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

NAESB BOARD OF DIRECTORS MEETING ASSEMBLED MEETING MATERIALS

JUNE 24, 2010

North American Energy Standards Board

801 Travis, Suite 1675, Houston, Texas 77002
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NAESB BOARD OF DIRECTORS MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Ballroom B
Thursday, June 24 -- 9:00 a.m. to 1:00 pm Central

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NAESB ANTITRUST GUIDELINES STATEMENT

ANTITRUST GUIDELINES

- The following guidelines will be reviewed by c ounsel at the meeting. The meeting will be monitored, transcribed, and minutes will the 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
2010 BOARD TERMS – Wholesale Gas Quadrant

PRODUCERS SEGMENT		**TERM END:**
Richard D. Smith	Regulatory & Compliance Manager, Noble Energy Inc.	12-31-2010
Mark Stultz	Vice President - Policy and Regulatory Affairs, US America Gas and Power, BP Energy Company	12-31-2011
Keith Sappenfield	Regional Director – US Regulatory Affairs, EnCana Oil & Gas (USA), Inc.	12-31-2011
Randy E. Parker	Global Regulatory Advisor, ExxonMobil Gas and Power Marketing Company	12-31-2010
Pete Frost	Director - Regulatory Affairs, ConocoPhillips Gas and Power Marketing	12-31-2011
PIPELINE SEGMENT		
Cathie Legge	Manager – Customer Service, Alliance Pipeline, LP	12-31-2010
Bill Grygar	Vice President, Panhandle Eastern Pipe Line	12-31-2010
Susanna B. Barry	Vice President – Commercial Operations, Tennessee Gas Pipeline Company	12-31-2010
Randy Young	Vice President - Regulatory Compliance and Corporate Services, Boardwalk Pipeline Partners, LP	12-31-2011
Richard Kruse	Senior Vice President, Spectra Energy Transmission	12-31-2011
LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT		
Craig Colombo	Energy Trader III, Dominion Resources	12-31-2010
Adrian Chapman	Vice President - Regulatory Affairs & Energy Acquisition, Washington Gas	12-31-2010
V A C A N C Y		12-31-2011
Mike Novak	Asst. General Manager, National Fuel Gas Distribution Corporation	12-31-2011
Lee Stewart	Senior Vice President, Gas Transmission, Southern California Gas Company	12-31-2011
END USERS SEGMENT		
Valerie Crockett	Senior Program Manager - Energy Markets & Policy, Tennessee Valley Authority	12-31-2010
Timothy W. Gerrish	Director of Origination-Energy Marketing and Trading, Florida Power & Light	12-31-2010
Tina Burnett	Natural Gas Resources Administrator, The Boeing Company	12-31-2010
Lori-Lynn C. Pennock	Senior Fuel Supply Analyst, Salt River Project	12-31-2011
Jim Templeton	Principal, Comprehensive Energy Services	12-31-2011
SERVICES SEGMENT		
V A C A N C Y		12-31-2010
Rusty Braziel	Managing Director, Bentek Energy, LLC	12-31-2010
Marty Patterson	Senior Vice President Commercial Services, American Midstream Partners, LP	12-31-2011
Paul Kahler	Midstream Regulatory Advisor, Cenovus Energy Inc.	12-31-2011
Lori Leeder	Relationship Manager/Business Development – Asset Optimization, Vega Energy Partners, Ltd	12-31-2010

OFFICERS: Ralph Cleveland is CEO and Chairman of the Board of Directors. Rae McQuade as President serves as Secretary and COO. J. Cade Burks is the REQ Vice Chairman and Treasure. Michael Desselle is the WEQ Vice Chairman. Valerie Crockett is the WGQ Vice Chairman. Jim Templeton is Chair Emeritus.

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NORTH AMERICAN ENERGY STANDARDS BOARD
2010 BOARD TERMS – Retail Electric Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT		**TERM END:**
Wendell Miyaji	Senior Director – Systems, Comverge, Inc.	12-31-2011
Jim Minneman	Controller, PPL Solutions LLC	12-31-2011
J Cade Burks	Executive Vice President of ista	12-31-2010
Austin Morris	Managing Partner – Energy, SunGard Consulting Services, LLC	12-31-2010
UTILITIES SEGMENT		
David Koogler	Director – State Regulation, Dominion Virginia Power	12-31-2011
Dennis Derricks	Director Regulatory Policy and Analysis, Wisconsin Public Service Corporation	12-31-2011
Ruth Kiselewich	Director - Demand Side Management Programs, Baltimore Gas & Electric Company	12-31-2010
Debbie McKeever	Market Advocate, Oncor	12-31-2010
END USERS/PUBLIC AGENCIES SEGMENT		
V A C A N C Y		12-31-2011
V A C A N C Y		12-31-2011
James P. Cargas	Senior Assistant City Attorney, City of Houston	12-31-2010
V A C A N C Y		12-31-2010

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NORTH AMERICAN ENERGY STANDARDS BOARD
2010 BOARD TERMS – Wholesale Electric Quadrant

TRANSMISSION SEGMENT		TERM END:	SUBSEGMENT:
Dan Klempel	Director Transmission Regulatory Compliance, Basin Electric Power Cooperative	12-31-2011	Muni/Coop
Chuck Feagans	Senior Manager, Reliability Policy, Tennessee Valley Authority	12-31-2010	Fed/State/Prov.
John E. Lucas	Director - Transmission Policy and Services, Southern Company Transmission	12-31-2010	IOU
V A C A N C Y		12-31-2011	at large
Jill Horswell	Director Transmission, Southern California Edison	12-31-2010	at large
Edward J. Davis	Policy Consultant, Entergy Services, Inc.	12-31-2011	at large
V A C A N C Y		12-31-2011	at large
GENERATION SEGMENT			
Douglas L. Curry	Administrator and CEO, Lincoln Electric System	12-31-2011	Muni/Coop
Belinda Thornton	General Manager - Energy Origination, Tennessee Valley Authority	12-31-2010	Fed/State/Prov.
Lou Oberski	Director – Electric Market Policy, Dominion Resources Services, Inc.	12-31-2010	IOU
Wayne Moore	Regulatory Affairs & Energy Policy Director and Compliance Officer – Generation, Southern Company Services, Inc.	12-31-2011	IOU
V A C A N C Y		12-31-2011	at large
Gloria Godson	Vice President Energy Policy, Conectiv Energy Supply, Inc.	12-31-2010	Merchant
Shah Hossain	Senior Regulatory Specialist, Westar Energy, Inc.	12-31-2011	at large
MARKETERS/BROKERS SEGMENT			
Roy True	Manager of Regulatory and Market Affairs, ACES Power Marketing	12-31-2010	Muni/Coop
Jeff Ackerman	Manager - Colorado River Storage Project Energy Management and Marketing Office, Western Area Power Administration	12-31-2011	Fed/State/Prov.
Gavin Cunningham	Manager – FirstEnergy Solutions Corp.	12-31-2010	at large
Jack Cashin	Senior Manager of Policy, Electric Power Supply Association (EPSA)	12-31-2011	at large
Sam Forrest	Vice President - Energy Marketing and Trading, Florida Power & Light	12-31-2010	IOU
R. Scott Brown	Vice President and Director, Exelon Generation Power Team	12-31-2011	IOU
V A C A N C Y		12-31-2011	at large

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DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT		TERM END:	SUBSEGMENT:
Arthur G. Fusco	Vice President and General Counsel, Central Electric Power Cooperative Inc.	12-31-2010	Muni/Coop
Paul McCurley	Manager – Power Supply, National Rural Electric Cooperative Association	12-31-2011	Muni/Coop
V A C A N C Y		12-31-2010	at large
Nelson Peeler	Vice President System Operations, Duke Energy	12-31-2011	IOU
V A C A N C Y		12-31-2011	at large
Joe Hartsoe	Managing Director – Federal Policy, American Electric Power Service Corp.	12-31-2010	at large
Bruce Ellsworth	New York State Reliability Council	12-31-2011	At-Large
END USERS SEGMENT			
Jesse D. Hurley	Chief Executive Officer, Shift Research, LLC	12-31-2011	at large
Aaron Breidenbaugh	Senior Manager - Regulatory Affairs and Public Policy - New York, EnerNOC, Inc.	12-31-2010	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	12-31-2010	Regulator
Marie Pieniazek	Consultant, Rep: Energy Curtailment Specialists, Inc.	12-31-2011	at large
Rick Lentz	Fellow with SunGard	12-31-2010	at large
V A C A N C Y		12-31-2011	at large
Michehl Gent	Open Access Technology International, Inc.	12-31-2011	At-Large
INDEPENDENT GRID OPERATORS/PLANNERS			
Michael Desselle	Vice President Process Integrity, Southwest Power Pool	12-31-2010	
Kent Saathoff	Vice President of System Operations, ERCOT	12-31-2010	
Kevin Kirby	Vice President Market Operations, ISO New England, Inc.	12-31-2010	
Rana Mukerji	Vice President Market Structures, New York Independent System Operator, Inc. (NYISO)	12-31-2010	
Andy Ott	Senior Vice President Marketing, PJM Interconnection, LLC	12-31-2011	
Bill Phillips	Vice President Standards Compliance & Strategy, Midwest ISO (MISO)	12-31-2011	
Peter Sergejewich	Director of Corporate Planning, Independent Electricity System Operator (IESO)	12-31-2011	

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TECHNOLOGY AND SERVICES

Jim Buccigross	Vice President Energy Industry Practice, 8760 Inc.	12-31-2010
Laurent M. Liscia	Executive Director, Organization for the Advancement of Structured Information Standards (OASIS)	12-31-2010
David A. Wollman	Leader, Smart Grid Team – Standards and Electrical Metrology Groups, National Institute of Standards and Technology (NIST)	12-31-2010
V A C A N C Y		12-31-2010
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

The subsegments noted in the above roster are:

At-Large -- Regional reliability organizations, regional transmission organizations, consultants, service companies, information services and software companies, law firms, and other such organizations that are not specifically encompassed in the other subsegments for a given segment.

Competitive Retailer (not available to MUNI/COOP, IOU or IOU affiliates)

End Use (also in another segment)

Federal/State/Provincial

IOU – Investor Owned Utility or IOU Affiliated

ITC – Independent Transmission Company

Large Industrials (not in other segments)

Merchant

Muni/Coop – Municipals, Cooperatives

Not IOU Affiliated

OTHER -- (not available to MUNI/COOP, IOU or IOU affiliates)

Regulator

Residential/Commercial

End Use (Self Generation)

The number of seats within each segment that are allotted to sub-segments are controlled through the WEQ Procedures.

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NORTH AMERICAN ENERGY STANDARDS BOARD
2010 BOARD TERMS – Retail Gas Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT		**TERM END:**
Leigh Spangler	President, Latitude Technologies Inc.	12-31-2010
Rick Vogel	Vice President – Sales and Natural Gas Operations, Sierra Southwest Cooperative Services, Inc.	12-31-2010
Dave Darnell	President & CEO, Systrends USA	12-31-2011
Greg Lander	President, Capacity Center	12-31-2011
DISTRIBUTORS SEGMENT		
Alonzo Weaver	Vice President of Engineering and Operations, Memphis Light, Gas & Water Division (APGA)	12-31-2011
Ralph Cleveland	Executive Vice President – Engineering and Operations, AGL Resources, Inc.	12-31-2011
V A C A N C Y		12-31-2010
V A C A N C Y		12-31-2010
END USERS/PUBLIC AGENCIES SEGMENT		
V A C A N C Y		12-31-2010
V A C A N C Y		12-31-2010
V A C A N C Y		12-31-2011
V A C A N C Y		12-31-2011

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Via email and posting
June 10, 2010

TO: NAESB Board of Directors, Executive Committee (EC) Members, EC Alternates, NAESB Members, NAESB Advisory Council, and Invited Guests

FROM: Rae McQuade, NAESB President

RE: Agendas with links for NAESB Board Meeting and related NAESB Meetings – June 23-24, 2010 – Additional Materials Added and Shown as Highlighted Links

Dear Board members, EC members, EC alternates, NAESB members, NAESB Advisory Council and invited guests,

As noted in other communications, we are pleased to announce the upcoming Board meeting which for June 24 in Houston, Texas at the Marriott IAH Airport Hotel. I hope you are able to travel to Houston for our upcoming Board meeting, related committee meetings and our Board dinner. For the Board meeting, we will address progress made towards the annual plans, the efforts with state regulatory commissions, the work underway related to Smart Grid applications, demand response, and energy efficiency.

At the Board dinner on June 23, you will not want to miss our speaker, Robert W. Gee, who will discuss the challenges and opportunities associated with the creation of a commercially viable carbon capture and storage industry in the United States. You can find Mr. Gee's biography at the following link: http://www.naesb.org/misc/gee_biography_2009.pdf.

The specifics of the meetings are:

Events: Board of Directors Meeting, and related NAESB meetings

Where: Marriott IAH Airport, 18700 John F. Kennedy Blvd, Houston, TX 77032, phone (281) 443-2310 (excepting Board Reception and Dinner)

When:

June 23	Wholesale Gas Quadrant Lead ership Meeting fr om 11:00 am to 1:00 pm C (lu nch s erved at noon during the meeting) – Victoria Room
June 23	Wholesale Electric Quadrant Leadership Meeting from 1:00 am to 3:00 pm C – Victoria Room
June 23	Retail Gas and Electric Quadrant Leadership Meeting from 3:00 pm to 5:00 p m C – Victoria Room
June 23	Board Receptio n and Dinner - 6:00 pm re ception and 7:00 p m dinner seatin g (held at the Petroleum Club with bus transportation provided to/from the Marriott IAH Airport Hotel)
June 24	Resources Committee Meeting from 8:00 am to 9:00 am C – Amarillo Room
June 24	Board Meeting from 9:00 am to 1:00 pm C, (a buffet lunch will be served during the meeting) -- Ballroom B

As with all our meetings, these events are open to any interested party. For the meetings, conference calling will be available should you be unable to attend in person. Please contact Veronica Thomason (vthomason@naesb.org, 713-356-0060) for additional information on the meetings and conference calling information. Board materials are provided as links in the agendas for the Board meeting and the three leadership meetings. As additional meeting materials become available, the agenda will be updated with those links.

We hope you will be able to make the leadership meetings and the dinner on June 23, followed by the Resources Committee meeting and the Board meeting on June 24. Please RSVP your intention to attend the Board dinner or Board of Directors meeting or any of the related meetings, and your intention to bring a guest or colleague to the dinner at your earliest convenience (vthomason@naesb.org, naesb@naesb.org, 713-356-0060). We look forward to seeing you at the dinner and our Board meeting and at any of the related meetings noted above.

Best Regards,

Rae McQuade

Rae McQuade
NAESB President and COO

As a reminder for your calendars, other 2010 scheduled Board meetings include: September 22-23 – which also serves s the members meeting and strategic session, and December 8-9 – where the annual plans for 2011 and the 2011 proposed budget are approved.

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CONFERENCE CALLING AND WEB CONFERENCING DETAILS

FOR THE JUNE 23-24, 2010 SET OF BOARD AND RELATED MEETINGS:

The meetings are open to all interested parties, who may participate by phone if unable to attend in person. The Board meeting is also web cast.

June 23	11:00 am to 1:00 pm C	Wholesale Gas Quadrant Leadership Meeting (In person and Conference Call)	
	Room – Victoria	• Call in number • Access Code – • Security Code	866-740-1260 356-0063 3521
June 23	1:00 to 3:00 pm C	Wholesale Electric Quadrant Leadership Meeting (In person and Conference Call)	
	Room – Victoria	• Call in number • Access Code – • Security Code	866-740-1260 356-0064 7318
June 23	3:00 to 5:00 pm C	Retail Gas and Electric Quadrants Leadership Meeting (In person and Conference Call)	
	Room – Victoria	• Call in number • Access Code – • Security Code	866-740-1260 356-0063 2501
June 24	8:00 to 9:00 am C	Resources Committee Meeting (In person and Conference Call)	
	Room – Amarillo	• Call in number • Access Code – • Security Code	866-740-1260 356-0063 2843
June 24	9:00 am to 1:00 pm C	Board Meeting (In person and Conference Call/Web Cast)	
	Room: Ballroom B	• Call in number • Access Code – • Security Code	866-740-1260 7133560 6515

To join a conference call:

- Dial the 11-digit toll free call-in phone number shown above for the specific meetings
- An automated attendant will ask you to enter a seven-digit access code (shown in the table above)
- The automated attendant will ask you to record your name.
- Please note that if the conference leader has not yet initiated the conference call, you will be placed on music hold until the conference leader starts the conference.
- The automated attendant will then ask you for a four-digit security code (shown in the table above)

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 on-hold line to have it disconnected.

If the meeting has the web conferencing feature enabled, 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.

