI signed the contracting naming OATI as the Administrator of the Electric Industry Registry (EIR). The new Registry will provide a replacement to the existing NERC TSIN Registry. The Registry will be available to the industry in mid-2011 with training and parallel operations available prior to production release. These details will be made available to the industry well in advance of the release. OATI will provide the solution via the OATI webRegistry solution. Participation in the OATI webRegistry is intended for all electric entities with intentions of performing scheduling within North America. NAESB and OATI are currently finalizing a press release and a frequently asked questions document to provide more information to participants. NAESB and NERC worked collaboratively to select OATI. NAESB, NERC and OATI continue to work together collaboratively to ensure that product brought to market will meet the needs of the industry. It is hoped that OATI will complete a draft of the report that will serve as a "Frequently Asked Questions" shortly, after which a press release from all three organizations will be finalized.

Smart Grid Activities: Mr. Booe provided the update. The Smart Grid Standards Development Subcommittee addressing the requests from NIST related to Priority Action Plans 3, 4 and 9 completed its phase two effort on October 14 and voted out four wholesale recommendations and four retail recommendations for a formal comment period. The comment period for these recommendations ended on November 15, 2010. The subcommittee met on November 18, 2010 to review the comments and begin development of a set of late comments to be submitted to the WEQ and REQ Executive Committees. The subcommittee is scheduled to meet on December 9, 2010 to finalize this late set of comments. The WEQ EC and REQ EC will hold a single topic conference call to review the recommendation and comments followed by a single topic conference call to vote on all eight of the recommendations in 2011.

The subcommittee also has a conference call scheduled on December 10, 2010 with the OASIS Technical Committees leadership responsible for incorporating the NAESB phase two recommendations into the EMIX (PAP03), WS-Calendar (PAP04) and Energy Interoperation (PAP09) technical specifications. There have been concerns raised that the NAESB efforts may not be reflected in the work of other groups. This meeting is to ensure



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that the work of the NAESB subcommittee has been properly utilized as prescribed by the SGIP PAP process in the efforts underway by the OASIS Technical Committees. It is the responsibility of the SGIP Administrator to ensure that the work of one group is represented in the work other groups may undertake in extending the NAESB standards.

The Smart Grid Standards Subcommittee on Priority Action Plan 10 voted to post both the wholesale and retail Energy Usage Information Model recommendations for the 30 day formal comment period on August 31. After the formal comment period ended on September 30 the subcommittee met and developed a set of late comments for the WEQ and REQ ECs. The two ECs held a single topic review session on October 15 and a meeting to vote on the recommendations on October 22. During the meeting on October 22, the REQ EC voted to approve the REQ recommendation; however, the WEQ EC did not garner enough votes to make a determination on the WEQ recommendation. After a WEQ EC notational ballot period ending on October 29, the WEQ recommendation was approved and both the WEQ and REQ recommendations were submitted for ratification. On November 30, the recommendations were ratified, with no votes in opposition. On December 2 the SGIP PAP 10 working group adopted the NAESB final action and is currently in the process of closing the PAP 10.

As the NAESB Energy Usage Information Model proposes extensions to the IEC CIM model, there is the potential for additional work to be done as the IEC reviews and evaluates the NAESB standard and the CIM model and the SEP 2.0 model become more integrated. Currently differences between the two models are managed through extensions in the CIM model.

The Energy Services Provider Interface Task Force has continued to meet every two weeks to continue the development of a recommendation in response to REQ AP Item 9.e. The Task Force has a draft recommendation under development and is scheduled to have a complete draft by mid January 2011. This draft will then go out for an informal comment period in early February and should be finalized by the end of the 1st Quarter. The subcommittee continues to address an issue of including REST and/or Web Services technical implementations of the standard. This was an issue that was left unresolved in the development of the Open ADE specifications.

Update on Parallel Flow Visualization: Ms. York provided the update. The Business Practice Subcommittee began this project back in June, 2009 and has held several meetings to complete the final work product. In March of this year, both NAESB and NERC filed comments in conjunction with a FERC NOI related to transmission curtailment issues stating that each organization believed that the Parallel Flow Visualization project would help alleviate curtailment issues by improving the data that is sent to the Interchange Distribution Calculator and that a field test was scheduled to begin in November of this year to test the effectiveness of that new data feed. In July of this year, NERC, NAESB, and FERC discussed the importance of beginning the test in November and at that time, the BPS, in light of meeting those deadlines, developed an interim solution for the field test. The BPS would then continue to work on a final solution for the project. In October, the Executive Committee voted to approve the BPS recommendation and the standards were ratified by the WEQ membership as of today. NERC has begun the field test that is scheduled to run 12-18 months. Once the final PFV product is complete and approved on the NAESB side, it will be sent to NERC to become part of that field test. The BPS is continuing to work on the final product at this time. They have met 6 days in this quarter to work on permanent solution and have narrowed scope down to two options – one being flow gate allocation and the second a hybrid consisting of a “tag all non-firm” with generator prioritization methodology. The subcommittee is expecting to narrow these two options down to one during their February meeting and then begin to develop business practice standards for that option. Schedules call for that product to be voted out of Subcommittee for a 30-day formal comment period by end of 2nd quarter for 2011.

Update on Common Codes: Mr. Buccigross provided the review. The WEQ BPS began work on WGQ Annual Plan Item 7 addressing Common Location Codes in late November. The issue was brought forth to discuss the idea that the common location codes were potentially redundant, since this information is already being accurately provided through requirements to provide an entity’s proprietary code and fill out a lengthy location data field. Over the course of two meetings, the subcommittee discussed whether the common location codes currently in the NAESB standards added value. Although formal consensus has not been reached, the subcommittee is proceeding under the unopposed understanding that consensus may form in favor of eliminating the common location codes. To this end,



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several participants have agreed to meet as a task force to determine which standards in WGQ Version 2.0 should be modified to accomplish the removal. This task force will present its findings to the full subcommittee in early January, when it is expected that participants will determine a plan for modifications to support removal of the location common codes from NAESB standards and implementation guides. Discussion with FERC staff to explain the direction of the subcommittee, and ascertain FERC requirements and expectations regarding common codes will occur before any decisions are made.

6. Review, Discuss and Approve 2011 Annual Plans

2011 WGQ Annual Plan: Mr. Buccigross reviewed the [2011 WGQ Annual Plan](#). One minor modification was made to the plan. Mr. Desselle moved, seconded by Mr. Young, to approve the 2011 WGQ Annual Plan. The motion unanimously passed a simple majority vote.

2011 WEQ Annual Plan: Ms. York provided the review of the [2011 WEQ Annual Plan](#). Mr. True asked about the difference between item 1.b and provisional item 4. Mr. Desselle noted that footnote 3 explained the difference. After reviewing the two items, Ms. McQuade stated that she would address this item offline. She would contact PJM and Midwest ISO, as the footnote was specific to comments that were provided by them. She will see if they are comfortable with provisional item 4 being addressed in annual plan item 1.b, or if the footnote should be revised to better clarify the difference between the two items. Mr. True moved, seconded by Mr. Hurley to approve the 2011 WEQ Annual Plan. The motion unanimously passed a simple majority vote.

2011 Retail Annual Plan: Ms. McKeever provided the review of the [2011 Retail Annual Plan](#). Mr. Desselle moved, seconded by Mr. Cargas, to adopt the annual plan. The motion unanimously passed a simple majority vote.

7. Presentation on Data Privacy

[Ms. Zientara](#) and Mr. Hurley each provided a power point presentation on data access and privacy related to third parties. In Mr. Hurley's presentation he noted that the Smart Grid introduces several issues regarding data privacy and protection. Up to this point the data that operates the balancing of the bulk power system has largely been maintained by the energy providers. The Smart Grid introduces third parties, which introduces questions of reliability and integrity. The Smart Grid will also introduce very large amounts of data to store and maintain.

Ms. McQuade noted that one of the purposes of the Smart Grid was to introduce efficiency into the system. She asked how that was possible with petabytes of data. Mr. Hurley responded that the network cannot currently handle the level of traffic anticipated by Smart Grid applications.

Mr. Kruse asked what NAESB could do to increase awareness of these concerns in the industry. Ms. McQuade agreed NAESB should take steps to highlight these concerns and determine if there were other aspects that had not been taken into account that would address the increase in data traffic, need for data privacy and protection and that should be publicized.

Mr. Ellsworth asked if the jurisdictional issues were being addressed. Mr. Hurley noted that the federal government accelerated deployment by incentivizing investment in Smart Grid while standardization was underway. By deploying without a strong foundation of standards, there is a risk of a development of a patchwork of systems that might not be the compatible. It is a balancing act of speed of implementation in the market offset by some duplicative development and accompanying cost to bring about compatibility.

8. Old and New Business

Ms. McQuade stated that NAESB continues to have a good working relationship with FERC, NARUC and various state commissioners and remain in close communication.

Ms. McQuade noted that the [2011 Board of Directors meetings](#) would be held at the Houston Marriott North at Greenspoint. She also noted that a leadership seminar would be held February 24 and 25 in Las Vegas. More information on the seminar would be sent out shortly.



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9. Adjourn

The meeting adjourned at 12:10 pm Central.



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12. Board Attendance and Voting Record (Vacancies Omitted)

WGQ PRODUCERS SEGMENT		ATTENDANCE
Richard D. Smith	Regulatory & Compliance Manager, Noble Energy Inc.	
Mark Stultz	Vice President – Policy and Regulatory Affairs, US America Gas and Power, BP Energy Company	
Keith Sappenfield	Regional Director – US Regulatory Affairs, EnCana Oil & Gas (USA), Inc.	
Randy E. Parker	Global Regulatory Advisor, ExxonMobil Gas and Power Marketing Company	In Person
Pete Frost	Director – Regulatory Affairs, ConocoPhillips Gas and Power Marketing	In Person
WGQ PIPELINE SEGMENT		
Cathie Legge	Manager – Customer Service, Alliance Pipeline, LP	In Person
Bill Grygar	Vice President, Panhandle Eastern Pipe Line	In Person
Susanna B. Barry	Vice President – Commercial Operations, Tennessee Gas Pipeline Company	In Person
Randy Young	Vice President – Regulatory Compliance and Corporate Services, Boardwalk Pipeline Partners, LP	In Person
Richard Kruse	Senior Vice President, Spectra Energy Transmission	In Person
WGQ LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT		
Craig Colombo	Energy Trader III, Dominion Resources	Phone
Adrian Chapman	Vice President – Regulatory Affairs & Energy Acquisition, Washington Gas	
Mike Novak	Asst. General Manager, National Fuel Gas Distribution Corporation	
WGQ END USERS SEGMENT		
Valerie Crockett	Senior Program Manager – Energy Markets & Policy, Tennessee Valley Authority	In Person
Timothy W. Gerrish	Director of Origination-Energy Marketing and Trading, Florida Power & Light	
Tina Burnett	Natural Gas Resources Administrator, The Boeing Company	In Person
Lori-Lynn C. Pennock	Senior Fuel Supply Analyst, Salt River Project	In Person
Jim Templeton	Principal, Comprehensive Energy Services	
WGQ SERVICES SEGMENT		
Darilyn Jones	Senior Vice President – Risk Control, Sequent Energy Management	Phone
Rusty Braziel	Managing Director, Bentek Energy, LLC	
Marty Patterson	Senior Vice President Commercial Services, American Midstream Partners, LP	
Paul Kahler	Midstream Regulatory Advisor, Cenovus Energy Inc.	
Lori Leeder	Relationship Manager/Business Development – Asset Optimization, Vega Energy Partners, Ltd	