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NAESB BOARD OF DIRECTORS MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Ballroom B
Thursday, June 24 -- 9:00 a.m. to 1:00 pm Central

DRAFT AGENDA WITH LINKS TO MATERIALS (ADDITIONAL MATERIALS HIGHLIGHTED)

#		Agenda Item
8:00 A		Resources Committee Meeting
8:30 A		Continental Breakfast
9:00 A	1.	Welcome
		a) Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance)
		b) Welcome to Board members, guests: http://www.naesb.org/pdf4/bod_terms.pdf (Roster)
	2.	Adoption of the Agenda and Minutes
		a) Agenda Adoption -http://www.naesb.org/pdf4/bd062410a.doc (Agenda)
		b) Adoption of Draft Minutes – March 25, 2010 - http://www.naesb.org/pdf4/bd032510dm.doc (Draft Minutes)
	3.	Membership and Financial Report
		a) Membership Report- http://www.naesb.org/misc/membership_slide_061110.ppt, http://www.naesb.org/misc/membership_report_061110.doc (Membership Profile and Report)
		b) Financial Report 2010 YTD - http://www.naesb.org/misc/financial_chart_062410.ppt, http://www.naesb.org/misc/financial_report_062410.doc (Financial Profile and Report)
	4.	Reports from Board Committees
		a) Resources – http://www.naesb.org/pdf4/board_resource062410w1.pdf (Resources Report)
		b) Critical Infrastructure Committee – http://www.naesb.org/pdf4/bd_cic_032210notes.doc, http://www.naesb.org/pdf4/bd_cic_051310notes.doc (Notes from March 22 and May 13)
		c) Retail Restructuring Committee
	5.	Smart Grid Updates
		a) Overview
		b) Priority Action Plan 3 – Both Wholesale and Retail Electric Market Applicability: http://www.naesb.org/pdf4/weq_req_ec061610a1.doc -WEQ, http://www.naesb.org/pdf4/weq_req_ec061610a4.doc - REQ (Recommendations Revised By Task Force and further revised and adopted by the ECs)
		c) Priority Action Plan 4 – Both Wholesale and Retail Electric Market Applicability: http://www.naesb.org/pdf4/weq_req_ec061610a2.doc -WEQ, http://www.naesb.org/pdf4/weq_req_ec061610a5.doc - REQ, (Recommendations Revised By Task Force and further revised and adopted by the ECs)
		d) Priority Action Plan 9 – Wholesale Electric Market Applicability: http://www.naesb.org/pdf4/weq_req_ec061610a3.doc (Recommendations Revised By Task Force and further revised and adopted by the ECs))
		e) Priority Action Plan 9 – Retail Electric Market Applicability: http://www.naesb.org/pdf4/weq_req_ec061610a6.doc (Recommendations Revised By Task Force)
		f) Priority Action Plan 10 – Both Wholesale and Retail Electric Market Applicability:

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NAESB BOARD OF DIRECTORS MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Ballroom B
Thursday, June 24 -- 9:00 a.m. to 1:00 pm Central

DRAFT AGENDA WITH LINKS TO MATERIALS (ADDITIONAL MATERIALS HIGHLIGHTED)

#	Agenda Item
	http://www.naesb.org/pdf4/smart_grid_pap10_schedule_announcement.doc (Task Force Announcement), http://www.naesb.org/misc/proposal_to_nist_052410.doc (NAESB Response to NIST Request); http://www.naesb.org/misc/pap10_report_to_sgip_gb_15jun2010.pdf (SGIP Report)
	6. Updates on specific efforts:
	a) Publications –http://www.naesb.org/misc/retail_publication_schedule_061110.doc (Retail Version 1.2), http://www.naesb.org/misc/weq_publication_schedule_061110.doc (WEQ Version 2.2) and http://www.naesb.org/misc/wgq_publication_schedule_061110.doc (WGQ Version 2.0)
	b) Update on Order 890 efforts – http://www.naesb.org/pdf4/update052610w6.xls (OASIS Report)
	c) Update on Demand Response and Demand Side Management: http://www.isorto.org/site/apps/nlnet/content2.aspx?c=jhKQIZPBImE&b=2613997&ct=8400541&notoc=1 (Updated IRC Matrix as of May 2010 from which the phase 2 WEQ business practices are to be derived), http://www.naesb.org/pdf4/dsmee052010w3.doc (Retail Matrix of comments from which the phase 2 retail business practices are to be derived), http://www.naesb.org/pdf4/dsmee052010w1.doc (Scoping document for EE for Retail Business Practices)
	d) RFP Status for the Electric Industry Registry
	7. 2010 Executive Committee Reports
	a) Review of 2010 WGQ Annual Plan and vote to adopt with any revisions made during the meeting http://www.naesb.org/pdf4/wgq_2010_annual_plan.doc (WGQ Annual Plan)
	b) Review of 2010 Retail Annual Plan and vote to adopt with any revisions made during the meeting - http://www.naesb.org/pdf4/retail_2010_annual_plan.doc (Retail Annual Plan)
	c) Review of 2010 WEQ Annual Plan and vote to adopt with any revisions made during the meeting - http://www.naesb.org/pdf4/weq_2010_annual_plan.doc (WEQ Annual Plan)
	8. Plan for September 23, 2010 Board Meeting, Strategic Session and Annual Meeting of the Members
	a) Report on Smart Grid efforts and tie-in to the natural gas market : http://www.naesb.org/misc/sandia_outline_061610.doc (Outline from SNL)
	9. Old and New Business
	a) Liaisons with external groups: FERC, NARUC, NERC, Other Groups
	b) Comments from Board Members, Invited Guests and Speakers, and Attendees
	c) Board Meeting Schedule for 2010 – http://www.naesb.org/misc/2010_schedule.pdf (Calendar)
1:00 P	10. Adjourn

Attire – Business Casual
Breakfast pastries, fruits and coffee served in the room, buffet lunch available at noon or conclusion of the meeting

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NAESB BOARD RESOURCES COMMITTEE MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Amarillo Room
Thursday June 24 -- 8:00 a.m. to 9:00 am Central

DRAFT AGENDA

#		Agenda Item
8:00 A	1.	Welcome
		a) Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance)
		b) Welcome to participants and roll call
		c) Adoption of Agenda
	2.	Status towards goal of 30 net new members
		a) New Members since last meeting
		b) Subscriptions to Home Page Access since last meeting
		c) Resignations since last meeting
		d) Results of exit interviews
	3.	Update on effort to address potential memberships
		a) Membership Information Packets by focus group (Wind, Geothermal, Demand Response)
		b) Identify prospects for potential technology and services segment in WEQ
		c) Smart Grid NIST activities
	4.	Review board and EC openings for prospects
	5.	Update on the Board Challenge
		a) Discuss progress of quadrant resource leaders
	6.	Business Continuity Planning – ID a backup for each board member
	7.	Other Business/Next Steps
9:00 A		Adjourn

Attire – Business Casual – Breakfast Served in the Room

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NAESB WHOLESALE GAS QUADRANT LEADERSHIP MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Victoria Room
Wednesday June 23 -- 11:00 a.m. to 1:00 pm Central

DRAFT AGENDA

#		Agenda Item
11:00 A	1.	Welcome a) Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance) b) Welcome to participants
	2.	Adoption of the Agenda
3.		Report on FERC and Minor Corrections for eTariff: http://www.naesb.org/misc/etariff_mcc_procedure_052710notes.doc
4.		Report on Smart Grid efforts and tie-in to the natural gas market : http://www.naesb.org/misc/sandia_outline_061610.doc (Outline from SNL)
5.		Update on Publication Activities : http://www.naesb.org/misc/wgq_publication_schedule_061110.doc (WGQ Version 2.0)
	6.	Review of 2010 WGQ Annual Plan http://www.naesb.org/pdf4/wgq_2010_annual_plan.doc
7.		Review of Membership for WGQ : http://www.naesb.org/misc/membership_slide_061110.ppt, http://www.naesb.org/misc/membership_report_061110.doc (Membership Profile and Report), http://www.naesb.org/pdf4/board_resource062410w1.pdf (Resources Report)
	8.	Review of Other Board or Leadership Issues
	9.	Old and New Business
1:00 P		Adjourn

Attire – Business Casual – Lunch Served in the Room

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NAESB WHOLESALE ELECTRIC QUADRANT LEADERSHIP MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Victoria Room
Wednesday June 23 -- 1:00 p.m. to 3:00 pm Central

DRAFT AGENDA

#		Agenda Item
1:00 P	1.	Welcome a) Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance) b) Welcome to participants
	2.	Adoption of the Agenda
3.		Report on FERC and Minor Corrections for eTariff: http://www.naesb.org/misc/etariff_mcc_procedure_052710notes.doc
4.		Update on Order 890 efforts (See Board Agenda Item 6(b))
5.		Update on Demand Response/Energy Efficiency (See Board Agenda Item 6(c))
	6.	Update on Parallel Flow Visualization
7.		Update on Smart Grid Activities (See Item 5 of the Board Agenda)
8.		Update on Publication Activities http://www.naesb.org/misc/weq_publication_schedule_061110.doc (WEQ Version 2.2)
	9.	Review of the 2010 Executive Committee Report http://www.naesb.org/pdf4/weq_2010_annual_plan.doc
10.		Review of Membership for WEQ http://www.naesb.org/misc/membership_slide_061110.ppt, http://www.naesb.org/misc/membership_report_061110.doc (Membership Profile and Report), http://www.naesb.org/pdf4/board_resource062410w1.pdf (Resources Report)
	11.	Review of Other Board or Leadership Issues
	12.	Old and New Business
3:00 P		Adjourn

Attire – Business Casual – Lunch Served in the Room

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NAESB RETAIL LEADERSHIP MEETING
Marriott IAH Airport Hotel, Houston, Texas -- Victoria Room
Wednesday June 23 -- 3:00 p.m. to 5:00 pm Central

DRAFT AGENDA

#		Agenda Item
3:00 P	1.	Welcome a) Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance) b) Welcome to participants
	2.	Adoption of the Agenda
3.		Review of Retail Quadrants Membership and Retail Restructuring: http://www.naesb.org/misc/membership_slide_061110.ppt, http://www.naesb.org/misc/membership_report_061110.doc (Membership Profile and Report), http://www.naesb.org/pdf4/board_resource062410w1.pdf (Resources Report)
	4.	Work With State Commissions
5.		Update on Demand Response/Energy Efficiency (See Board Agenda Tab 6(c))
	6.	Update on Smart Grid Activities (See item 5 of the Board Agenda)
7.		Update on Publication Activities http://www.naesb.org/misc/retail_publication_schedule_061110.doc (Retail Version 1.2)
	8.	Review of the 2010 Executive Committee Report http://www.naesb.org/pdf4/retail_2010_annual_plan.doc
	9.	Review of Other Board or Leadership Issues
	10.	Old and New Business
5:00 P	11.	Adjourn

Attire – Business Casual – Cookies and Coffee Break Served in the Room

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April 1, 2010

TO: NAESB Board of Directors, Executive Committee (EC) Members, EC Alternates, and Invited Guests

FROM: Jonathan Booe, NAESB Staff Attorney

RE: Draft Minutes of the NAESB Board Meeting – March 25, 2009

NAESB BOARD OF DIRECTORS MEETING
Marriott IAH Airport Hotel, Houston, Texas
Thursday, March 25, 2010 – 9:00 a.m. to 1:00 pm Central
DRAFT MINUTES

1. Administration and Welcome

Mr. Cleveland welcomed the Board members and guests in the room and on the phone. Mr. Boswell provided the antitrust guidance. Mr. Booe called the roll of the NAESB Board members. Quorum was established.

2. Adoption of the Agenda and Minutes

The Board members reviewed the draft agenda. Mr. Desselle moved to adopt the agenda as drafted and Ms. Crockett seconded the motion. The motion passed without objection.

Next, the Board members reviewed the draft minutes from the December 10, 2009 Board meeting. Mr. Cleveland asked if there were any proposed modifications. No modifications were offered. Mr. Desselle moved to adopt the minutes as drafted and Ms. Crockett seconded the motion. The motion passed without objection

3. Membership and Financial Report

Membership Report: Ms. McQuade reviewed the membership report. This quarter NAESB has experienced a net gain in membership, largely in response to the creation of the new WEQ segment and smart grid activities. Several of the new members include state commission staff, which may result in additional membership in the Retail Quadrants. The hard work of the Board has paid off this quarter and there are currently several new prospects in touch with the NAESB staff.

Financial Report: Ms. McQuade provided the financial report and reviewed the financial profile comparing the 2009 budget with the 2010 year to date budget. NAESB experienced a positive net income for 2009 that was applied to the negative retained earnings. The positive net income can be attributed to the increase in the membership fee implemented by the Board in 2009. The NAESB staff has not received notice of any member resigning his membership due to the increase in the membership fee. The financial profile only reports through January of 2010, making it difficult to determine if modifications to Organization's budget need to be made at this time. NAESB is in the process of relocating offices, which has resulted in a savings that will be reflected in the report at the June Board meeting.

4. Reports from Board Committees

Resources: Mr. Brown provided the report of the Resources Committee. He noted the ten new memberships and three resignations that resulted in a positive gain in membership during the last quarter. He also noted the increase in home page subscription requests, which have been an unexploited revenue stream in the past, and encouraged Board members to recommend home page access to their company's outside counsel. The biggest draw to NAESB has been through the recently created Technology and Service segment in the WEQ. This trend should continue as a number of available Board and Executive Committee seats in the new segment were recently announced by NAESB. The restructuring of the Retail Quadrants has made membership more attractive to state regulatory commissions and the Resources Committee and Board members should encourage membership at upcoming NARUC meetings. An increase in participation by state regulatory commissions should result in an increased interest by companies that are

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regulated by state commissions. The Resource Committee intends to work with the NAESB staff during the next quarter to develop a letter to the various trade organizations informing them of current NAESB activities and explaining the value of participation in NAESB for their constituents. Mr. Brown also encouraged the Board members to consider how the vacant seats in the WEQ Board and Executive Committee could be filled by new or existing members.

Managing Committee Update: Ms. McQuade provided an update of the Managing Committee activities and noted that the Committee met during the last quarter to approve compensation adjustments. Mr. Desselle stated that the managing committee also addressed the proposed WEQ Annual Plan item that was presented at the December Board meeting regarding best practices for demand response products and procedures. He stated that the issue was discussed at the NAESB Advisory Council in February and with FERC staff on multiple occasions to determine the level of support for including the item on the WEQ Annual Plan. After discussions with FERC staff, some Board members and the Advisory Council, the Managing Committee circulated a resolution via email to defer adding the item from the WEQ Annual Plan and present to the Board. Mr. Desselle reviewed the approved resolution, which can be found through the following hyperlink: http://www.naesb.org/pdf4/managing031710notes.doc. Mr. Phillips moved to adopt the resolution as presented by Mr. Desselle and Mr. Kirby seconded the motion. The motion passed without opposition. At the request of Mr. Phillips, Mr. Desselle recommended that the NAESB staff flag all proposed additions to Annual Plans that are received after Executive Committee approval but prior to the Board meeting. Ms. McQuade agreed to do so in the future.

Critical Infrastructure Committee: Mr. Hurley provided an update of the activities of the Critical Infrastructure Committee and an outline of the national cyber security activities currently underway. The Committee consists of named members but all meetings are open to the public and are accessible by anyone who wishes to participate. During the Committee's March 22, 2010 conference call, the participants adopted a mission and scope statement and discussed NAESB's involvement in cyber security activities. The Committee will continue to meet every other month through the end of the year and will report to the Board at each quarterly meeting. Mr. Hurley emphasized NAESB's need to be involved on the cyber security front and provide a voice for the private industry that may be affected by government mandated standards. Ms. McQuade reiterated that the Committee will only function as an advisory group to the Board on cyber security and critical infrastructure issues concerning commercial aspects and will not address the electric reliability aspects which are more appropriately addressed in the NERC venue.

Retail Restructuring Update: Mr. Minneman provided an update of the restructuring of the Retail Quadrants. The Retail Quadrants modified their structure in the third quarter of 2009 creating three segments; 1) the Suppliers/Services Providers segment, 2) the Utilities segment, and 3) the End Users/Public Agencies segment. This segment structure was developed in an effort to better reflect the status of the current retail market and appeal to participants interested in the Demand Side Management and Energy Efficiency (DSM-EE) and Smart Grid efforts. Since the last quarter, the Retail Quadrants have seen an increase in membership and a growing interest of potential members. Several of the new members are representatives from state commission staff and the May Executive Committee meetings are to be hosted by the Pennsylvania Public Utility Commission. Mr. Minneman noted that the restructuring actions taken last year appear to be moving the Quadrants in the right direction, even though the Quadrants membership statistics are still below the minimum requirements. Mr. Desselle moved to extend the resolution passed at the March 2009 Board meeting allowing a waiver of the minimum membership requirements for the Retail Quadrants for twelve months with quarterly reports from the Retail Quadrants regarding membership for an additional 12 months. Ms. Crockett seconded the motion and the motion passed without opposition.

5. Report from Advisory Council

Mr. Ellsworth provided an update of the February 13, 2010 Advisory Council meeting. During the meeting, Ms. McQuade presented a primer of the NAESB standards development process as well as an update of the Organizations development activities related to Smart Grid and other initiatives. Mr. Ellsworth noted that the Advisory Council is an excellent opportunity to receive advice and guidance from industry leadership outside of the NAESB membership and that it provides a less formal setting for federal and state agencies to discuss emerging

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issues. Ms. McQua de enc ouraged th e NAESB Board m embers to attend in conjunction with th e wi nter NARUC meeting.