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12. Board Attendance and Voting Record (Vacancies Omitted)

REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT

Wendell Miyaji	Senior Director – Systems, Comverge, Inc.	In Person
Jim Minneman	Controller, PPL Solutions LLC	
J Cade Burks	Executive Vice President of ista	
Austin Morris	Managing Partner – Energy, SunGard Consulting Services, LLC	

REQ UTILITIES SEGMENT

David Koogler	Director – State Regulation, Dominion Virginia Power	In Person
Dennis Derricks	Director Regulatory Policy and Analysis, Wisconsin Public Service Corporation	
Ruth Kiselewich	Director – Demand Side Management Programs, Baltimore Gas & Electric Company	Phone
Debbie McKeever	Market Advocate, Oncor	In Person

REQ END USERS/PUBLIC AGENCIES SEGMENT

Kevin Cooney	Managing Director – Energy, Navigant Consulting, Inc.	Phone
James P. Cargas	Senior Assistant City Attorney, City of Houston	In Person

WEQ TRANSMISSION SEGMENT

SUBSEGMENT

Dan Klempel	Director Transmission Regulatory Compliance, Basin Electric Power Cooperative	Muni/Coop	
Chuck Feagans	Senior Manager, Reliability Policy, Tennessee Valley Authority	Fed/State/Prov	Phone
John E. Lucas	Director – Transmission Policy and Services, Southern Company Transmission	IOU	
Jill Horswell	Director Transmission, Southern California Edison	at large	Phone
Edward J. Davis	Policy Consultant, Entergy Services, Inc.	at large	In Person

WEQ GENERATION SEGMENT

Douglas L. Curry	Administrator and CEO, Lincoln Electric System	Muni/Coop	
Belinda Thornton	General Manager – Energy Origination, Tennessee Valley Authority	Fed/State/Prov	
Lou Oberski	Director – Electric Market Policy, Dominion Resources Services, Inc.	IOU	Phone
Wayne Moore	Regulatory Affairs & Energy Policy Director and Compliance Officer – Generation, Southern Company Services, Inc.	IOU	In Person
Brent Hodges	Director – Strategy and Development, NRG Energy, Inc.	at large	
Shah Hossain	Senior Regulatory Specialist, Westar Energy, Inc.	at large	In Person

WEQ MARKETERS/BROKERS SEGMENT

Roy True	Manager of Regulatory and Market Affairs, ACES Power Marketing	Muni/Coop	In Person
Jeff Ackerman	Manager – Colorado River Storage Project Energy Management and Marketing Office, Western Area	Fed/State/Prov	



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12. Board Attendance and Voting Record (Vacancies Omitted)

	Power Administration		
Gavin Cunningham	Manager – FirstEnergy Solutions Corp.	at large	Phone
Jack Cashin	Senior Manager of Policy, Electric Power Supply Association (EPSA)	at large	
Sam Forrest	Vice President – Energy Marketing and Trading, Florida Power & Light	IOU	
R. Scott Brown	Vice President and Director, Exelon Generation Power Team	IOU	In Person

WEQ DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT

Arthur G. Fusco	Vice President and General Counsel, Central Electric Power Cooperative Inc.	Muni/Coop	Phone
Paul McCurley	Manager – Power Supply, National Rural Electric Cooperative Association	Muni/Coop	
Nelson Peeler	Vice President System Operations, Duke Energy	IOU	In Person
Joe Hartsoe	Managing Director – Federal Policy, American Electric Power Service Corp.	at large	
Bruce Ellsworth	New York State Reliability Council	At-Large	In Person

WEQ END USERS SEGMENT

Jesse D. Hurley	Chief Executive Officer, Shift Research, LLC	at large	In Person
Aaron Breidenbaugh	Senior Manager – Regulatory Affairs and Public Policy – New York, EnerNOC, Inc.	at large	
Thomas G. Dvorsky	Director of the Office of Electricity, Gas, and Water at the New York State Department of Public Service, rep. National Association of Regulatory Utility Commissioners	Regulator	
Marie Pieniazek	Consultant, Rep: Energy Curtailment Specialists, Inc.	at large	
Rick Lentz	Fellow with SunGard	at large	In Person
Michehl Gent	Open Access Technology International, Inc.	At-Large	In Person

WEQ INDEPENDENT GRID OPERATORS/PLANNERS

Michael Desselle	Vice President Process Integrity, Southwest Power Pool		In Person
Kent Saathoff	Vice President of System Operations, ERCOT		
Kevin Kirby	Vice President Market Operations, ISO New England, Inc.		Phone
Rana Mukerji	Vice President Market Structures, New York Independent System Operator, Inc. (NYISO)		
Andy Ott	Senior Vice President Marketing, PJM Interconnection, LLC		
Bill Phillips	Vice President Standards Compliance & Strategy, Midwest ISO (MISO)		In Person
Peter Sergejewich	Director of Corporate Planning, Independent Electricity System Operator (IESO)		



North American Energy Standards Board

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12. Board Attendance and Voting Record (Vacancies Omitted)

WEQ TECHNOLOGY AND SERVICES

Jim Buccigross	Vice President Energy Industry Practice, 8760 Inc.	Phone
Laurent M. Liscia	Executive Director, Organization for the Advancement of Structured Information Standards (OASIS)	
David A. Wollman	Leader, Smart Grid Team – Standards and Electrical Metrology Groups, National Institute of Standards and Technology (NIST)	
Dr. Scott Coe	Vice President, Utility Integration Solutions, Inc. (UISOL)	In Person

RGQ SERVICE PROVIDERS/SUPPLIERS SEGMENT

Leigh Spangler	President, Latitude Technologies Inc.	In Person
Rick Vogel	Vice President – Sales and Natural Gas Operations, Sierra Southwest Cooperative Services, Inc.	
Dave Darnell	President & CEO, Systrends USA	
Greg Lander	President, Capacity Center	

RGQ DISTRIBUTORS SEGMENT

Alonzo Weaver	Vice President of Engineering and Operations, Memphis Light, Gas & Water Division (APGA)	
Ralph Cleveland	Senior Vice President – Engineering and Operations, AGL Resources, Inc.	