6. Special Report on Smart Grid Efforts and Links to the Natural Gas Market

Mr. C onsidine gave a p resentation c oncerning sm art ener gy an d t he n ormalization of m arkets t o i ncrease engagement and innovation. He noted that the smart grid initiative, while primarily focused on the electric market, would be more appropriately referred to as the smart energy initiative. Many of the activities currently underway to develop t he smart g rid will h ave far reach ing im plications t hat will i mpact a b road g roup of en ergy ind ustry participants, including those in the wholesale and retail natural gas markets. His presentation can be found on the NAESB website through the following hyperlink: http://www.naesb.org/pdf4/bd032510a2.pdf.

7. Updates on Specific Efforts

Publications: Ms. McQuade provided an update of the NAESB publication schedule. WEQ Version 2.2 will be published in the July-August time frame and will include the smart grid and NITS standards currently under development. The Retail Quadrant has scheduled Version 1.3 to be published in first quarter 2011 and the WGQ is scheduled to publish Version 2.0 in November 2010.

WEQ, Update on FERC Order No. 890 efforts: Ms. York provided an update on the Order No. 890 efforts. The OASIS subcommittee is working to address NITS and has postponed their expected completion date from first quarter to second quarter. In an effort expedite the work of the OASIS subcommittee, the WEQ Executive Committee formed a Task Force to scope 2010 WEQ Annual Plan item 2.a.iii (business practices to support service across multiple transmission systems), which will be addressed upon the completion of the NITS effort. The Task Force met on March 22, 2010 and has developed a list of issues that need to be resolved before the subcommittee addresses the item. The FERC has asked that NAESB provide progress reports on the item beginning in June and has expressed their desire to have it addressed quickly. The Task Force has scheduled a conference call for March 31, 2010 and will continue to scope the item.

WEQ/Retail Electric, Update on Demand Response and Demand Side Management: Mr. True provided an update of the DR and DSM activities. The Wholesale DR Task Force has held two conference calls this year to review the work of the Glossary Task Force, the Model Business Practice sub-working group and the Performance Evaluation sub-working group. The next Wholesale DR Task Force meeting is scheduled for Friday, April 23, 2010. On the Retail side, the DR Task Force has met twice to review formal comments that were submitted in response to the first phase of standards. The Task Force is roughly half way through the comments and has scheduled a meeting on Thursday, April 22, 2010 to continue the review. The Retail Energy Efficiency work group has held two conference calls to discuss the scope of the standards to be developed. The work group has agreed to use the National Action Plan for Energy Efficiency as a guide for their work and will continue efforts during their next conference call on April 15, 2010. The next full DSM-EE meeting is scheduled for May 20, 2010 from 10:00 am to 4:00 pm Eastern in Holyoke, MA.

WEQ/Retail Electric, Smart Grid Update: Mr. Booe provided an update of the Smart Grid effort. Since the last Board meeting, the Smart Grid Standards Task Force voted out four recommendations containing use case and data requirement standards that were created in response to the NIST assignments related to Priority Action Plans (PAP) 3 (Common Price Communication Model), 4 (Common Scheduling Mechanism) and 9 (Standard Demand Response Signals) and requested at the September 2009 NIST meeting. A single recommendation was voted out of the Task Force for PAPs 3 and 4 respectively and separate wholesale and retail recommendations were voted out of the Task Force for PAP 9. These recommendations were posted for a 30 day formal comment period for the WEQ and REQ Quadrants on March 9, 2010 and the comments are due April 9, 2010. After the comment period has ended, the Task Force will review the comments and provide a set of late comments in response to help provide guidance for the Executive Committees. The Executive Committees will have single topic conference call to review the recommendations followed by a single topic meeting to vote on the recommendations. As part of phase two of the smart grid effort, the Task Force plans to refine and further develop the data requirements that were developed in phase one of the effort in order to provide a more complete and consistent set of standards. This effort will be done expediently and in coordination with the other groups such as OASIS and Zigbee who are tasked with providing the

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schemas and technical standards based on the use case and data requirement standards. Related to Priority Action Plan 10, the Standard Energy Usage Information PAP, NAESB was asked to develop a survey to determine the types of energy usage information communicated today and consolidate use cases and requirements for those communications. The Task Force's role in PAP 10 is different from PAPs 3, 4, and 9, in that, the Task Force will be acting as a facilitator and gather of information, rather than developing standards. The Task Force is on schedule to have a completed survey developed and ready for distribution to NAESB membership and other groups that have been identified by the Task Force by April 9, 2010. The Task Force will gather the results and create a report in the May-June time frame.

RFP Status for the Electric Industry Registry: Ms. McQuade noted that NAESB put out an RFP seeking an administrator for the Electric Industry Registry (EIR). The RFP was distributed on February 22, 2010 and proposals must be submitted to NAESB by May 21, 2010. NAESB, in consultation with NERC, will select an administrator by the end of the second quarter. Mr. True noted that the RFP references DUNs numbers and suggested NAESB consider using GLN numbers moving forward. Mr. Minneman asked how the maintenance of the EIR would be funded. Ms. McQuade responded that the RFP requires that a proposed funding mechanism be included in submissions.

8. 2010 Executive Committee Reports

Ms. Davis reviewed the 2010 WGQ Annual Plan; Mr. Minneman reviewed the 2010 Retail Annual Plan; and Ms. York reviewed the 2010 WEQ Annual Plan. Mr. Desselle noted that the status of item 6.a.ii on the WEQ Annual Plan should reflect that the item is underway. Ms. McQuade stated that she would make the correction. Mr. Desselle moved to adopt the Annual Plans as reviewed and Mr. Lucas seconded the motion. The motion passed a simple majority vote.

9. Plan for June 2010 Board Meeting

Ms. McQuade noted that the June 24, 2010 Board meeting will be held in Houston, Texas and asked the participants to submit any agenda items they wish to discuss during the meeting to the NAESB office. She also noted that the September Board meeting will be the strategic session for 2011. The 2010 Board meeting schedule can be found through the following link: http://www.naesb.org/misc/2010_schedule.doc.

10. Old and New Business

Ms. McQuade stated that she is in the process of setting up meetings with the FERC Commissioners over the next month to discuss NAESB activities. She stated that some Managing Committee members may attend the meetings and that they will also meet with DoE and FCC representatives. Mr. Brown emphasized the importance of establishing a strong relationship with the new Commissioners.

11. Adjourn

The meeting adjourned at 11:28 a.m. Central on March 25, 2010.

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	In Person
Keith Sappenfield	Regional Director – US Regulatory Affairs, EnCana Oil & Gas (USA), Inc.	Phone
Randy E. Parker	Global Regulatory Advisor, ExxonMobil Gas and Power Marketing Company	
Pete Frost	Director – Regulatory Affairs, ConocoPhillips Gas and Power Marketing	In Person

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12. Board Attendance and Voting Record (Vacancies Omitted)

WGQ PIPELINE SEGMENT		
Cathie Legge	Manager – Customer Service, Alliance Pipeline, LP	
Bill Grygar	Vice President, Panhandle Eastern Pipe Line	Phone
Susanna B. Barry	Vice President – Commercial Operations, Tennessee Gas Pipeline Company	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	
Adrian Chapman	Vice President – Regulatory Affairs & Energy Acquisition, Washington Gas	Phone
Mike Novak	Asst. General Manager, National Fuel Gas Distribution Corporation	
Lee Stewart	Senior Vice President, Gas Transmission, Southern California Gas Company	
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	Phone
Lori-Lynn C. Pennock	Senior Fuel Supply Analyst, Salt River Project	In Person
Jim Templeton	Principal, Comprehensive Energy Services	In Person
WGQ SERVICES SEGMENT		
Steve Abbey	Manager of Regulatory Affairs – Marketing Department, Anadarko Energy Services Company	
Rusty Braziel	Managing Director, Bentek Energy, LLC	
Paul Kahler	Midstream Regulatory Advisor, Cenovus Energy Inc.	
Lori Leeder	Relationship Manager/Business Development – Asset Optimization, Vega Energy Partners, Ltd	Phone
REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT		
Jim Minneman	Controller, PPL Solutions LLC	In Person
J Cade Burks	Executive Vice President of ista	
Austin Morris	Managing Partner – Energy, SunGard Consulting Services, LLC	In Person
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	
Debbie McKeever	Market Advocate, Oncor	In Person

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12. Board Attendance and Voting Record (Vacancies Omitted)

REQ END USERS/PUBLIC AGENCIES SEGMENT			
James P. Cargas	Senior Assistant City Attorney, City of Houston		
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 In	Person
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 In	Person
Wayne Moore	Regulatory Affairs & Energy Policy Director and Compliance Officer – Generation, Southern Company Services, Inc.	IOU	
Gloria Godson	Vice President Energy Policy, Conectiv Energy Supply, Inc.	Merchant	
Shah Hossain	Senior Regulatory Specialist, Westar Energy, Inc.	at large	
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 Power Administration	Fed/State/Prov.	Phone
Gavin Cunningham	Manager – FirstEnergy Solutions Corp.	at large	In Person
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 Ph	one
Paul McCurley	Manager – Power Supply, National Rural Electric Cooperative Association	Muni/Coop	
Nelson Peeler	Vice President System Operations, Duke Energy	IOU	In Person

North American Energy Standards Board
1301 Fannin, Suite 2350, Houston, Texas 77002
Phone: (713) 356-0060, Fax: (713) 356-0067, E-mail: naesb@naesb.org
Hom e Page: www.naesb.org

12. Board Attendance and Voting Record (Vacancies Omitted)

Joe Hartsoe	Managing Director – Federal Policy, American Electric Power Service Corp.	at large	Phone
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	
Rick Lentz	Fellow with SunGard	at large	
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		In Person
Kevin Kirby	Vice President Market Operations, ISO New England, Inc.	In	Person
Rana Mukerji	Vice President Market Structures, New York Independent System Operator, Inc. (NYISO)	Ph	one
Andy Ott	Senior Vice President Marketing, PJM Interconnection, LLC	Ph	one
Bill Phillips	Vice President Standards Compliance & Strategy, Midwest ISO (MISO)	In	Person
Peter Sergejewich	Director of Corporate Planning, Independent Electricity System Operator (IESO)	Ph	one
WEQ TECHNOLOGY AND SERVICES			
Jim Buccigross	Vice President Energy Industry Practice, 8760 Inc.		
Laurent M. Liscia	Executive Director, Organization for the Advancement of Structured Information Standards (OASIS)	Ph	one
David A. Wollman	Leader, Smart Grid Team – Standards and Electrical Metrology Groups, National Institute of Standards and Technology (NIST)	Ph	one
RGQ SERVICE PROVIDERS/SUPPLIERS SEGMENT			
Leigh Spangler	President, Latitude Technologies Inc.		Phone
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,		In Person

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Hom e Page: www.naesb.org

12. Board Attendance and Voting Record (Vacancies Omitted)

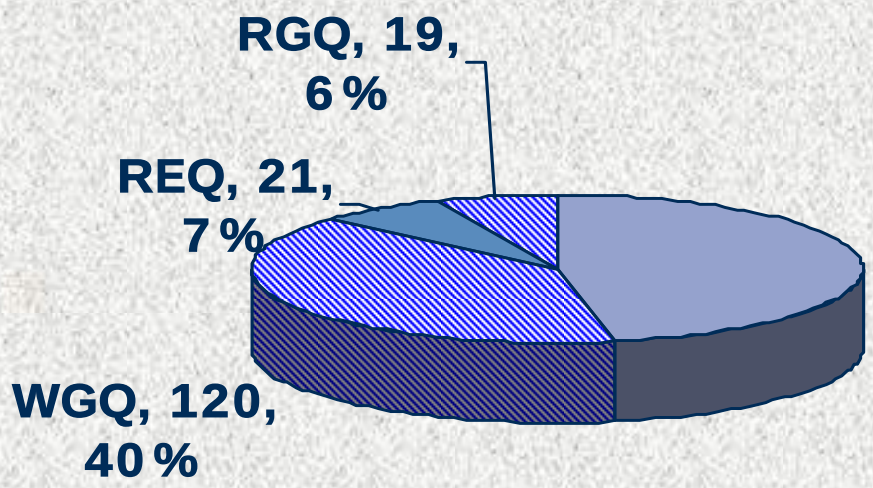
Inc.

13. Other Attendance

Name Or	ganization	Attendance
Jonathan Booe	NAESB	In Person
Bill Boswell	NAESB	In Person
Kathryn Burch	Spectra Energy Transmission	In Person
Christopher Burden	Williams Gas Pipeline	In Person
Toby Considine	University of North Carolina	In Person
Lorraine Cross	Cross & Company	In Person
Cory Cummings	NAESB	In Person
Dale Davis	Williams Gas Pipeline	In Person
Rufus Gladney	Consumers Energy Co.	In Person
Mark Gracey	El Paso Gas Pipeline Company	In Person
Bill Griffith	El Paso Natural Gas	In Person
John Goodin	California ISO	Phone
Susan Munson	ERCOT	In Person
Sylvia Munson	SunGard Energy Systems	In Person
Rae McQuade	NAESB	In Person
Phil Precht	Baltimore Gas and Electric	Phone
Denise Rager	NAESB	In Person
Barbara Rehman	Bonneville Power Administration	Phone
Ed Skiba	Midwest ISO	In Person
Veronica Thomason	NAESB	In Person
Nancy Traweek	California ISO	Phone
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
Randy Young	Boardwalk Pipeline Partners	Phone

North American Energy Standards Board

Organizational Profile



Membership Profile

June 11, 2010

Total Membership

302

Quadrant Statistics	WEQ	WGQ	REQ	RGQ	Total
Membership YE 2009	138	122	18	19	297
Reclassification	0	0	0	0	0
Net Change	+4	-2	+3	0	+5
Membership YTD	142	120	21	19	302

North American Energy Standards Board Membership List
As of June 11, 2010

NAESB Membership Statistics – Changes by Quadrant for 2010 as of June 11, 2010

NAESB Membership Report - Quadrant/Segment Membership Analysis		**Number of Members**
WGQ Segments	**TOTAL**	**120**
End	Users	16
Distributors		19
Pipelines		42
Producers		13
S	ervices	30
REQ Segments	**TOTAL**	**21**
	End Users/Public Agencies	5
Utilit	ies	7
Service	Providers/Suppliers	9
RGQ Segments	**TOTAL**	**19**
	End Users/Public Agencies	1
Distributors		6
Service	Providers/Suppliers	12
WEQ Segments	**TOTAL**	**142**
End	Users	11
Distributors		21
Tra	nsmission	47
Generation		24
M	arketers	26
None	Specified	1
	Independent Grid Operators/Planners	9
Techno	logy /Services	3

North American Energy Standards Board Membership List
As of June 11, 2010

WEQ	New Members:	+8
	8760, Inc. (Technology/Services), Organization for the Advancement of Structured Information Standards (OASIS) (Technology/Services), Public Utilities Commission of Ohio (End Users, Regulator); National Institute of Standards and Technology (NIST) (Technology/Services), Avista Corporation (Transmission, IOU), Brookfield Energy Marketing, Inc. (Marketers/Brokers, NIOU), Nebraska Public Power District (Transmission, Muni/Coop), Energy Curtailment Specialists, Inc. (End Users, End Use)	
Member	Resignations:	-4
	Southeastern Power Administration (Generation, Fed/State/Prov), Progress Energy (Marketers/Brokers, IOU), APS Marketing and Trading (Marketers/Brokers, IOU), TransServ International, Inc. (WEQ, IGO)	
WGQ	New Members:	+3
	Cenovus Energy, Inc. (Services), American Midstream Partners, LP (Services), Eastern Shore Natural Gas Company (LDC)	
Member	Resignations:	- 5
	Pacific Gas & Electric (Pipeline), Foothills Energy Ventures, LLC (Producer), Anadarko Energy Services Company (Services); Goodrich Petroleum Company LLC (Producer), Mirant Energy Trading, LLC (End Users)	
REQ	New Members:	+3
	Maryland Public Service Commission (End Users/Public Agencies), Public Service Utilities Commission of Ohio (End Users/Public Agencies), Comverge, Inc.	
Member	Resignations:	- 0
RGQ	New Members:	+ 1
	Sierra Southwest Cooperative Services, Inc. (Service Providers/Suppliers)	
Member	Resignations:	- 1
	Interstate Gas Supply (Services)	
TOTAL New	Members:	14
Member	Resignations:	10

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
Retail Electric Quadrant Members:				
1	Alabama Power	u	Judy W. Ray	
2	Ameren Services Company	u	Patrick Eynon	
3	Baltimore Gas & Electric Co.	u	Ruth Kiselewich, Phil Precht	
4	City of Houston	e	James P. Cargas	
5	Comverge, Inc.	s	Wendell Miyaji	
6	Dominion Retail	s	William Barkas, Richard Zelenko	
7	Dominion Virginia Power	u	David F. Koogler, Mary Edwards	
8	Electric Reliability Council of Texas (ERCOT) s		Susan Munson, Kent Saathoff	
9	Exelon Energy Delivery	u	Toni Garza	
10	ista	s	Judy Bailey, J. Cade Burks, Jennifer Teel	
11	Maryland Public Service Commission	e	Dan Norfolk	
12	North Carolina Advanced Energy Corporation	s	Robert K. Koger	
13	Oncor	u	Larry Williford, Debbie McKeever	
14	Pennsylvania Office Of Consumer Advocate	e	Tanya J. McCloskey, Sonny A. Popowsky	
15	Pennsylvania Public Utility Commission	e	Robert F. Wilson, Annunciata E. Marino	
16	PPL Solutions, LLC	s	James M. Minneman, Kim Wall	
17	Public Utilities Commission of Ohio	e	Christopher Kotting	
18	Southern Company Services	s	Barbara Hingst	
19	SunGard Consulting Services, LLC	s	Austin Morris	
20	Ventyx, Inc.	s	Nathan Chang	
21	Wisconsin Public Service Corporation	u	Dennis Derricks, Ken Thiry	
Wholesale Gas Quadrant Members:				
1	8760, Inc.	s	Jim Buccigross	
2	Alliance Pipeline LP	pl	Cathie Legge, Brian Troicuk	
3	Ameren Corporation	l	Scott Glaeser, Ken Dothage, Jim Massmann	
4	American Midstream Partners, LP	s	Marty Patterson	
5	ANR Pipeline Company	s	Sandy Meyers, Joseph E. Polland, Rene Staeb, Debbie Forth, Carol Wehlmann, Radha Raman	
6	Apache Corporation	pr	Maribeth Bedevian	
7	Arizona Public Service Company	e	Tom Carlson, Kelly Daly	
8	Atmos Energy	pl	Steve Easley	
9	Ballard Natural Gas, LLC	s	Susan Thibodeaux	
10	Baltimore Gas & Electric Co.	l	Phil Precht, Ron Jennings	

[1] The segment abbreviations are: **REQ**: u – utilities, e – end users/public agencies, s – service providers/suppliers. **RGQ**: d – distributors, e – end users/public agencies, s – service providers/suppliers. **WEQ**: m – marketer/broker, d – distribution, i – independent grid operators/planners, t – transmission owner, e – end user, g – generator, ts – technology/services. **WGQ**: s – services, pl – pipeline, l – LDC, pr – producer, e – end user.

[2] The sub-segment apply only to the WEQ and the abbreviations are – muni – municipal/cooperative, iou – investor owned utility, itc – independent transmission company, fed – federal/state/provincial facility/agency, lind – large industrial, sgen – self generation, end use – end user that may be represented in other segments, merc – merchant, N – no designation, reg – regulatory agency, niou – not investor owned utility. To get a full description of the subsegment, please reference the WEQ Procedures: http://www.naesb.org/pdf/weq_quadrant_procedures.doc

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
11	Barclays Bank PLC	s	Guy Kern-Martin	
12	Bentek Energy, LLC	s	E. Russell Braziel	
13	BG Energy Merchants, LLC	s	Martha Braddy, Denise Almoina, Susan Bailey, Melody Fontenot	
14	Boardwalk Pipelines, LP	pl	Randy Young, Mitch Whitehead	
15	Boeing Co., The	e	Tina Burnett	
16	BP Energy	pr	Mark Stultz, Rhonda Denton	
17	Calpine Energy Services, LP	e	Shonnie Daniel, Jay Dibble	
18	Cargill Incorporated	s	Lester Welch	
19	Carolina Gas Transmission Corporation	pl	Rae Davis, Dana B. Randall	
20	Cenovus Energy, Inc.	s	Paul Kahler	
21	CenterPoint Energy Gas Services, Inc.	s	James G. Beste, Larry Kunkle	
22	CenterPoint Energy Gas Transmission Company	pl	Larry Thomas	
23	CenterPoint Energy Mississippi River Transmission Corporation	pl Rober	t Trost	
24	Cheniere Pipeline Company	pl	Whit Scott	
25	Chevron Natural Gas	pr	Charles (Chuck) Cook	
26	Chevron Pipe Line Company	pl	Mary Anne Collins, Deborah Plattsmier, Jeff Kirk	
27	Cimarex Energy Co.	pr	Charlotte Baker	
28	Citigroup Energy Inc.	s	Carrie Southard, Angela Davis	
29	Colorado Springs Utilities	l	Joe M. Holmes	
30	Columbia Gas Transmission	pl	Claire Burum	
31	Comprehensive Energy Services	e	Jim Templeton	
32	ConocoPhillips Gas and Power	pr	Peter Frost	
33	Consolidated Edison Company of NY	l	Scott Butler, Paul Olmsted	
34	Constellation Energy Commodities Group Inc.	s	Lisa Simpkins, Joseph Kirwan, Andrea Kullman, Jennifer Scott	
35	Dauphin Island Gathering Partners	pl	Katie Rice	
36	DB Energy Trading	s	William Donnelly, Travis McCullough	
37	Defense Energy Support Center	e	Veronica Jones, Kevin Ahern	
38	Department of Energy	e	Christopher Freitas	
39	Devon Energy Corporation	pr	Bill Green, Dianne Dunbar	
40	Dominion Resources	l	Craig Columbo	
41	Dominion Transmission, Inc.	pl	Gary Sypolt, Ron Tomlinson	
42	DTE Energy Trading, Inc.	s	Gregory V. Staton, James Buck, Dena Crawford, Marcia L. Hissong, Ann Marie Jambor, Cynthia Klots, Shelley Greene	
43	Eastern Shore Natural Gas Company	l	Elaine B. Bittner	
44	El Paso Natural Gas	pl	William Griffith	
45	El Paso Exploration & Production Company	pr	David A. Webster, Stephanie Karm	
46	Enbridge (U.S.) Inc.	pl	Brad Petzold	
47	EnCana Marketing (USA) Inc.	s	Keith Sappenfield	
48	EnCana Oil & Gas (USA) Inc.	pr	Keith Sappenfield	

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
49	Energy Transfer Partners, L.P.	pl	Josie Castrejana, Miki Kolobara	
50	Entergy Services, Inc.	e	Laura Berryman, Terry Shields	
51	Enterprise Products Partners L.P.	pl	Jeff Molinaro	
52	Equitrans, LP	pl	Joseph M. Dawley	
53	ExxonMobil Gas & Power Marketing Company a division of Exxon Mobil Corporation	pr	Randy E. Parker, John W. Poe	
54	Florida Power & Light Company	e	Dona Gussow, Art Morris	
55	Gas Transmission Northwest Corp.	pl	Jay Story	
56	Golden Pass Pipeline, LLC	pl	Susan Braden	
57	Great Lakes Gas Transmission	pl	Gene Fava	
58	High Mount Exploration and Production, Inc.	pr	David Ogden, Gary Weaver, Sheri Heslington	
59	Iberdrola USA Management Corporation	l	Mark Marini	
60	Imperial Irrigation District	e	William Rapp	
61	Integrys Energy Group, Inc.	l	David E. Wear	
62	Iroquois Gas Transmission System	pl	Tom Gwilliam	
63	JP Morgan Ventures Energy Corp	S	Paul Tramonte	
64	Kern River Gas Transmission Co	pl	Brenda Horton	
65	Laclede Gas Co.	l	Kenneth Neises	
66	Latitude Technologies	s	Leigh Spangler	
67	Louis Dreyfus Energy Services	s	Jennifer Farris, W. Scott Harwood	
68	Lower Colorado River Authority	e	Mickey Bell	
69	Macquarie Cook Energy, LLC	s	Angela Jones	
70	Marathon Oil Company	pr	Robin Perrine	
71	Mewbourne Oil Company	pr	Michael F. Shepard	
72	National Fuel Gas Distribution	l	Michael Novak	
73	National Fuel Gas Supply Corp.	pl	Joseph Kardas	
74	National Grid Gas Distribution Companies	l	Bob Superty	
75	Natural Gas Pipeline Co of America	pl	Paul Love, Stan Thomas, Mike Schisler, Paul Haas	
76	Nexen Marketing	s	Shelley Leavitt	
77	NextEra Energy Power Marketing, LLC	e	Marty Jo Rogers	
78	NiSource, Inc.	l	George Simmons, Sorana Linder	
79	Noble Americas Corp	pl	Joseph Limone	
80	Noble Energy, Inc.	pr	Richard Smith, Tammy M. Stevens	
81	Northern Border Pipeline Company	pl	Scott Coburn	
82	Northern Natural Gas	pl	Nancy A. Hetrick	
83	Northwest Natural Gas Company	l	Randolph Friedman	
84	NOVA Gas Transmission Ltd.	pl	Doug Miller	
85	OGE Energy Resources, Inc.	s	Cary Metz	
86	ONEOK	l	Richard Tangeman	
87	ONEOK Partners GP, LLC	pl	Teri Tingler	
88	Panhandle Eastern Pipe Line	pl	William Grygar, Kim Van Pelt	
89	PECO Energy Co.	l	Carlos Thillet	

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
90	Pemex Gas Y Petroquimica Basica	s	Juan Enrique Gonzalez Azuara	
91	Peoples Gas System (A division of Tampa Electric Co)	l	Wraye Grimard	
92	Platts	s	Bill Murphy	
93	Portland Natural Gas Transmission System	pl	David Haag	
94	PPL EnergyPlus, LLC	e	Anne Lovett	
95	Questar Pipeline Co.	pl	Jerry H. Gross	
96	Quorum Business Solutions Inc.	s	Anne Golenternek, Michael Lewis	
97	Reliance Gas Transportation Infrastructure Limited	pl	Jagjit S. Yadav	
98	Salt River Project Agricultural Improvement & Power District	e	Lori-Lynn C. Pennock	
99	Sempra Energy - Southern California Gas Co.	l	Lee Stewart, Rodger Schwecke	
100	Sequent Energy Management, L.P.	s	Pat Metteauer	
101	Shell Energy North America (US), L.P.	s	Eric Gillaspie	
102	SolArc, Inc.	s	Mark Davis	
103	Southern California Edison Company	e	Roman Bakke, Curt Roney	
104	Southern Company Services, Inc.	e	Alan Kilpatrick, Bryan Mitchell	
105	Southern Natural Gas Co.	pl	Renee Hyde, Tracey Nicholson, Ludean Wyatt	
106	Southern Star Central Gas Pipeline	pl	Philip Rullman, Tim L. Thompson	
107	Southwest Gas Corporation	l	Larry Black	
108	Spectra Energy Transmission	pl	Richard Kruse	
109	SunGard	s	Lucia Nail	
110	Tennessee Gas Pipeline Company	pl	Sue Barry, Mark Gracey	
111	Tennessee Valley Authority	e	Valerie Crockett	
112	Tiger Natural Gas	s	Tracy Phillips	
113	TransCanada Pipelines	pl	Doug Miller	
114	Transwestern Pipeline Company, LLC	pl	Blair V. Lichtenwalter, Mary Draemer, David Mendoza	
115	Vector Pipeline L.P.	pl	Amy Bruhn	
116	Vega Energy Partners, Ltd	s	Julie Pincus, Lori Leeder	
117	Washington Gas Light Co.	l	Adrian Chapman, Mark Lowe, Paul Buckley	
118	Williams Gas Marketing, Inc.	s	Rich Ficken	
119	Williams Gas Pipeline	pl	Dale Davis, Christopher Burden	
120	Williston Basin Interstate Pipeline	pl	Keith Tiggelaar, Gwen Schoepp, Kelly Brooks, Lori Myerchin	
Wholesale Electric Quadrant Members:				
1	8760, Inc.	ts	Jim Buccigross	
2	ACES Power Marketing LLC	m	Roy J. True, Amadou Fall	muni
3	Alabama Municipal Electric Authority	d	Ray Phillips	muni
4	Alberta Electric System Operator	i	Diana Pommen, Henry Ren	
5	American Electric Power Service Corp.	d	Barbara Radous, Joseph Hartsoe, Phil Cox	iou
6	American Municipal Power, Inc.	m	Chris Norton, Alice Walker	muni
7	American Public Power Association d		Allen Mosher	muni

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
8	American Wind Energy Association	g	Tom Vinson	merc
9	Arizona Public Service Company	t	Mark W. Hackney	iou
10	Arkansas Electric Cooperative Corporation	g	Ricky Bittle	muni
11	Avista Corporation	t	Jeff Schlect	iou
12	Basin Electric Power Cooperative	t	Dan Klempel	muni
13	Basin Electric Power Cooperative	m	David Raatz	muni
14	Basin Electric Power Cooperative	g	Jason Doerr	muni
15	Black Hills Corporation	t	Larry D. Williamson	iou
16	Bonneville Power Administration	d	Sydney D. Berwager	other
17	Bonneville Power Administration	g	Francis Halpin, Robin Chung	fed
18	Bonneville Power Administration m		Brenda Anderson	fed
19	Bonneville Power Administration	t	Barbara Rehman, Tom Davis	fed
20	BP America Inc.	e	Rhonda Denton	lind
21	British Columbia Transmission Corporation t		Rohan Soulsby	fed
22	Brookfield Energy Marketing, Inc.	m	Nicolas Bosse	niou
23	California Department of Water Resources	g	Glenn Solberg, Chi Doan	fed
24	California ISO	i	Yakout Mansour	
25	Central Electric Power Cooperative	d	Arthur Fusco	muni
26	Cleco Power, LLC	t	Cindy Guillot	iou
27	Comprehensive Energy Services	e	Jim Templeton	enduse
28	Conectiv Energy Supply, Inc.	g	Gloria Godson	merc
29	Consolidated Edison Company of New York, Inc.	t	Scott Butler	iou
30	Consumers Energy Company	d	Andrew C. Dotterweich, Frank Johnson	iou
31	Dairyland Power Cooperative	t	Chuck Callies	muni
32	Deseret Power Electric Co-op	g	Curt Winterfeld	muni
33	Dominion Energy Marketing, Inc.	g	Lou Oberski, Jalal Babik	iou
34	Duke Energy Americas, LLC (DEA)	g	Walt Yeager	iou
35	Duke Energy Corp.	d	Alan Pritchard	iou
36	Dynegy Power Marketing, Inc.	g	Ben Trammell	merc
37	Edison Electric Institute	n	David Owens, Dave Dworzak, James P. Fama	n
38	Electric Power Supply Association	m	Jack Cashin, Barry Green	at large
39	Electric Reliability Council of Texas (ERCOT)	i	Bill Blevins, Paul Wattles, Joel Mickey	
40	Empire District Electric Company, The	t	Bary K. Warren	iou
41	Energy Curtailment Specialists, Inc. (ECS)	e	Marie Pieniazek	enduse
42	EnerNOC, Inc.	e	Aaron Breidenbaugh	enduse
43	Entegra Power Group, LLC	g	Rebecca Turner	merc
44	Entergy Services, Inc.	t	Edward J. Davis, Narinder Saini	iou
45	Exelon Generation - Power Team	m	Jack Crowley	iou
46	First Energy Service Company	d	Robert M. Martinko, Thomas C. Burgess	iou
47	FirstEnergy Solutions Corp.	m	Mark Travaglianti	iou
48	Florida Municipal Power Agency	g	Frank Gaffney	muni

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
49	Florida Municipal Power Agency	d	Frank Gaffney	muni
50	Florida Power & Light Company	m	Gerry Yupp, Tim Gerrish	iou
51	Florida Power & Light Company	t	Marty Mennes, Bob Birch	iou
52	Georgia Transmission Corporation t		Patrick McGovern	muni
53	Hydro – Quebec Transenergie	t	Glenn Sylvain	fed
54	Iberdrola USA Management Corporation	t	Mark Marini	iou
55	Idaho Power Company	t	Kathy Anderson	iou
56	Independent Electricity System Operator (IESO)	i	Cristian Dragnea, Biju Gopi	
57	Indiana Municipal Power Agency	g	Scott Berry	muni
58	ISO New England, Inc.	i	Matthew F. Goldberg	
59	Lincoln Electric System g		Douglas Bantam	muni
60	Los Angeles Department of Water and Power	t	Mohammed Johar Beshir	muni
61	Los Angeles Department of Water and Power	m	Bradford L. Packer, Joel F. Cordero	muni
62	Manitoba Hydro	t	Blaine Poff	fed
63	Manitoba Hydro	m	Blaine Poff	fed
64	Michigan Public Power Agency	d	James R. Nickel	muni
65	MidAmerican Energy Company	m	Dennis Kimm	iou
66	Midwest Independent Transmission System Operator i		William (Bill) Phillips, Ed Skiba	
67	Midwest Reliability Organization	t	Dan Schoenecker	at large
68	Missouri River Energy Services	d	Brian Zavesky	muni
69	Modesto Irrigation District	t	Roger Van Hoy	muni
70	National Association of Regulatory Utility Commissioners	e	Lou Ann Westerfield	reg
71	National Grid	t	Edward M. Kremzier	iou
72	National Institute of Standards and Technology	ts	David A. Wollman	
73	National Rural Electric Cooperative Assoc.	d	Paul McCurley	muni/coop
74	Nebraska Public Power District	t	Don Schmit	muni/coop
75	New York Independent System Operator (NYISO)	i	Rana Mukerji	
76	New York State Reliability Council	d	P. Donald Raymond	at large
77	North American Electric Reliability Corporation	d	Gerry Adamski, Andy Rodriquez	at large
78	North Carolina Electric Membership Corporation	d	David Beam	muni
79	NCMPA1	d	Martin Summe, George Landis	muni
80	Northeast Utilities Service Company	t	David Boguslawski, Calvin A. Bowie	iou
81	Northwestern Corporation	t	Mike Cashell	iou
82	NRG Energy, Inc.	g	Alan Johnson, Jennifer J. Vosburg	merc
83	NV Energy	m	Sheryl Torrey	iou
84	NV Energy, Inc.	t	Patricia Englin	iou
85	Open Access Technology International, Inc.	e	Michehl Gent	at large
86	Open Access Technology International, Inc.	t	Paul R. Sorenson	at large
87	Organization for the Advancement of Structured Information Standards (OASIS)	ts	Laurent M. Liscia	