RGQ END USERS/PUBLIC AGENCIES SEGMENT



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13. Other Attendance

Name	Organization	Attendance
Jonathan Booe	NAESB	In Person
Bill Boswell	NAESB	In Person
Kathryn Burch	Spectra Energy Transmission	In Person
Christopher Burden	Williams Gas Pipeline	Phone
James Culliton	NAESB	Phone
Cory Cummings	NAESB	In Person
Dale Davis	Williams Gas Pipeline	In Person
Rufus Gladney	Consumers Energy Company	In Person
Mark Gracey	El Paso Gas Pipeline Company	In Person
Bill Griffith	El Paso Natural Gas	In Person
Susan Munson	ERCOT	In Person
Rae McQuade	NAESB	In Person
Alan Pritchard	Duke Energy	Phone
Denise Rager	NAESB	In Person
Andy Rodriguez	NERC	In Person
Lisa Simpkins	Constellation Energy Resources	Phone
Ed Skiba	Midwest ISO	In Person
Veronica Thomason	NAESB	In Person
Kim Van Pelt	Panhandle Eastern Pipeline	In Person
Jill Vaughn	Preferred Legal Services	In Person
Charles Yeung	SPP	In Person
Kathy York	Tennessee Valley Authority	In Person
Mary Zientara	Reliant Energy	In Person



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NORTH AMERICAN ENERGY STANDARDS BOARD
2011 Annual Plan for the Wholesale Gas Quadrant Executive Committee
As Approved by the Board of Directors on December 9, 2010

Item Description		Completion ¹	Assignment ²
1. Reorganize Standards Manuals for Ease of Use³			
a.	Develop a separate WGQ manual specifically for Informational Postings standards or, alternatively, add the Informational Postings standards to the Additional Standards manual to provide ease in implementation. (Reorganize Standards Request) Status: Not Started	3 rd Q, 2011	IR/Technical
b.	Continue reordering of standards by topic and as future standards are added, standards continue to be ordered in topic format. Status: Not Started	2012	IR/Technical
2. Sample Paper Review³			
a.	Plan for the Review and Update Sample Papers and ASX X12 Samples for all data sets with the exception of the Offer – Standard No. 5.4.z1, Bid - Standard No. 5.4.z2, Award Download - Standard No. 5.4.z3 and the Operational Capacity - Standard No. 0.4.z1 and Unsubscribed Capacity - Standard No. 0.4.z2 data sets in Capacity Release to ensure consistency with the related data dictionaries. (Sample Paper Review Request) Status: Not Started	1 st Q, 2011	IR/Technical
b.	Execute Plan to Review and Update Sample Papers and ASX X12 Samples for all data sets with the exception of the Offer – Standard No. 5.4.z1, Bid - Standard No. 5.4.z2, Award Download - Standard No. 5.4.z3 and the Operational Capacity - Standard No. 0.4.z1 and Unsubscribed Capacity - Standard No. 0.4.z2 data sets in Capacity Release to ensure consistency with the related data dictionaries. Status: Not Started	Dependent on 2a	IR/Technical
3. Development of EBB Code Values³			
a.	Plan for the review of code values and code value descriptions in all data sets to make them easier to understand on the TSPs' EBB web sites. (EBB Code Request) Status: Not Started	2 nd Q, 2011	IR/Technical
b.	Execute the plan for the review code values and code value descriptions in all data sets to make them easier to understand on the TSPs' EBB web sites. Status: Not Started	Dependent on 3a	IR/Technical
4. Development of Error Code Standards³			
a.	Plan for the development of meaningful error code values in all data sets to make them easier to understand on the TSPs' EBB web sites as compared to the X12 DISA error codes. (Error Code Request) Status: Not Started	3 rd Q, 2011	IR/Technical
b.	Execute the plan for the development of meaningful error code values in all data sets to make them easier to understand on the TSPs' EBB web sites as compared to the X12 DISA error codes. Status: Not Started	Dependent on 4a	IR/Technical