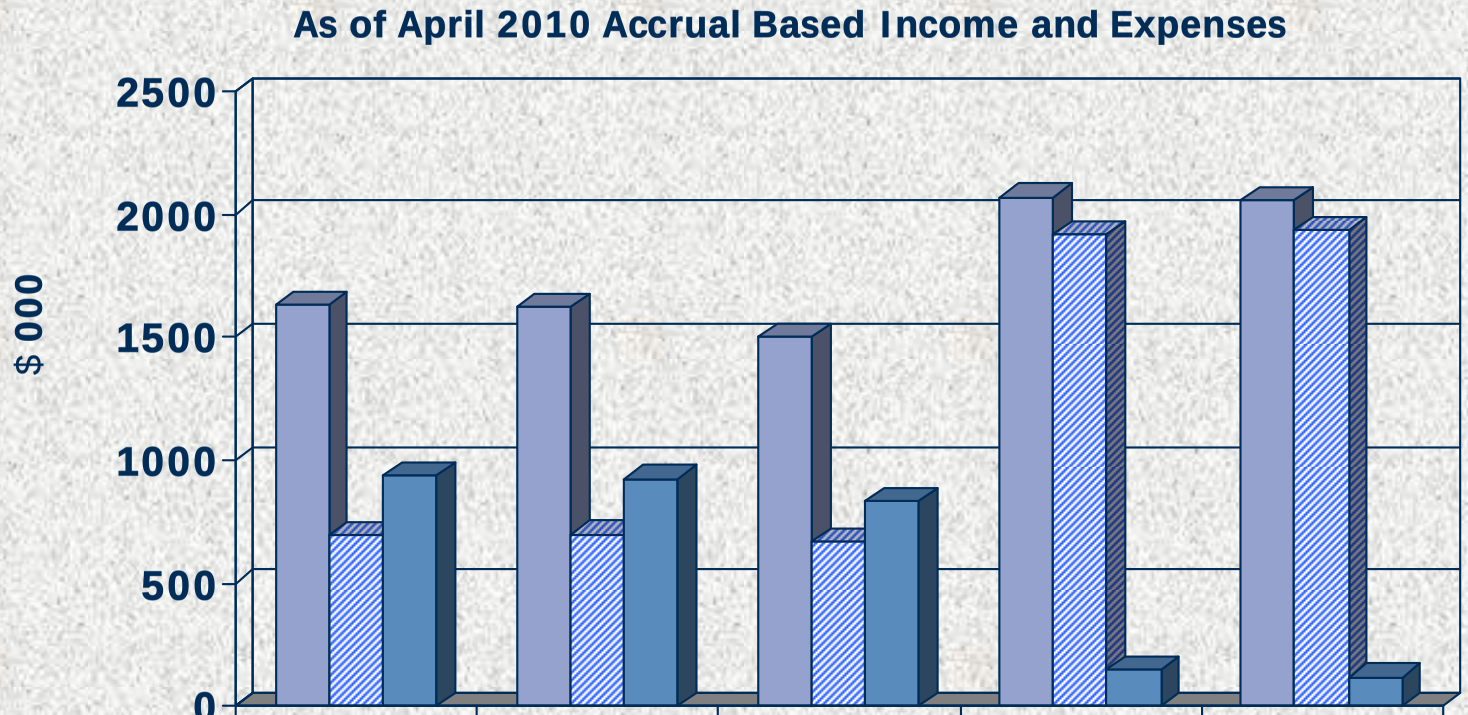
North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
88	PacifiCorp	m	John Apperson	iou
89	PacifiCorp	t	Shay Labray	iou
90	PHI Power Delivery	t	Ken Gates	iou
91	PJM Interconnection	i	Patrick Brown, Cathy Wesley	
92	Portland General Electric	t	Frank Afranji, John Walker	iou
93	Powerex Corp	m	Michael L McWilliams, Sharole Tylor	fed
94	PowerSouth Energy Cooperative	d	William Ronald Graham	muni
95	PPL Electric Utilities Corporation t		Randy Kreider	iou
96	Progress Energy	t	Phillip W. Lewis, Michael Anthony, Leslie Williams, Lee Schuster	iou
97	Public Service Company of New Mexico	m	Steven Maestas, Darren Wilkins, Patricia Merville, Roger Vaughn	iou
98	Public Service Electric and Gas Company	t	Kenneth D. Brown	iou
99	Public Utilities Commission of Ohio	e	Christopher Kotting	reg
100	Puget Sound Energy, Inc.	t	George Marshall, Bob Harshbarger	iou
101	RRI Energy Services, Inc.	g	Trent Carlson	merc
102	Sacramento Municipal Utility District	d	Steve Sorey	muni
103	Salt River Project Agricultural Improvement and Power District	t	Wendy Weathers, Michael J. Pfeister	fed
104	Salt River Project Agricultural improvement and Power District	m	Richard Lehman	fed
105	San Diego Gas & Electric Company t		Patricia vanMidde	iou
106	Santee Cooper	t	Tom Abrams	fed
107	Seattle City Light	d	Marilynn Semro, Thomas P. Rowan, Doug Rough	muni
108	Seminole Electric Cooperative, Inc.	m	Steve Wallace	muni
109	Shell Energy America (US), L.P.	m	Robert Reilley, Paul Kerr	niou
110	Shift Research, LLC	e	Jesse D. Hurley	at large
111	SonicWALL, Inc.	e	Boris Yanovsky	enduse
112	South Carolina Electric & Gas Company	t	S. Porcher Stoney	iou
113	South Carolina Electric & Gas Company	m	Kevin Spitzform	iou
114	Southern California Edison	t	Weston Williams	iou
115	Southern California Edison Co.	g	Tracy Bibb	iou
116	Southern Company Services, Inc.	g	John Ciza	iou
117	Southern Company Services, Inc.	m	Joel Dison	iou
118	Southern Company Services, Inc.	t	R.D. (Dean) Ulch, John Lucas, JT Wood, James Y. Busbin, Daryl McGee	iou
119	Southwest Power Pool	i	Carl Monroe, Michael Desselle, Charles Yeung	
120	Southwest Transmission Cooperative, Inc.	t	Larry D. Huff	muni
121	Southwestern Power Administration t		Tracey Stewart	fed
122	SunGard	e	Andrew Tritch	at large
123	Tampa Electric Company	m	Gail M. McKaig	iou
124	Tenaska, Inc.	g	Scott Helyer	merc
125	Tennessee Valley Authority	g	Kathy York	fed

North American Energy Standards Board Membership List
As of June 11, 2010

	Organization	Seg[1]	Contact	Sub-Seg[2]
126	Tennessee Valley Authority	m	Belinda Thornton, Valerie Crockett	fed
127	Tennessee Valley Authority	t	Chuck Feagans	fed
128	TransAlta Energy Marketing Canada	m	Kim McRunnel	niou
129	Tri-State Generation and Transmission Association, Inc.	t	Keith V. Carman	muni
130	Tri-State G&T Association, Inc.	g	Janelle Marriott	muni
131	Tucson Electric Power Company	t	Raquel Aguilar, Judy Fregoso, Ed Beck	iou
132	United Illuminating Company, The	t	Rose Pysh	iou
133	Vermont Public Power Supply Authority	g	William J. Gallagher	muni
134	Westar Energy, Inc.	g	Shah Hossain, Grant Wilkerson	iou
135	Western Area Power Administration t		JB Hite	fed
136	Western Area Power Administration m		Jeffrey Ackerman	fed
137	Western Electricity Coordinating Council	t	Michelle Mizumori, Louise McCarren	at large
138	We Energies (Wisconsin Electric)	d	Linda Horn	iou
139	We Energies (Wisconsin Electric)	g	James R. Keller	iou
140	WPPI Energy	d	Mike Stuart	muni
141	Wisconsin Public Service Corporation	g	Christopher Plante, Charles W. Severance, Neal Balu	iou
142	Xcel Energy Inc.	m	David Lemmons	iou
Retail Gas Quadrant Members:				
1	AGL Resources Inc.	d	Gregory Becker	
2	Allegro Development	s	Kimberly Page	
3	American Public Gas Association (APGA)	d	Alonzo Weaver, Joe Stengel	
4	Asgard Energy, LLC	s	Rhett C. Shumway	
5	Capacity Center	s	Greg Lander	
6	Clarity Systems, Ltd.	s	Steve O'Neil	
7	Dominion Retail, Inc.	s	Richard A. Zollars	
8	Duke Energy Corp	d	Dan Jones	
9	Exelon Energy	s	Sheree M. Petrone	
10	International LNG Alliance	s	David Sweet	
11	Latitude Technologies	s	Leigh Spangler	
12	National Fuel Gas Distribution Corporation	d	Mike Novak	
13	Pennsylvania Office of Consumer Advocate	e	Tanya J. McCloskey	
14	Sierra Southwest Cooperative Services, Inc.	s	Rick Vogel	
15	Sprague Energy Corp.	s	Paul Scoff	
16	Systrends USA	s	Dave Darnell	
17	UGI Utilities, Inc.	d	Paul Szykman	
18	Vectren Retail, LLC	s	Tami Wilson	
19	Wisconsin Public Service Corporation	d	Dennis Derricks, Ken Thiry	

North American Energy Standards Board
Board of Directors Meeting – 6-24-10



	YTD Budget	YTD Actuals	YTD Prior Year	YE Est. 2010	2010 Budget
Income	1633	1622	1502	2067	2057
Expense	696	699	668	1919	1936
Net Income	937	923	834	148	121

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Membership YTD 2010:

- **January 31, 2010**: Membership in January is 300. Membership by quadrant is: 122 (WGQ), 19 (REQ), 19 (RGQ), 140 (WEQ). Year to date, we have had five new memberships (3 – WEQ, 1 – REQ, 0 – RGQ, 1 – WGQ) and two member resignation (1 – WGQ, 0 – REQ, 0 – RGQ, 1 – WEQ). We began the year with 297 members (122 (WGQ), 18 (REQ), 19 (RGQ), 138 (WEQ)). In January, we had five new member join, Cenovus Energy, Inc. (WGQ, Services), 8760, Inc. (WEQ, Technology/Services), Organization for the Advancement of Structured Information Standards (OASIS) (WEQ, Technology/Services), Avista Corporation (WEQ, Transmission, IOU) and Maryland Public Service Commission (REQ, End Users) . We had two member resignations, Southeastern Power Administration (WEQ, Generation, Fed/State/Prov) and Pacific Gas and Electric (WGQ, Pipeline).
- **February 28, 2010**: Membership in February is 302. Membership by quadrant is: 122 (WGQ), 20 (REQ), 19 (RGQ), 141 (WEQ). Year to date, we have had eight new memberships (5 – WEQ, 2 – REQ, 0 – RGQ, 1 – WGQ) and three member resignation (1 – WGQ, 0 – REQ, 0 – RGQ, 2 – WEQ). We began the year with 297 members (122 (WGQ), 18 (REQ), 19 (RGQ), 138 (WEQ)). In February, we had three new members join, Public Utilities Commission of Ohio (WEQ, End Users, Regulator), National Institute of Standards and Technology (WEQ, Technology/Services) and Public Utilities Commission of Ohio (REQ, End Users/Public Agencies). We had one member resignation, Progress Energy (WEQ, Marketers/Brokers, IOU).
- **March 31, 2010**: Membership as of March is 302. Membership by quadrant is: 123 (WGQ), 20 (REQ), 18 (RGQ), 141 (WEQ). Year to date, we have had ten new memberships (6 – WEQ, 2 – REQ, 0 – RGQ, 2 – WGQ) and five member resignation (1 – WGQ, 0 – REQ, 1 – RGQ, 3 – WEQ). We began the year with 297 members (122 (WGQ), 18 (REQ), 19 (RGQ), 138 (WEQ)). In March, we had two new members join, Brookfield Energy Marketing, Inc. (WEQ, Marketers/Brokers, NIOU) and American Midstream Partners, LP (WGQ, Services). We had two member resignations, APS Marketing and Trading (WEQ, Marketers/Brokers, IOU) and Interstate Gas Supply (RGQ, Services).
- **April 30, 2010**: Membership as of April is 302. Membership by quadrant is: 122 (WGQ), 20 (REQ), 18 (RGQ), 142 (WEQ). Year to date, we have had twelve new memberships (8 – WEQ, 2 – REQ, 0 – RGQ, 2 – WGQ) and seven member resignation (2 – WGQ, 0 – REQ, 1 – RGQ, 4 – WEQ). We began the year with 297 members (122 (WGQ), 18 (REQ), 19 (RGQ), 138 (WEQ)). In April, we had two new members join, Energy Curtailment Specialists, Inc. (WEQ, End Users/End Use) and Nebraska Public Power District (WEQ, Transmission, Muni/Coop). We had two member resignations, TranServ International, Inc. (WEQ, IGO) and Foothills Energy Ventures, LLC (WGQ, Producers).
- **May 31, 2010**: Membership as of May is 303. Membership by quadrant is: 121 (WGQ), 21 (REQ), 19 (RGQ), 142 (WEQ). Year to date, we have had fourteen new memberships (8 – WEQ, 3 – REQ, 1 – RGQ, 2 – WGQ) and eight member resignation (3 – WGQ, 0 – REQ, 1 – RGQ, 4 – WEQ). We began the year with 297 members (122 (WGQ), 18 (REQ), 19 (RGQ), 138 (WEQ)). In May, we had two new members join, Comverge, Inc. (REQ, Service Providers/Suppliers) and Sierra Southwest Cooperative Services, Inc. (RGQ, Service Providers/Suppliers). We had one member resignation, Anadarko Energy Services Company (WGQ, Services).
- **June 11, 2010**: Membership as of June 11 is 302. Membership by quadrant is: 120 (WGQ), 21 (REQ), 19 (RGQ), 142 (WEQ). Year to date, we have had 15 new memberships (8 – WEQ, 3 – REQ, 1 – RGQ, 3 – WGQ) and ten member resignation (5 – WGQ, 0 – REQ, 1 – RGQ, 4 – WEQ). We began the year with 297 members (122 (WGQ), 18 (REQ), 19 (RGQ), 138 (WEQ)). In June, we had one new member join, Eastern Shore Natural Gas Company, (WGQ, LDC). We had two member resignations, Goodrich Petroleum Company, LLC (WGQ, Producers) and Mirant Energy Trading, LLC (WGQ, End Users).