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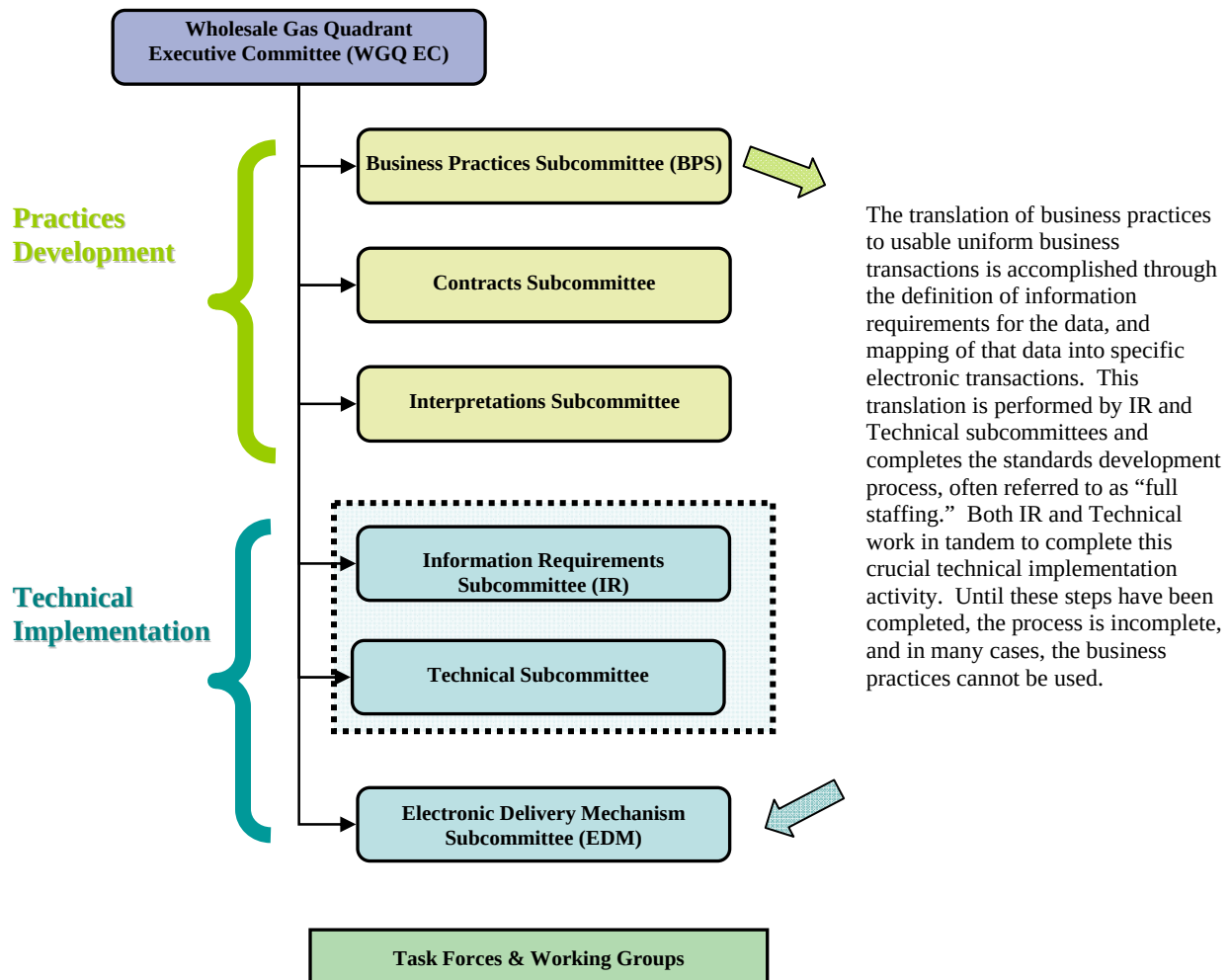
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NORTH AMERICAN ENERGY STANDARDS BOARD
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Item Description	Completion ¹	Assignment ²
5. Electronic Delivery Mechanisms		
Review minimum technical characteristics in Appendices B, C, and D of the WGQ QEDM Manual, and make changes as appropriate. Status: Not Started	3 rd Q, 2011	EDM
6. NAESB Base Contract Review and Update		
Review typical industry Special Provisions to the NAESB Base Contract for consideration to be integrated into the NAESB Base Contract. Review is to include corresponding updates to other related documents (e.g. Canadian Addendum, ISDA Amendment and Model Credit Support Addendum and Frequently Asked Questions)		
a. NAESB Base Contract review and update Status: Pending start February 2011	3 rd Q, 2011	Contracts Subcommittee
b. Canadian Addendum, ISDA Amendment, Model Credit Support Addendum and Frequently Ask Questions review and update Status: Pending start April 2011	3 rd Q, 2011	Contract Subcommittee
7. Common Codes		
a. Determine if location common codes as formulated are needed. Status: Underway	1st Q, 2011	BPS
b. If location common codes are needed, then determine if existing specifications are sufficient, or conversely, if not needed, develop plan for modifications to support removal of location common code from NAESB WGQ standards. Status: Not Started	Date dependent on annual plan item 7a	BPS
Program of Standards Maintenance & Fully Staffed Standards Work		
Business Practice Requests	Ongoing	Assigned by the EC ⁴
Continue review against plan for migration to ANSI ASC X12 new versions as needed and coordinate such activities with DISA.	Ongoing	ANSI X12 Subcommittee
Information Requirements and Technical Mapping of Business Practices	Ongoing	Assigned by the EC ³
Interpretations for Clarifying Language Ambiguities	Ongoing	Assigned by the EC ³
Maintenance of Code Values and Other Technical Matters	Ongoing	Assigned by the EC ³
Maintenance of eTariff Standards	As Requested	Assigned by the EC ³
Provisional Activities		
1. Review and develop standards as needed related to Docket No. RM11-1-000 , Capacity Transfers on Intrastate Natural Gas Pipelines (Notice of Inquiry issued on October 21, 2010).		

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NAESB 2011 WGQ EC and Subcommittee Leadership:

Executive Committee: Jim Buccigross, Chair and Dale Davis, Vice-Chair
Business Practices Subcommittee: Kim Van Pelt, Lori Lynn Pennock, Mike Novak and Richard Smith
Information Requirements Subcommittee: Dale Davis
Technical Subcommittee: Mike Stender, Kim Van Pelt
Contracts Subcommittee: Keith Sappenfield
Electronic Delivery Mechanism Subcommittee: Leigh Spangler, Christopher Burden
Interpretations Subcommittee: Paul Love



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End Notes, WGQ 2011 Annual Plan:

¹ Dates in the completion column are by end of the quarter for completion by the assigned committee. The dates do not necessarily mean that the standards are fully staffed to be implementable by the industry, and/or ratified by membership. If one item is completed earlier than planned, another item can begin earlier and possibly complete earlier than planned. There are no begin dates on the plan.

² The assignments are abbreviated. The abbreviations and committee structure can be found at the end of the annual plan document.

^{3 3} As business issues are presented to the Information Requirements Subcommittee and Technical Subcommittee, those business issues will be given precedence over WGQ 2011 Annual Plan Item Nos. 1, 2, 3 and 4.

⁴ The EC assigns maintenance of existing standards on a request-by-request basis.