North American Energy Standards Board

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Meeting Analysis YTD 2010:

2010 NAESB Meeting Analysis

		Total		WEQ		WGQ		Retail		Joint		Board	
Month	**Event**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**
January	Meetings/Hours	9	45.5	6	30	3	15.5	0 0		0 0		0 0	
	Conf. Calls/Hours	14	36	3	12	2 4		1 5		8	15	0 0	
	Monthly Total	23 81.		5	9	42	5 19.	5	1	5	8	15	0	0
February	Meetings/Hours	8	43	4	24	3	17	0 0		1 2		0 0	
	Conf. Calls/Hours	9	24.5	2	8	1 2		1 5		5	9.5	0 0	
	Monthly Total	17 67.		5	6	32	4	19	1	5	6 11.	5	0	0
March	Meetings/Hours	12	48	6	28	3	13	1 2		0 0		2 5	
	Conf. Calls/Hours	16	46.5	5	17.5	2	4	2 12		7 13		0	0
	Monthly Total	28	94.5	11	45.5	5 17		3 14		7 13		2	5
April	Meetings/Hours	9	47	4	21	5	26	0 0		0 0		0 0	
	Conf. Calls/Hours	15	36	3	13	5 9		0 0		7	14	0 0	
	Monthly Total	24 83		7	34	10 35		0	0	7 14		0	0
May	Meetings/Hours	14	70	7	35	4	20.5	2	9.5	1 5		0 0	
	Conf. Calls/Hours	18	54.5	5	25	5	8.5	1 6		6	12	1 3	
	Monthly Total	32	124.5	12	60	9 29		3	15.5	7 17		1	3
June	Meetings/Hours	0	0										
	Conf. Calls/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	
July	Meetings/Hours	0	0										
	Conf. Calls/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	
August	Meetings/Hours	0	0										
	Conf. Calls/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	
September	Meetings/Hours	0	0										
	Conf. Calls/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	
October	Meetings/Hours	0	0										
	Conf. Calls/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	

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2010 NAESB Meeting Analysis

		Total		WEQ		WGQ		Retail		Joint		Board	
Month	**Event**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**	**#**	**Hrs**
November	Meetings/Hours	0	0										
	Conf. Call/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	
December	Meetings/Hours	0	0										
	Conf. Call/Hours	0	0										
	Monthly Total	0 0		0	0	0 0		0 0		0 0		0 0	
Total YE 2010	**Meetings/Hours**	**52**	**253.5**	**27**	**138**	**18**	**92**	**3**	**11.5**	**2 7**		**2 5**	
	Conf. Calls/Hours	**72**	**197.5**	**18**	**75.5**	**15 27.**	**5**	**5**	**28**	**33 63.**	**5**	**1**	**3**
	Events/Hours	**124**	**451**	**45**	**213.5**	**33**	**119.5**	**8 39.**	**5**	**35 70.**	**5**	**3**	**8**
Total YE 2009	**Meetings/Hours**	**142 707.**	**5**	**71**	**380**	**44 228.**	**5**	**8**	**27.5**	**11**	**51.5**	**8**	**20**
	Conf. Calls/Hours	**137**	**354.5 51**		**180**	**20**	**41.5**	**22**	**48**	**42**	**81**	**2**	**4**
	Events/Hours	**279**	**1062**	**122**	**560**	**64**	**270**	**30**	**75.5**	**53**	**132.5**	**10**	**24**

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Product Access YTD 2010:

- **Monthly:** The copyright policy and list of companies with authorized access to our standards is prepared monthly and posted on the NAESB web site. It includes all companies who have legal access to the NAESB standards.
- **June 1, 2010:** The copyright report as of June 1, 2010 is posted on the web site. Statistics for purchases of standards are maintained monthly and can be seen below as of May 31, 2010:

2010 Purchases of NAESB Products

Product/Month	J	F	M	A	M	J	J	A	S	O	N	D	Total
NAESB Home Page Access for Password Protected Area ($3500)	1	0	3	1	2								**7**
NAESB WGQ / REQ / RGQ Internet Electronic Transport Manual, V 1.0 ($150/$900)	0	0	0	0	0								**0**
Retail Base Contract for Sales/Purchase of Natural Gas/Electricity ($25/$50)	1	0	1	1	1								**4**
WGQ Base Contract for Sales/Purchases of Natural Gas/FTAA/OBA (Vs 1.7 and older) ($25/$50 ea)	0	0	0	1	0								**1**
WGQ Base Contract for Sales/Purchases of Natural Gas/FTAA/OBA (V 1.8, 1.9) ($25/$50 ea)	15	1	4	5	6								**31**
WGQ Electronic CD-Rom of Standards Manuals (Vs 1.7 and older) ($150/$900)	0	0	0	0	0								**0**
WGQ Electronic CD-Rom of Standards Manuals (V 1.8) ($150/$900)	11	0	0	0	0								**11**
WGQ Electronic CD-Rom of Standards Manuals (V 1.9) ($150/$900)	0	2	7	2	4								**15**
WEQ Electronic CD-Rom of Standards Manuals (Vs 002 and older) ($150/$900)	0	0	0	0	0								**0**
WEQ Electronic CD-Rom of Standards Manuals (V 002.1) ($150/$900)	1	0	0	0	2								**3**
NAESB WGQ Contracts Course/ eTariff Workshop CD-Rom	0	0	0	0	0								**0**
NAESB REQ/RGQ Model Business Practices CD-Rom (Vs 1.1 and older) ($150/$900)	0	0	0	0	0								**0**
Final Actions ($50)	0	0	0	0	0								**0**
Total	**29**	**3**	**15**	**10**	**15**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**72**

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Non-member Three Day Limited Waivers

Product/Month	J	F	M	A	M	J	J	A	S	O	N	D	Total
NAESB Final Actions or Individual Standard Nos.	1				1								2
WGQ Standards Manuals (V 1.4)													0
WGQ Standards Manuals (V 1.5)													0
WGQ Standards Manuals (V 1.6)													0
WGQ Standards Manuals (V 1.7)													0
WGQ Standards Manuals (V 1.8)		1											1
WGQ Standards Manuals (V 1.9)													0
WEQ Standards Manuals (V 001)													0
WEQ Standards Manuals (V 002)													0
WEQ Standards Manuals (V 002.1)													0
NAESB REQ/RGQ Model Business Practices (V 1.0)													0
NAESB REQ/RGQ Model Business Practices (V 1.1)													0
NAESB REQ/RGQ Model Business Practices (V 1.2)													0
Total	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**

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FINANCIAL REPORT YEAR-TO-DATE 2010 – ACCRUAL BASED, AS OF APRIL 30, 2010

BALANCE SHEET

Assets	
Current Assets	$437,602.48
Accounts Receivable	$234,000.00
Fixed Assets	$40,802.33
Other Assets	$31,903.94
Total Assets	$735,808.75
Liability & Equity	
Deferred Revenue	$118,500.02
Accounts Payable	$45,627.98
Retained Earnings	($350,980.62)
Net Income	$922,661.37
Total Liability and Equity	$735,808.75

INCOME AND EXPENSE

Income	$1,621,991.60
Expense	$699,330.23
Net Income	$922,661.37

INCOME AND EXPENSES TO BUDGET - YTD

2010 YTD Budget for Income	$1,633,151,30
Income Variance (over budget)	$1,823.42
2010 YTD Budget for Expenses	$696,543.30
Expenses Variance (under budget)	($3,091.49)

YEAR END ANALYSIS

2010 Budget	$2,056,933.00
Revenue YTD Actual	$1,621,991.60
Remaining Revenue Estimated through YE	$444,941.40
Estimated YE Revenue	$2,066,933.00
Expenses YTD Actual	$699,330.23
Remaining Expenses Estimated through YE	$1,220,000.00
Estimated YE Expenses	$1,919,330.23
Difference – YE Revenue – YE Expenses	$147,602.77

CASH BASIS ANALYSIS

Beginning Balance 1-1-10	$682,359
Total Cash Income	$463,464
Total Costs	$742,410
Ending Balance	$403,413

ACCOUNTS RECEIVABLE ANALYSIS

Accounts Receivable	$225,500.00
Items more than 90 Days Outstanding	$45,500.00
Items 61 up to 90 Days Outstanding	$6,500.00
Items 31 up to 60 Days Outstanding	$13,000.00
Items 30 Days or less Outstanding	$160,500.00

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June 11, 2010

TO: NAESB Resources committee

FROM: Rae McQuade, NAESB President and COO

RE: Membership Analysis, Vacancies on the Board and EC, Membership Prospects – June 24, 2010

via email

Dear NAESB Resources Committee:

This report has several parts, all of which should provide information to support the committee as it determines actions to take to solicit participation and membership in NAESB. We truly appreciate your efforts in helping grow our organization --

Best Regards,
Rae

Enclosures:
(1) Resources Committee Roster
(2) Membership Prospects: (a) short-term, (b) wind generators, (c) solar, (d) demand side management – energy efficiency, (e) groups, (f) long-term, (g) smart grid – technology companies
(3) New Members in 2009 and 2010
(4) Member Resignations in 2009 and 2010
(5) Vacancies on the Board and Executive Committee
(6) Membership Roster Sorted by Company

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Attachment 1

North American Energy Standards Board
Board Resources Committee Roster

Quadrant	Contact and Company	Phone	Email
WEQ	Jeff Ackerman, Western Area Power Administration	970-240-6209	ackerman@wapa.gov
WEQ	Scott Brown, Exelon Corporation	202-347-8096	scott.brown@exeloncorp.com
WGQ	Adrian Chapman, Washington Gas	703-750-7677	achapman@washgas.com
WEQ	Michael Desselle, Southwest Power Pool	501-614-3206	mdesselle@spp.org
WEQ	Bruce Ellsworth, New York State Reliability Council	603-746-3447	ellsworth@conket.com
WEQ	Jesse Hurley, Shift Research, Inc.	774-262-9093	jesse.hurley@shiftresearch.com
REQ	Ruth Kiselewich, Baltimore Gas & Electric	410-470-1361	ruth.c.kiselewich@bge.com
REQ	David Koogler, Dominion Virginia Power	804-771-3429	david.koogler@dom.com
RGQ	Greg Lander, Commerce Energy Group	978-535-7500	glander@skippingstone.com
WGQ	Mike Novak, National Fuel Gas Distribution	716-857-7884	novakm@natfuel.com
WGQ	Lori-Lynn Pennock, Salt River Project	602-236-4360	lori-lynn.pennock@srpnet.com
WGQ	Keith Sappenfield, EnCana Oil & Gas (USA), Inc.	720-876-3693	keith.sappenfield@encana.com
WGQ	Jim Templeton, Comprehensive Energy Services	713-759-6999	jrtemplton@aol.com
WEQ	Roy True, Aces Power Marketing	317-344-7203	royt@acespower.com

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Attachment 2a

NAESB Membership Prospects – Short Term, Individual Companies and Organizations

Membership Prospects		Source	Contact/Notes	Assignment
✓	8760, Inc.	R. McQuade	Jim Buccigross – ***Joined 01/2010***	D. Rager
	AARP			S. Brown, J. Ackerman
×	Accenture LLP	R. McQuade	Jeb Bartley – resent membership information on 05/10/2010. Response 05/14/2010 not joining at this time	D. Rager
	Agway Energy Services	M. Novak	Mark Anton, II – sent membership information 03/09/2010; sent follow-up 06/10/2010	D. Rager
✓	American Midstream Partners, LP	R. McQuade	Marty Patterson – ***Joined 03/2010***	R. McQuade/D. Rager
	ATC	S. Brown	Burt Garvin – Scott will approach	S. Brown
✓	Avista Corporation	Office	Jeff Schlect – ***Joined 03/2010***	D. Rager
HPA	Brickfield, Burchette, Ritts & Stone, PC	Office	Damon E. Xenopoulos – sent membership information 04/22/2010. Company decision to only subscribe to NAESB HPA at this time. ***HPA received 06/04/2010***	D. Rager
	Bridge Energy	Board Resources	Jim Walker – membership information sent 03/08/2010; sent follow-up 06/10/0210	D. Rager
✓	Brookfield Energy Marketing, Inc.	Office	Nicolas Bosse – ***Joined 03/2010***	D. Rager
✓	Cenovus Energy, Inc.	K. Sappenfield	Paul Kahler – ***Joined 01/2010***	K. Sappenfield
✓	Comverge, Inc.	S. Brown/R. True	S. Brown and R. True will follow-up with Norm Brownell – Wendell Miyaji ***Joined 05/2010***	S. Brown, R. True
	C-Power	S. Brown	Mike Gordon – Scott will approach.	S. Brown
×	Dean Ventures Natural Gas Trading	Office	Max Rausch – sent membership information 01/22/2010 – not interested at this time.	D. Rager

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Attachment 2a

NAESB Membership Prospects – Short Term, Individual Companies and Organizations

	Membership Prospects	Source	Contact/Notes	Assignment
	Direct Energy	Board Resources	Michael Flores and Chuck Moore – sent membership information 03/08/2010. Denise spoke to Diedra Senegal on 03/24/2010 still considering. Sent follow-up 06/10/2010	D. Rager
✓	Eastern Shore Natural Gas Company	Office	Elaine B. Bittner – ***Joined 06/10/2010***	D. Rager
	El Paso Electric	D. Rager	Pablo Onate – sent information on 06/07/2010; presenting business case to company management as of 06/10/2010	D. Rager
✓	Energy Curtailment Specialist	Board Resources	Bob Boyle and Daniel Perez – sent membership information 03/08/2010 – ***Joined 04/2010***	D. Rager
	EnerNex	J. Booe	Eric Gunther – Jonathan met with Eric - sent follow-up materials 12/02/09	J. Booe
	FCC	J. Booe	Jeff Goldthorp – 04/13/2010 follow-up sent on 06/10/2010	J. Booe
	FixProtocol	J. Booe	Jim Northey – sent membership information 01/27/2010	J. Booe
	Gateway Energy Services Corporation	M. Novak	William D. Cateno – sent membership information 03/09/2010; sent follow-up 06/10/2010	D. Rager
	General Electric	Board Resources	Charles R. Smith – sent membership information 03/08/2010; sent follow-up 06/10/2010	D. Rager
	Google	J. Hurley	David Drummand	J. Hurley
×	Green Energy Corporation	D. Koogler	Daniel C. Gregory – sent membership information 12/27/2009 – sent follow up 03/09/2010; could only join at a reduced rate due to budget at this time.	D. Rager
	GreenSmith Energy Management Systems		Dr. Chen-Young – sent information on 12/3/08 as requested by R. McQuade	R. McQuade
	General Dynamics	J. Hurley	Naudia Short	
	GridPoint	J. Hurley		J. Hurley

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Attachment 2a

NAESB Membership Prospects – Short Term, Individual Companies and Organizations

Membership Prospects		Source	Contact/Notes	Assignment
×	Gridwise Alliance	R. McQuade	Karen Hamilton – Rae meeting on 04/02/2009 – not joining at this time.	R. McQuade
	Honeywell	J. Booe	Dave Kaufman – sent information and purchased WEQ and REQ M&V and DR standards – 11/30/09	J. Booe
	International Transmission Company (ITC)	S. Brown	Terry Harvill – Scott met with Terry on July 8	S. Brown
	Lockheed Martin	R. McQuade	Matt O'Connor – sent membership information 04/28/2010	D. Rager
	Mantech International	J. Hurley	Tiffany Gates	
✓	Maryland Public Service Commission	J. Booe	Dan Norfolk – sent membership information 01/27/2010 – ***Jointed 01/2010***	J. Booe
	Microsoft	J. Hurley		J. Hurley
×	Missouri Public Service Commission	Office	Dave Sommerer – sent membership information 02/12/2010. Not interested in joining at this time.	D. Rager
	National Fuel Resources, Inc.	R. McQuade	Joseph N. Del Vecchio – sent information 05/10/2010; received reply of consideration on 05/12/2010; sent follow-up on 06/10/2010	D. Rager
✓	National Institute of Standards and Technology (NIST)	R. McQuade/J. Booe	Dr. David A. Wollman – ***Joined 02/2010***	D. Rager/J. Booe
✓	Nebraska Public Power District	Office	Don Schmit – ***Joined 04/2010***	D. Rager
	North Carolina PUC	D. Koogler		
✓	Organization for the Advancement of Structured Information Standards (OASIS)	R. McQuade/J. Booe	Laurent M. Liscia – ***Joined 01/2010***	D. Rager/J. Booe
×	Paloma Business Solutions	R. McQuade	John McNevin - sent membership information 4/3/2009, D. Rager follow-up 4/13/2009	D. Rager
×	PNE Wind USA, Inc.	M. Desselle/R. McQuade	Edmundo O. Toro – Rae sent information 8/13/09. Sent follow-up on 12/02/09 via email.	R. McQuade

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Attachment 2a

NAESB Membership Prospects – Short Term, Individual Companies and Organizations

	Membership Prospects	Source	Contact/Notes	Assignment
*	Progress Energy	D. Rager	James Eckelkamp – rejoining WEQ, Marketers/Brokers; ***application received 5/18/2010 – waiting on payment of dues***	D. Rager
✓	Public Utilities Commission of Ohio	R. McQuade/J Booe	Chris Kotting – sent membership information 02/04/2010 – ***Joined 02/2010 REQ and WEQ (End Users)***	
*	Sempra Pipelines & Storage Company	Office	Martine Blair – sent information 05/19/2010; ***application for WEQ, Pipeline received 05/20/2010 – waiting on payment of dues***	D. Rager
	Shipley Energy Company	M. Novak	Brett Hoffmaster – sent membership information 03/10/2010; sent follow-up 06/10/2010	D. Rager
✓	Sierra Southwest Cooperative Services, Inc.	Office	Rick Vogel – ***Joined 05/2010***	D. Rager
	Silver Springs Network	J. Hurley		
	Solar Alliance, The	S. Brown	Carrie Cullen Hitt – Scott will contact with info provided by Rae. Carrie is presenting to her Board.	S. Brown
	Summitt Blue	Board Resources	Kevin Cooney – sent membership information 03/08/2010; sent follow-up 06/10/2010	D. Rager
	Terremark	J. Hurley	Chris Day	
	US Telecom	J. Hurley	Robert Mayer – sent information packets 05/24/2010	J. Hurley/D. Rager
	Verisign	J. Hurley		J. Hurley
	Verizon	J. Hurley	Robert Heffron – sent information packets 05/24/2010; reply on 05/25/2010 will call; follow-up on 06/10/2010	J. Hurley/D. Rager
	Vinson & Elkins	J. Hurley		

✓ = has joined NAESB
* = membership application received/payment pending
× = not joining at this time