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NORTH AMERICAN ENERGY STANDARDS BOARD
2011 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS
Approved by the Board of Directors on December 9, 2010 [With Proposed Changes from Retail Leadership](#)

Item Number & Description ¹	Completion ²	Assignment ³⁴
1. Develop Technical Electronic Implementation Standards and Data Dictionaries – Book 10: Customer Enrollment, Drop and Account Information Change		
a.. For the Distribution Company Registration Model Registration Agent Model Status: Not Started	2011	TEIS
2. Develop NAESB Certification checklist criteria for Retail Quadrants to be used in the NAESB Certification Program. The certification checklist may address test scripts, a checklist of items to be tested, data connectivity for test scripts and EDM testing. Status: Not Started. Dependent upon publication of Version 2.0 at a minimum, but more dependent upon completion of Customer Choice efforts, expected 1 st Q 2011 at the earliest.	2 nd Q, 2011	Ad Hoc EC Certification Group
3. Review and develop business practices standards to Demand Response, Demand Side Management and Energy Efficiency Programs Review and develop needed model business practices for a standardized method for quantifying benefits, savings, cost avoidance and/or the reduction in energy demand and usage derived from the implementation of demand side management and energy efficiency programs. This effort will include demand side response, energy efficiency programs and metering, including the 'curtailment service provider' program. The wholesale and retail demand response work groups and the Smart Grid Standards Subcommittees should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other.		
a. Develop glossary for business practice standards Status: Ongoing	Ongoing	Joint WEQ/REQ DSM Subcommittee
b. Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. ⁵ This includes developing business practice standards to measure and verify energy reductions for energy efficiency or a stand-alone Energy Efficiency Portfolio Standard. Status: Underway	2 nd Q, 2011	Joint WEQ/REQ DSM-EE Subcommittee
c. Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets. ⁶ This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard. Status: Not Started	4 th Q, 2011	REQ DSM-EE Subcommittee
d. Harmonize DSM-EE glossary with Retail Glossary Status: Ongoing	Ongoing	REQ/RGQ Glossary Subcommittee
4. Overview of Retail Gas and Retail Electric Quadrant Procedures		
a. Develop process flows and online navigational aids to support the procedures and to be provided as Retail orientation materials. Status: Not Started	2 nd Q, 2011	BPS



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NORTH AMERICAN ENERGY STANDARDS BOARD
2011 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS
Approved by the Board of Directors on December 9, 2010 [With Proposed Changes from Retail Leadership](#)

Item Number & Description ¹	Completion ²	Assignment ³⁴
5. Additional Registration Agent Processes		
a. Review all existing Model Business Practices to determine if there are other Registration Agent Model processes not covered, and develop a prioritized list of those processes, if any. Status: Underway	2nd Q, 2011	BPS
b. Develop Model Business Practices and Process Flows for those Registration Agent Model processes on the prioritized list developed in (a) above, if any. Status: Underway	4 th Q, 2011	BPS
c. Develop Technical Electronic Implementation Standards and Data Dictionaries to support Model Business Practices of Book 14 – Service Requests, Disconnections and Reconnections in the registration Agent Model Status: Underway	2011	IR/TEIS
d. Develop Technical Electronic Implementation Standards and Data Dictionaries to support any Model Business Practices developed in (b) above Status: Underway	2011	IR/TEIS
6. Supplier Certification Develop practices to register/certify new Suppliers. Status: Underway	1 st Q, 2011	BPS
7. Supplier Marketing Practices Develop Model Business Practices providing for a “Consumer Disclosure Statement” to be presented to residential and small commercial customers describing the Supplier’s service offering and related contract provisions. This statement would also identify how certain Supplier-Customer interactions are conducted. Amongst the topics to be considered for inclusion on the statement would be the following: • the most important terms of the Supplier agreement, such as the contract’s term and termination fee provisions; • training and identification of Supplier marketing representatives; • protocols for Supplier in-person and telephone contacts with customers; • added measures for protecting non-English speaking customers; and • Processes for handling customer complaints and resolving disputes arising from Supplier marketing activities. Status: Underway	1 st Q, 2011	BPS



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Item Number & Description ¹	Completion ²	Assignment ³⁴
8 Develop Smart Grid Wholesale and Retail Electric Standards		
a. Harmonize Smart Grid glossary with Retail Glossary Status: Underway	Ongoing	REQ/RGQ Glossary Subcommittee
b. Develop standards to support PAP 10 – Standards Energy Usage Information		
i. Develop Information Model and related business practices – Phase 2, Harmonization with CIM and SEP 2.0 Status: Not Started, pending discussions with CIM and SEP 2.0	2011	Joint WEQ/REQ PAP 10 SGS Subcommittee
c. Develop standards to support inclusion of OpenADE requirements document into the NAESB Smart Grid standards (R10008), specifically to standardize the exchange of Energy Usage Information. Status: Underway	~~1st~~ <u>2nd</u> Q, 2011	REQ PAP 10 SGS Subcommittee Energy Services Provider Interface Task Force
<u>d. Develop retail electric model business practices for third party access to consumer smart grid data with considerations for data privacy practices those third parties should employ (R10012)</u> <u>Status: Not Started</u>	<u>TBD</u>	<u>REQ PAP 10 SGS Subcommittee Data Privacy Task Force</u>
9. Customer Information - Develop Model Business Practices and Process Flows to enable a Retail Customer, or a third party acting on behalf of the Retail Customer, to obtain the retail Customer's energy usage information on an on-going basis outside of a Smart Grid environment Status: Not Started	3 rd Q, 2011	BPS
10. Update Existing Model Business Practices – Review and update all existing Model Business Practices, filling in any gaps that may exist and making the language consistent throughout all Books.		
a. Book 1 – Market Participant Interactions Status: Not Started	1 st Q, 2011	BPS
b. Book 2 – Creditworthiness Status: Not Started	2 nd Q, 2011	BPS
c. Book 3 – Billing and Payments Status: Not Started	3 rd Q, 2011	BPS
d. Book 4 – Distribution Company – Supplier Disputes Status: Not Started	4 th Q, 2011	BPS
e. Book 8 – Customer Information Status: Not Started	4 th Q, 2011	BPS
f. Book 9 – Customer Billing and Payment Notification via Uniform Electronic Transactions Status: Not Started	2012	BPS
g. Book 10 – Customer Enrollment, Drop, and Account Information Change Status: Not Started	2012	BPS
h. Book 11 - Customer Enrollment, Drop, and Account Information Change Using a Registration Agent	2012	BPS