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Attachment 2b

NAESB Membership Prospects – Wind Generators

Membership Prospects	Source	Contact/Notes	Assignment
Acciona	Resource Committee		S. Brown, R. McQuade, M. Desselle
First Wind	Resource Committee	Kurt Adams	S. Brown
Gamesa	Resource Committee		S. Brown
Horizon	Resource Committee		S. Brown, R. McQuade, M. Desselle
Iberdola	Resource Committee		S. Brown, R. McQuade, M. Desselle
John Deere Wind	Resource Committee	John Harvey	R. True
PNE Wind USA, Inc.	M. Desselle/R. McQuade	Edmundo O. Toro – Rae sent information 8/13/09.	R. McQuade

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Attachment 2c

NAESB Membership Prospects – Solar

Membership Prospects	Source	Contact/Notes	Assignment
Solar Alliance, The	S. Brown	Carrie Cullen Hitt – Scott will contact with info provided by Rae. Carrie is presenting to her Board.	S. Brown
Solar Trade Association	Resource Committee	Mack Thompson	
Solar Electric Power Association (SEPA)	Resource Committee	Julia Hamm, Executive Director	

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Attachment 2d

NAESB Membership Prospects – Demand Side Management – Energy Efficiency

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
Accenture	Participant DSM	Jeb Bartley	
Allegheny Energy, Inc.	Participant DSM	*David P. Johnson, Cynthia A. Menhorn*	
Allegheny Power	Participant DSM	*Terri Brabiak, Cassandra Robinson, Thomas Rone, Jason J. Wojciechowicz*	
Alliance to Save Energy	Participant DSM	Steve Capanna, Joe Loper	
American Gas Association	Participant DSM	Mariam Arnaout	
ANB Enterprises, Inc.	Participant DSM	S. Blakrishnan	
Arizona Corporation Commission	Participant DSM	Bob Gray	
Association of Energy Services Professionals (AESP)	Participant DSM	Meg Matt	
Balhoff & Rowe, LLC	Participant DSM	Bob Rowe	
Ballard Spahr Andrews & Ingersoll, LLP	Participant DSM	Howard H. Shafferman	
Bayboro EC, Inc.	Participant DSM	Yolanda Mason	
BHMM Energy Services, LLC	Participant DSM	Vicky A. Bailey	
Brattle Group, The	Participant DSM	Philip Q. Hanser	
Brickfield, Burchette, Ritts and Stone - *HPA Subscriber*	Participant DSM	***Shaun Moher, Damon Xenopoulos***	
California Public Utility Commission	Participant DSM	Dian Grueneich	
CLEAResult Consulting	Participant DSM	Eric Stern	
CLEAResult Incorporated	Participant DSM	Glenn Garland, Jonathan Kleinman, John Oyhenart	
Climate Master	Participant DSM	Dan Ellis, Robert Sallee	
Colorado Public Utilities Commission	Participant DSM	Jeff Hein	
ComVerge	**Participant DSM**	**Cynthia Arcate, Bob Bress, Wendell Miyaji, Blake Morris**	
Consortium for Energy Efficiency	Participant DSM	Marc Hoffman, Monica Nevius	
CPower, Inc.	**Participant DSM**	**Janette Dudley, Murtaza Kapadia, Dirk Mahling, Nicholas Justice Planson**	

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NAESB Membership Prospects – Demand Side Management – Energy Efficiency

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
Demand Response Coordinating Committee	Participant DSM	Katherine George, Paul M. Pietsch	
Demand Response & Energy Consulting, LLC	Participant DSM	Marie Pieniazek	
Distributed Energy Financial Group LLC	Participant DSM	Jamie Wimberly	
Distribution Control Systems, Inc.	Participant DSM	Ben Boyd	
District of Columbia Public Service Commission	Participant DSM	Daniel Cleverdon	
Duquesne Light Company	Participant DSM	Dan Flaherty	
Eagle Energy Partners	Participant DSM	Mary Anne Berlinsky	
Efficiency Valuation Organization	Participant DSM	John Cowan, Abraham Raher	
Electric Power Research Institute	Participant DSM	Bob Entriken, Krish Gomatom, Jennifer Robinson	
Electricity Consumers Resource Council (ELCON)	Participant DSM	John Hughes	
Energy and Environmental Economics, Inc.	Participant DSM	Ren Orans	
Energy Connect	Participant DSM	Jacob Dobscha	
Energy Curtailment Specialists, Inc.	**Participant DSM**	**Daniel Perez, Glen E. Smith, Paul Tyno**	
Energy Regulatory Affairs, Alcoa, Inc.	Participant DSM	Tom Gianneschi	
Energy Services Group	Participant DSM	George Behr	
Energy Trust of Oregon	Participant DSM	Fred Gordon	
Energy Washington Week	Participant DSM	David Clarke	
Bector Consulting	Participant DSM	Brett A. Perlman	
Environmental Law and Policy Center	Participant DSM	John N. Moore	
EPRI	**Participant DSM**	**Bernie Neenan**	
Evergreen Software Inc.	Participant DSM	Marc Tannenbaum	
Fox, Smolen & Associates	Participant DSM	Paul N. Smolen	
Frontier Associates	Participant DSM	Phil Audet, Ed Garcia, John McClain, Greg Landreth, Jay Zarnikau	

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NAESB Membership Prospects – Demand Side Management – Energy Efficiency

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
Gainesville Regional Utilities	Participant DSM	Earl Fair	
GDS Associates, Inc.	Participant DSM	Richard Spellman	
Good Company Associates	Participant DSM	Greg Ewing, Steve Isser, Robert King	
GoodCents	Participant DSM	Bill Bland, Robert Mason, Liza Thompson	
GreenSmith Energy Management Systems	Participant DSM	Michael Chen-Young	
Gridpoint	Participant DSM	Marija Zivanovic	
Honeywell	Participant DSM	Donna Harper	
Honeywell Utility Solutions	Participant DSM	Thomas McMahon	
Institute for Electric Efficiency	Participant DSM	TD Smith	
International Program Measurement and Verification Protocol (IPMVP)	Participant DSM	Steve Schiller	
Itron, Inc.	Participant DSM	Chris Haslund, Dave Hanna	
JEA	Participant DSM	PG (Bud) Para	
Kansas City Power & Light	Participant DSM	Jason Jones	
KEMA Services	Participant DSM	Daniel Waintroob	
Kema/Xnergy	Participant DSM	Mimi Goldberg, Liz Hicks	
Lawrence Berkeley National Laboratory	Participant DSM	Chuck Goldman, Gryason Heffner	
Lockhheed Martin Information Technology	Participant DSM	Mark R. Bowen	
Loeffler Tuggey Pauerstein Rosenthal, LLP	Participant DSM	Rebecca A. Klein	
Maine Office of Public Advocate	Participant DSM	Richard Davies	
Maine Public Utilities Commission	Participant DSM	Denise Bergeron	
Market Development Group	Participant DSM	Katherine Johnson	
Mendota Group, LLC	Participant DSM	Grey Staples	
Metropolitan Washington Council of Governments	Participant DSM	Jeff King	
Midwest Energy Efficiency Alliance	Participant	Alicia Ward	

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NAESB Membership Prospects – Demand Side Management – Energy Efficiency

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
	DSM		
Monsanto	Participant DSM	Gary Kajander	
National Association of State Utility Consumer Advocates	Participant DSM	Charles A. Acquard	
National Energy Board	Participant DSM	John McCarthy	
National Energy Marketers Association	Participant DSM	Stacey Rantala	
NC Utilities Commission – Public Staff	Participant DSM	Jack Floyd, Bob Hinton	
New York Public Service Commission	Participant DSM	Diane Barney	
New York Department of Public Service	Participant DSM	Alice Miller, Lia Rosi	
New York State Department of Public Service	Participant DSM	Sigmund Peplowski, Stacey Harwood, William (Bill) Saxonis	
Nexus Market Research, Inc.	Participant DSM	Greg Clendenning, Tim Pettit	
Northeast Energy Efficiency Partnerships, Inc.	Participant DSM	Julie Michals, Elizabeth Titus	
Northeast Energy Efficiency Project	Participant DSM	Sue Coakley	
Norhtrop Grumman, Tech. Services	Participant DSM	Thomas A. Adams	
Northwest Power and Conservation Council	Participant DSM	Tom Eckman	
NSTAR Electric & Gas	**Participant DSM**	**David Olivier, Dave Weber, Lisa Shea**	**J. Hurley**
Occidental Energy Ventures Corp	Participant DSM	Michelle D'Antuono	
Occidental Chemical	Participant DSM	Scott Wardle	
Office of Weatherization and Intergovernmental Program, EE-2K	Participant DSM	Faith S. Lambert	
Public Utilities Commission of Ohio – ***joined 02/2010***	Participant DSM	Thom Pearce	
Ontario Power Authority	Participant DSM	Neil Hutchings	
Otter Tail Power Company	Participant DSM	Kim Pederson, Rebeca Wentler	
Peak Load Management Association (PLMA)	Participant DSM	Elliott Boardman, Craig Boice	
Policy Solutions	Participant DSM	Anne Arquit	
Praxair	Participant DSM	David Meade	

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NAESB Membership Prospects – Demand Side Management – Energy Efficiency

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
Public Utility Commission of Texas	Participant DSM	Shawnee Claiborn-Pinto, Cliff Crouch, Ernest Garcia, Theresa Gross, Voiteh Yaroshevich	
RETX	Participant DSM	Ross Malme	
Southeast Energy Efficiency Alliance	Participant DSM	Kelly Ross Gillespie	
Southern California Gas Company	Participant DSM	Lee Stewart	
Southwest Energy Efficiency Alliance	Participant DSM	Howard Geller	
Summit Blue Consulting	Participant DSM	Mark Klos, Daniel Violette, Kevein Coney	
Synapse Energy Economics	Participant DSM	Paul Peterson	
TecMarket Works	Participant DSM	Nick Hall	
The Gee Strategies Group	Participant DSM	Robert W. Gee	
The Regulatory Assistance Project	Participant DSM	Richard Sedano	
TXU Energy	Participant DSM	Mack Wallace	
U.S. Environmental Protection Agency	Participant DSM	Stacy Angel, Nikolaas Dietsch	
U.S. Demand Response Coordinating Committee	Participant DSM	Dan Delurey	
UISOL	Participant DSM	Scott Coe	
University of Texas MD Anderson Cancer Center	Participant DSM	Ron Russell	
VA State Corporation Commission	Participant DSM	David R. Eichenlaub	
Vermont Energy Investment Corp.	Participant DSM	Bolleen Orsburn	
Vermont Public Service Board	Participant DSM	Pam Stonier	
Virginia State Corporation Commission	Participant DSM	Diane Jenkins	
Warren Energy engineering, LLC	Participant DSM	Kevin Warren	

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Attachment 2e

NAESB Membership Prospects – Groups

Membership Prospects	Source	Contact/Notes	Assignment
End Users	Resources Committee	Should hold meetings with john Anderson for ideas after we begin the sessions for ISOs and RTOs.	S Brown/M Desselle
Munis and Coops	Resources Committee	R. True will approach APPA and NRECA about opportunities to speak about NAESB to raise awareness and increase interest in membership. Mr. True followed up with APPA but will provide the NAESB office with a more up to date calendar prior of APPA events prior to the next meeting.	R. True
Western Groups - WECC	Resources Committee	WECC has been a member since May 2005. Conference call held with J Ackerman, B Schwermann, M Wells and L Westerfield. Meeting held on October 27 to speak to them about NAESB.	S Brown/M Desselle/R. McQuade
ABBA Energy Limited ?	Resource Committee		

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Attachment 2f

NAESB Membership Prospects – Long Term

Membership Prospects	Source	Contact/Notes	Assignment
AES Corporation - Indianapolis Power & Light Company	EEI - EPSA		
Alaska Energy and Resources Company	EEI		
ALLETE - Minnesota Power - Superior Water, Light and Power	EEI		
Alliant Energy Corporation - Interstate Power and Light Co - Wisconsin Power and Light Co	EEI		
Arizona Corporation Commission	NERC		
Avista Utilities	EEI		
Big Rivers Electric Corp.	NERC		
Central Vermont Public Service Corporation	EEI		
CH Energy Group, Inc. - Central Hudson Gas & Electric Corp	EEI		
Clarksdale Public Utilities Commission	NERC		
DPL Inc. - The Dayton Power and Light Company	EEI		
Duquesne Light Holdings - Duquesne Light Company	EEI		S. Brown
East Kentucky Power Coop.	NERC		
El Paso Electric Company	EEI		M. Desselle
Electric Energy, Inc.	EEI		
Electric Power Research Institute	NERC		
Farmington Electric Utility System	NERC		
Goldman Sachs & Co.	EPSA		S. Brown
Great Plains Energy, Inc. - Kansas City Power & Light Company	EEI		M. Desselle
Great River Energy	NERC		
GridAmerica LLC	NERC		
Hawaiian Electric Industries, Inc. - Hawaii Electric Light Co., Inc. - Maui Electric Co., Ltd.	EEI		
Huntsville Utilities	NERC		
InterGen	EPSA		
Kansas City Board of Public Utilities	NERC		
MDU Resources Group, Inc. - Montana-Dakota Utilities Co.	EEI		
MGE Energy, Inc. - Madison Gas and Electric Co.	EEI		
Missouri Office of Public Counsel	NERC		
Mt. Carmel Public Utility Company	EEI		
National Energy & Gas Transmission Inc.	EPSA		
National Energy Board	NERC		

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NAESB Membership Prospects – Long Term

Membership Prospects	Source	Contact/Notes	Assignment
Nebraska Public Power District – joined 04/2010	NERC		
Northeast Power Coordinating Council			M Desselle
Northern Star Generation Co. -- NSTAR	EPSA-EEI		
Nuclear Management Company, LLC	EEI		
Ohio Valley Electric Corporation	EEI		
Omaha Public Power District	NERC		
Ontario Energy Board	NERC		
Pepco Holdings, Inc. - Pepco	EEI		
Pinnacle West Capital Corporation -- (APS)	EEI		
PNM Resources, Inc. - Public Service Co of New Mexico	EEI		
Praxair, Inc.	NERC		
Quebec Energy Board	NERC		
Shell Trading	EPSA		S. Brown
Sierra Pacific Resources - Nevada Power Company - Sierra Pacific Power Company	EEI		
Sithe Energies Inc.	EPSA		
Snohomish County PUD No.1	NERC		
Strategic Energy LLC	EPSA		
TECO Energy, Inc. - Tampa Electric Company	EEI		S. Brown
TNP Enterprises, Inc. - Texas-New Mexico Power Company	EEI		
TransAlta	NERC		
Trans-link			M Desselle
UIL Holdings Corporation - The United Illuminating Company	EEI		
UniSource Energy Corporation - Tucson Electric Power Company	EEI		
Utah Public Service Commission	NERC		
Vermont Electric Power Company, Inc.	EEI		
Wheelabrator Technologies Inc.	EPSA		
Wolf Creek Nuclear Operating Corporation	EEI		

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Attachment 2g

NAESB Membership Prospects – Smart Grid (Technology Companies)

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
Abidance Consulting (DLC International)	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Aegix Consulting	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
AESI-US, Inc.	S. Brown	Loreto D. Sarrachini - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Agiliance, Inc.	S. Brown	Mark Lockareff - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Akonix Sytems, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Akuacom	**Participant SGSTF**	**Edward Koch**	
Allen Systems Group, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
AssurX, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
AUS, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Axentis	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Barbeion Software Corporation	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
BOW Networks	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Bridge Energy Group, Inc.	**Participant SGSTF**	**Jim Walker**	
Bullzi Security, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
CA, Inc.	S. Brown	Bill Warren - D. Rager - sent letter with membership information 4/23/2009	D. Rager

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NAESB Membership Prospects – Smart Grid (Technology Companies)

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
Ceelox, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
CipherOptics	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Compliance Spectrum	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
ControlPath	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Cooper Power Systems, Inc. (Cybectec)	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
CoreTrace Corporation	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Corpedia, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Critical Watch	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Corporate Risk Solutions, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Deloitte & Touche, LLP	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Dyonyx	S. Brown	Fred Pratt - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Ember	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
EnerNex Corporation	**Participant SGSTF**	**Erich W. Gunther**	**J. Booe**
EnerVision, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
ENOSERV	S. Brown	D. Rager - sent letter with membership information	D. Rager

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NAESB Membership Prospects – Smart Grid (Technology Companies)

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
		4/23/2009	
Eviance	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Erado Message Control Solutions	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
ERLPhase Power Technologies, Ltd.	S. Brown	Michael Weiblen - D. Rager - sent letter with membership information 4/23/2009	D. Rager
EthicsPoint, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Eureka Software	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
FishNet Security, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Fix Protocol	**Participant SGSTF**	**Kathleen Callahan, Courtney Doyle, Jim Northey, Ryan Pierce**	
General Electric	**Participant SGSTF**	**Charles Smith**	
Gilliam Wesley International	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Global DataGuard, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Gridpoint	**Participant SGSTF**	**R. Scott Crowder, III, Stephen Haber**	
Gridwise Architecture Council	**Participant SGSTF**	**Dr. Kenneth P. Wacks**	
Grier Consulting Group, LLC	S. Brown	Chris Grier - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Honeywell	**Participant SGSTF**	**David R. Kaufman**	**J. Booe**
HP Atalla Security Products	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Industrial Defender	S. Brown	D. Rager - sent letter with membership information	D. Rager

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Attachment 2g

NAESB Membership Prospects – Smart Grid (Technology Companies)

(Bold = Active participant in DSM-EE activities.)