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Item Number & Description ¹	Completion ²	Assignment ³⁴
Status: Not Started		
i. Book 12 – Customer Inquiries	2012	BPS
Status: Not Started		
j. Book 14 – Service Request, Disconnection and Reconnection in the Registration Agent Model	2012	BPS
Status: Not Started		

Program of Standards Maintenance & Fully Staffed Standards Work⁷

Business Practice Requests	Ongoing	Assigned by the EC
Information Requirements and Technical Mapping of Business Practices	Ongoing	Assigned by the EC
Ongoing Interpretations for Clarifying Language Ambiguities	Ongoing	Assigned by the EC
Ongoing Maintenance of Code Values and Other Technical Matters	Ongoing	Assigned by the EC
Ongoing Development and Maintenance of Definitions	Ongoing	Glossary
Ongoing Development and Maintenance of Model Business Practices	Ongoing	BPS

Provisional Activities

Joint Effort:

- Modify TPA as necessary.
- Review security standards as may be deemed necessary, such as Public Key Infrastructure (PKI).
- Review and update the technical implementation of Book 3 – Billing and Payment.
- Develop XML transactions to support customer choice programs.

Retail Electric Quadrant Effort Only:

- Retail Meter Data Validation, Editing & Estimating: Develop procedures for ensuring the integrity and validity of retail customer metering data that is needed by utilities and suppliers for billing, etc. Issues related to unbundled or competitive metering are not to be considered.
- Settlement Process: Reconcile energy schedules and energy delivered by suppliers within a given market. Note: will need to be coordinated with the WEQ for the REQ.
- Develop business practice standards for cap and trade programs for green house gas.

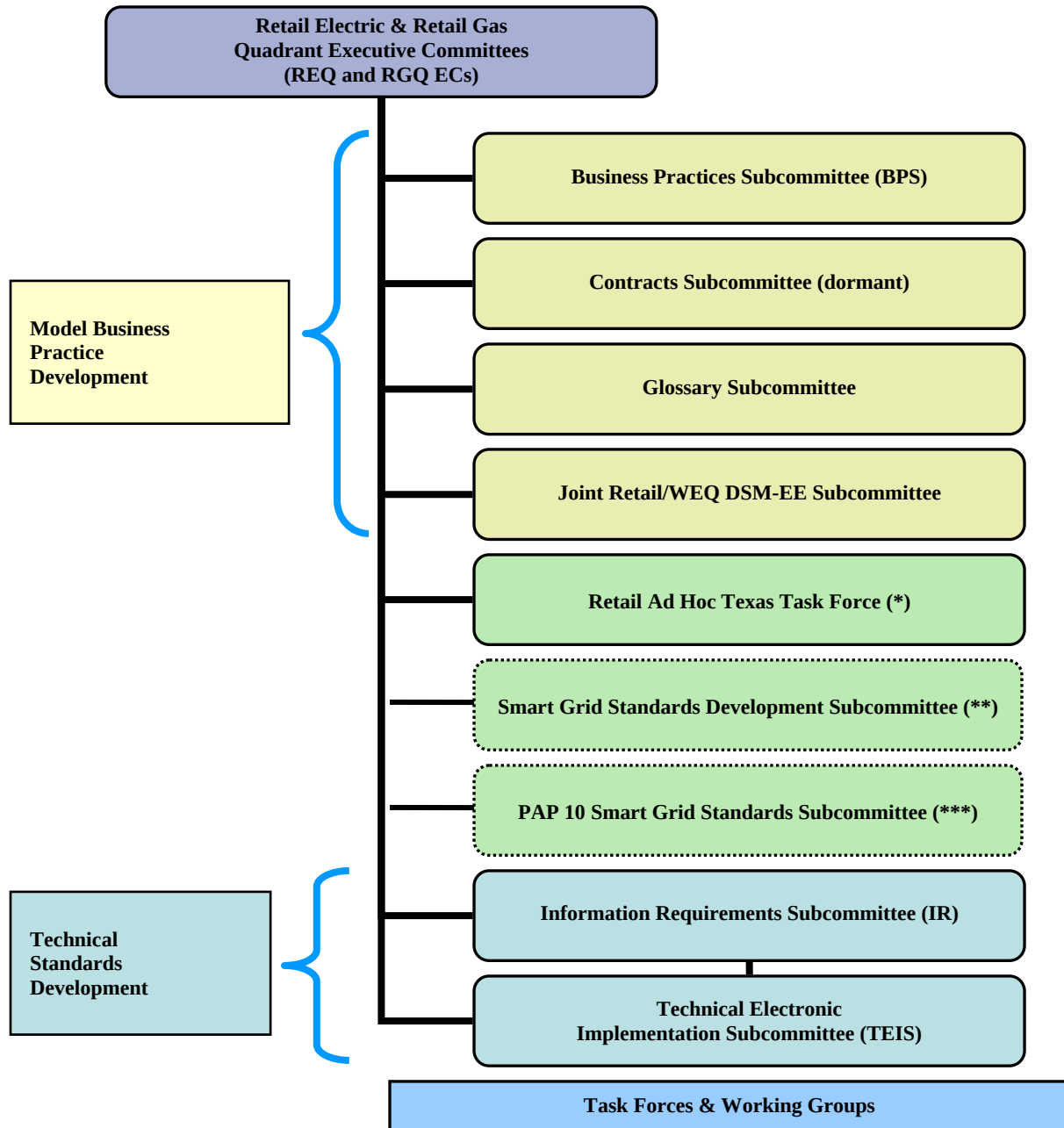
Retail Gas Quadrant Effort Only:

- Examine Wholesale Gas Quadrant Non-EDM Standards for applicability to retail business practices.
- Settlement Process: Reconcile energy schedules and energy delivered by suppliers within a given market.



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NAESB Retail Subcommittee Leadership: ⁸

Executive Committee: Mike Novak, Chair (RGQ), Phil Precht, Chair (REQ)

Business Practices Subcommittee: Phil Precht (REQ), Dan Jones (RGQ)

Information Requirements Subcommittee: Jennifer Teel (REQ)

Technical Electronic Implementation Subcommittee: Julie Compton-Pellizzi (RGQ)

Glossary Subcommittee: Patrick Eynon (REQ)

DSM-EE Subcommittee: Ruth Kiselewich, David Koogler (REQ), Roy True (WEQ), and Paul Wattles (WEQ)

Retail Ad Hoc Texas Task Force: Debbie McKeever (REQ) and Susan Munson (REQ)

(*) The Retail Ad Hoc Texas Task Force may draft MBPs, process flows, implementation guides and technical standards supportive of the Registration Agent. The group is chaired by Debbie McKeever and Susan Munson.

(**) The Smart Grid Standards Subcommittee is a joint group of the retail electric and wholesale electric quadrants with other standards development groups such as OASIS, CalConnect, FIX and UCAIug, and includes other groups. Direction may be given from NIST, DoE or FERC and the group reports jointly to the NAESB Board Smart Grid Strategic Steering Committee and the REQ EC. The group is chaired by Wayne Longcore, Joe Zhou and Robert Burke.

(***) The PAP 10 Smart Grid Standards Subcommittee is a joint group of the retail electric and wholesale electric quadrants with other standards development groups such as OASIS, UCAIug, OpenADE, ZigBee, ASHRAE, EIS Alliance, NARUC and includes other groups. Direction may be given from NIST, DoE or FERC and the group reports jointly to the NAESB Board Smart Grid Strategic Steering Committee and the REQ EC. The group is chaired by Phil Precht, Cathy Wesley, Sharon Dinges, David Kaufman, Brad Ramsay, Tobin Richardson and Ed Koch.

The PAP 10 Smart Grid Standards Subcommittee has created a Energy Services Providers Interface Task Force led by Dave Mollerstuen of Tendril, Steve Van Ausdall of Xtensible and Chad Maglaque of Xtreme Consulting Group to address the OpenADE request R10008.



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Retail 2011 Annual Plan End Notes:

¹ As outlined in the NAESB Bylaws, the REQ and RGQ will also address requests submitted by members and assigned to the REQ and RGQ through the Triage Process.

² Dates in the completion column are by end of the quarter for completion by the assigned committee. The dates do not necessarily mean that the standards are fully staffed to be implementable by the industry, and/or ratified by membership. If one item is completed earlier than planned, another item can begin earlier and possibly complete earlier than planned. There are no begin dates on the plan.

³ The assignments are abbreviated. The abbreviations and committee structure can be found at the end of the annual plan document.

⁴ The DSM-EE subcommittee has split into several separate groups to support concurrent development of separate standards sets.

⁵ Energy efficiency may be a wholesale product, such as capacity. Energy efficiency in retail markets may be from individual energy efficiency measures at the project level or a portfolio of projects that make up an energy efficiency program.

⁶ Energy efficiency may be a wholesale product, such as capacity. Energy efficiency in retail markets may be from individual energy efficiency measures at the project level or a portfolio of projects that make up an energy efficiency program.

⁷ This work is considered routine maintenance and thus the items are not separately numbered. The REQ and RGQ ECs will assign maintenance efforts on a request-by-request basis.

⁸ The ECs and the subcommittees can create task forces and working groups to support their development activities for development of model business practices and technical standards.



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November 30, 2010

TO: NAESB Board of Directors and Executive Committee
FROM: Rae McQuade
RE: Schedule of 2011 Meetings

Below is the schedule of 2011 meetings for the Board of Directors, Advisory Council and Executive Committee.

2011 Calendar of Board and Advisory Council Meetings

Date	Meeting	Location
February 12	Advisory Council Meeting	Washington D.C. – Renaissance Washington Hotel (in conjunction with NARUC Winter Meeting)
March 24	Board of Directors	Houston Marriott North at Greenspoint, 255 North Sam Houston Parkway East, Houston, Tx 77060 Phone: 281-875-4000 8 miles from IAH Intercontinental Airport, airport shuttle provided every 30 minutes
June 23	Board of Directors	Houston Marriott North at Greenspoint
September 22	Board of Directors, Meeting of the Members and Strategic Session	Houston Marriott North at Greenspoint
December 8	Board of Directors	Houston Marriott North at Greenspoint

2011 Calendar of Executive Committee Meetings

Date	Meeting	Location
February 1-3	Executive Committee (WEQ, Retail, WGQ)	Host Salt River Project, Phoenix, AZ
February 24-25	Leadership Seminar (WEQ, Retail, WGQ)	Mirage Hotel, Las Vegas
May 3-5	Executive Committee (WEQ, Retail, WGQ)	Host Aces Power, Carmel, IN
August 16-18	Executive Committee (WEQ, Retail, WGQ)	Host El Paso Western Pipeline, Colorado Springs, CO
October 25-27	Executive Committee (WEQ, Retail, WGQ)	Host Dominion, Richmond, VA

Notes:

1. The Retail Executive Committee meetings will be held by conference call and web cast unless otherwise determined by the retail leadership.
2. For each of the Board meetings, a dinner will be held the night before at the Petroleum Club in the Exxon Building, 800 Bell Street, 43rd Floor.
3. Board members are encouraged to attend the leadership seminar as well.