Membership Prospects	Source	Contact/Notes	Assignment
		4/23/2009	
Industry Compliance Institute	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Intellibind	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Ivara Corporation	S. Brown	Kathy Steel - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Jefferson Wells	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
KEMA	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Kestrel Power Engineering, LLC	S. Brown	Mike Fogarty - D. Rager - sent letter with membership information 4/23/2009	D. Rager
KPMG LLP	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Lawrence Berkeley National Laboratory	**Participant SGSTF**	**Dave Watson**	
LogRhythm, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Loma Consulting	S. Brown	Earl S. Hill - D. Rager - sent letter with membership information 4/23/2009	D. Rager
The MathWorks	S. Brown	Jack Little - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Matrikon	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
McCoy Power Consultants	S. Brown	Steven W. McCoy - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Methodware	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager

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Membership Prospects	Source	Contact/Notes	Assignment
MetricStream, Inc.	S. Brown	Gunjan Sinha - D. Rager - sent letter with membership information 4/23/2009	D. Rager
MLJ Energy Group	S. Brown	Michael T. Brown - D. Rager - sent letter with membership information 4/23/2009	D. Rager
NCircle Network Security	S. Brown	Abe Kleinfeld - D. Rager - sent letter with membership information 4/23/2009	D. Rager
N-Dimension Solutions Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
NetVision	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Network & Security Technologies, Inc.	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Nexant, Inc.	S. Brown	Basem Sarandah - D. Rager - sent letter with membership information 4/23/2009	D. Rager
North American Energy Services	S. Brown	D. Rager - sent letter with membership information 4/23/2009	D. Rager
Oxford Consulting	S. Brown	Michelle Abreu - D. Rager - sent letter with membership information 4/23/2009	D. Rager
Pacific Northwest National Laboratory	**Participant SGSTF**	**Steve Widergren**	
Policy Technologies International, Inc.	S. Brown	D. Rager - sent letter with membership information 4/24/2009	D. Rager
Portland Gas and Electric	**Participant SGSTF**	**Albert Chiu**	
Power Decisions Consulting	S. Brown	D. Rager - sent letter with membership information 4/24/2009	D. Rager
POWER Testing and Energization, Inc.	S. Brown	D. Rager - sent letter with membership information 4/24/2009	D. Rager
Powersmiths International, Inc.	S. Brown	D. Rager - sent letter with membership information 4/24/2009	D. Rager
PricewaterhouseCoopers LLP	S. Brown	D. Rager - sent letter with	D. Rager

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Membership Prospects	Source	Contact/Notes	Assignment
		membership information 4/24/2009	
Quality Plus Engineering, LLC	S. Brown	Greg Hutchins - D. Rager - sent letter with membership information 4/24/2009	D. Rager
Quanta Technology	S. Brown	James (Jim) M. Blackman - D. Rager - sent letter with membership information 4/24/2009	D. Rager
Quizzicle	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
RavenEye	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Resolver, Inc.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Rocky Mountain Power Services, Inc.	S. Brown	Matthew Fulk - D. Rager - sent letter with membership information 4/29/2009	D. Rager
RW Beck	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Securicon, LLC	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
SecuSolutions Ltd.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
SenSage, Inc.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Sirius Solutions, LLP	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Slalom Consulting	S. Brown	Brian Jacobsen - D. Rager - sent letter with membership information 4/29/2009	D. Rager
Softential, Inc.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager

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Membership Prospects	Source	Contact/Notes	Assignment
SOURCEfire	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Southwest Microwave, Inc.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Sph3r3, LLC	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Structure Consulting Group, LLC	S. Brown	Mike Peterson - D. Rager - sent letter with membership information 4/29/2009	D. Rager
Surf Technologies, Inc.	S. Brown	Jacques Davignon - D. Rager - sent letter with membership information 4/29/2009	D. Rager
Symantec	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
System Operations Success, Int'l. (SOS Int'l)	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Telkonet, Inc.	S. Brown	Jason L. Tienor - D. Rager - sent letter with membership information 4/29/2009	D. Rager
Teltone	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Towerline Software	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
TriGeo Network Security	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Tripwire	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Utility Decision Support (UDS) Group	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Universal Safety Response, Inc.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager

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NAESB Membership Prospects – Smart Grid (Technology Companies)

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Membership Prospects	Source	Contact/Notes	Assignment
University of North Carolina	**Participant SGSTF**	**Toby Considine**	
Utility Services LLC	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Utility System Efficiencies, Inc.	S. Brown	Daniel H. Wood - D. Rager - sent letter with membership information 4/29/2009	D. Rager
Vidient	S. Brown	Frank Pao - D. Rager - sent letter with membership information 4/29/2009	D. Rager
Vigilant Power Solutions, Inc.	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Verisign	S. Brown	D. Rager - sent letter with membership information 4/29/2009	D. Rager
Xtensible Solutions	**Participant SGSTF**	**Joe Zhou**	
Z Global Engineering & Energy Solutions	S. Brown	Ziad Alaywan - D. Rager - sent letter with membership information 4/29/2009	D. Rager

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Attachment 3

North American Energy Standards Board
New Members since January 2009

Quadrant	Segment	Contact and Company	Reason Joined	Month Joined
WEQ	Distribution	Alabama Municipal Electric Authority Contact: Ray Phillips	Participation	April
WEQ	Generation	Arkansas Electric Coopeartive Corporation Contact: Ricky Bittle	Participation	July
RGQ	Supplier	Asgard Energy, LLC Contact: Rhett C. Shumway	Participation	June
REQ	End Users	City of Houston Contact: James P. Cargas	Participation	June
RGQ	Services	Clarity Systems, Ltd. Contact: Steve O'Neil	Participation	September
WGQ	Pipeline	Golden Pass Pipeline, LLC Contact: Susan Braden	Participation	January
WEQ	Marketer	Los Angeles Department of Water and Power Contact: Michael S. Webster	Participation	January
WEQ	Transmission	Los Angeles Department of Water and Power Contact: Mohammed Johar Beshir	Participation	January
WEQ	Transmission	Manitoba Hydro Contact: Blaine Poff	Participation	July
WEQ	Marketers	Manitoba Hydro Contact: Blaine Poff	Participation	July
WGQ	Producer	Noble Americas Corp. Contact: Boris Yanovsky	Participation	September
REQ	End Users	Pennsylvania Public Utility Commission Contacts: Robert F. Wilson and Annunciata E. Marino	Participation	August
WEQ	End Users	Shift Research, LLC Contact: Jesse D. Hurley	Participation	July
WEQ	End Users	SonicWALL, Inc. Contact: Boris Yanovsky	Participation	October
WEQ	End Users	SunGard Consulting Services, LLC Contact: Austin Morris	Participation	April

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Attachment 3

North American Energy Standards Board
New Members since January 2010

Quadrant	Segment	Contact and Company	Reason Joined	Month Joined
WEQ	Technology/Services	8760, Inc. Contact: Jim Buccigross	Participation	January
WGQ	Pipeline	American Midstream Partners, LP	Participation	March
WEQ	Transmission	Avista Corporation Contact: Jeff Schlect	Participation	January
WEQ	Marketers/Brokers	Brookfield Energy Marketing, Inc Contact: Nicolas Bosse	Participation	March
WGQ	Services	Cenovus Energy, Inc. Contact: Paul Kahler	Participation	January
REQ	Service Providers/Suppliers	Comverge, Inc. Contact: Wendell Miyaji	Participation	May
WGQ	LDC	Eastern Shore Natural Gas Company Contact: Elaine B. Bittner	Participation	June
WEQ	End Users	Energy Curtailment Specialists, Inc. Contact:Marie Pieniazek	Participants	April
REQ	End Users	Maryland Public Service Commission Contact: Dan Norfolk	Participation	January
WEQ	Technology/Services	National Institute of Standards and Technology Contact: David A. Wollman	Participation	February
WEQ	Transmission	Nebraska Public Power District Contact: Don Schmit	Participation	April
WEQ	Technology/Services	Organization for the Advancement of Structured Information Standards (OASIS) Contact: Laurent M. Liscia	Participation	January
REQ	End Users	Public Utilities Commission of Ohio Contact: Christopher Kotting	Participation	February
WEQ	End Users	Public Utilities Commission of Ohion Contact: Christopher Kotting	Participation	February
RGQ	Service Providers/Suppliers	Sierra Southwest Cooperative Services, Inc. Contact: Rick Vogel	Participation	May

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Attachment 4

North American Energy Standards Board
Member Resignations in 2009

Quadrant	Segment	Contact and Company	Reason Resigned	Month Resigned
REQ	End Users	Advantage IQ, Inc.	No reason given for non renewal	August
WEQ	Marketers/Brokers	Ameren Services	No reason given for non renewal	July
RGQ	Distribution	Baltimore Gas & Electric Company	Company decision to not renew – only keeping two memberships	September
WGQ	LDC	Cascade Natural Gas Corporation	Company decision to not renew due to resources *(May reconsider later in year)*	January
WGQ	Pipeline	Chandeleur Pipe Line Co	No reason given for non renewal	March
WGQ	Services	Cheniere LNG Marketing	May reconsider in June 2009	May
REQ	Distribution	Consolidated Edison Company of NY	Non-renewal due to budget	July
REQ	Services	Constellation NewEnergy, Inc.	Non-renewal due to budget	November
REQ	Supplier	Direct Energy Business Services	No reason given for non renewal	September
WEQ	Generation	Edison Mission Marketing & Trading, Inc.	No reason given for non renewal	September
WEQ	Generation	ElectriCities of North Carolina (North Carolina Eastern Municipal Power Agency)	Company decision to not renew – only keeping one membership	January
WEQ	Distribution	Exelon Corporation – PECO Energy	No reason given for non renewal	March
WEQ	Generation	Exxon Mobil Gas Marketing	Company decision to not renew – only keeping one membership	June
WGQ	Services	Hess Corporation	No reason given for non renewal	March
WGQ	Producer	Husky Energy Marekting, Inc.	Company decision to not renew – purchased contract	October
WGQ	Producer	Husky Gas Marketing, Inc.	Company decision to not renew – purchased contract	October
WGQ	End Users	Husy Marketing and Supply Company	Company decision to not renew – purchased contract	October
WEQ	Transmission	Hydro One Networks	No reason given for non renewal	September
REQ	Serv Prov/Supp	ICF International	No reason given for non renewal	October
WEQ	Marketers/Brokers	Imperial Irrigation District	Company decision to not renew – only keeping one membership	January
WGQ	Services	Lehman Brothers Commodity Services, Inc.	No reason given for non renewal	March
REQ	Distribution	MidAmerican Energy Company	Company decision to not renew – only keeping one membership	May
WEQ	Marketers/Brokers	Navigant Consulting, Inc.	Non-renewal due to budget	November
WGQ	LDC	New Jersey Natural Gas Company	No reason given for non renewal	December
WEQ	Marketers/Brokers	North Carolina Electric Municipal Power Agency #1	Company decision to not renew – only keeping one membership	January

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Member Resignations in 2009

REQ	End Users	Office of Public Advocate, State of Maine	No reason given for non renewal	June
WEQ	Generation	Ontario Power Generation	Non-renewal due to budget	July
WEQ	Transmission	Otter Tail Power Company	No reason given for non renewal	April
WGQ	Pipeline	Ozark Gas Transmission, LLC	No reason given for non renewal	October
WEQ	Generation	PacifiCorp	Company decision to not renew – only keeping two memberships	June
WEQ	Marketers/Brokers	Portland General Electric	Company decision to not renew – only keeping one membership	July
WEQ	Marketers/Brokers	PSEG Energy Resources and Trade LLC	No reason given for non renewal	January
WEQ	Generation	PSEG Power LLC	No reason given for non renewal	January
WEQ	Distribution	Public Power Council	No reason given for non renewal	May
REQ	Distribution	Public Service Electric & Gas Company	No reason given for non renewal	April
WEQ	Distribution	Public Service Electric and Gas Company	Company decision to not renew – only keeping two memberships	October
WEQ	Generation	Qualedi, Inc.	No reason given for non renewal	November
WEQ	Distribution	Southern Company Services, Inc.	Company decision to not renew – only keeping other memberships	December
WEQ	Marketers/Brokers	SUEZ Energy Marketing NA, Inc.	No reason given for non renewal	February
WGQ	Services	SUEZ Energy Marekting NA, Inc.	No reason given for non renewal	November
WEQ	Distribution	Tennessee Valley Authority	Company decision to not renew – only keeping four memberships	November
WGQ	Services	UBS Energy LLC	No reason given for non renewal	January
WGQ	Services	Virginia Power Energy Marketing	No reason given for non renewal	May
WGQ	LDC	Westfield Gas & Electric Light Dept.	No reason given for non renewal	February
RGQ	Distribution	Xcel Energy	Company decision to not renew due to resources *(May reconsider later in 2010)*	January

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North American Energy Standards Board
Member Resignations in 2010

Quadrant	Segment	Contact and Company	Reason Resigned	Month Resigned
WGQ	Services	Anadarko Energy Services Company	No reason given for non renewal	May
WEQ	Marketers/Brokers	APS Marketing and Trading	No reason given for non renewal	March
WGQ	Producer	Foothills Energy Ventures, LLC	No reason given for non renewal	April
WGQ	Producer	Goodrich Petroleum	Non-renewal (Economic Conditions)	June
RGQ	Service Providers/Suppliers	Interstate Gas Supply	Non-renewal (Switched to HPA)	March
WGQ	End Users	Mirant Energy Trading, LLC	No reason given for non renewal	June
WGQ	Pipeline	Pacific Gas & Electric	No reason given for non renewal	January
WEQ	Marketers/Brokers	Progress Energy	Company decision to not renew – only keeping one memberships	February
WEQ	Generation	Southeastern Power Administration	No reason given for non renewal	January
WEQ	IGO	TranServ International, Inc.	Non-renewal (NAESB WEQ, IGO segment is not applicable to their core business any longer)	April

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Attachment 5

North American Energy Standards Board and Executive Committee Vacancies as of March 10, 2010

Vacant Seats	Quadrant	Seat	Segment	Subsegment
5	Retail Electric	Board (3)	End Users/Public Agencies (3)	
		Executive Committee (2)	End Users/Public Agencies (2)	
14	Retail Gas	Board (6)	Distributors (2) End Users/Public Agencies (4)	
		Executive Committee (8)	Distributors (2) End User /Public Agencies (4) Service Providers/ Suppliers (2)	
23	Wholesale Electric	Board (11)	Distribution/Load Serving Entities (LSE) (2)	IOU (at large)(1) Competitive Retailer (at large) (1)
			Transmission (2)	IOU (at large) (1) At-Large (at large)(1)
			Generation (1)	Merchant (at large) (1)
			Marketers/Brokers (1)	At-Large (at large) (1)
			End User (1)	Large Industrial (at large) (1)
			Technology/Services (4)	
		Executive Committee (12)	End User (3)	Large Industrial (at large)(1) Commercial/Residential (at large)(1) End Use (In other segments) (at large)(1)
			Distribution/LSE (1)	Muni/Coop (at large)(1)
			Marketers/Brokers (1)	Not IOU Affiliated (at large) (1)
			Technology/Services (6)	
			Generation (1)	IOU (1)
3	Wholesale Gas	Board (2)	LDC (1) Services (1)	
		Executive Committee (1)	Services (1)	

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Attachment 6

Membership Roster Sorted by Company as of June 10, 2010

Quadrant	Segment	Sub-Segment	Member Company	Contact	State / Province
WEQ	ts		8760, Inc.	Jim Buccigross	AL
WGQ	s		8760, Inc.	Jim Buccigross	AL
WEQ	m	muni	ACES Power Marketing LLC	Roy J. True, Amadou Fall	IN
RGQ	d		AGL Resources Inc.	Gregory Becker	GA
WEQ	d	muni	Alabama Municipal Electric Authority	Ray Phillips	AL
REQ	u		Alabama Power	Judy W. Ray	AL
WEQ	i		Alberta Electric System Operator	Diana Pommen, Henry Ren	ALB
RGQ	s		Allegro Development	Kimberly Page	TX
WGQ	pl		Alliance Pipeline LP	Cathie Legge, Brian Troicuk	ONT
WGQ	l		Ameren Corporation	Scott Glaeser, Ken Dothage, Jim Massmann	MO
REQ	u		Ameren Services Company	Patrick Eynon	MO
WEQ	d	iou	American Electric Power Service Corp.	Barbara Radous, Joseph Hartsoe, Phil Cox	OH
WGQ	s		American Midstream Partners, LP	Marty Patterson	TX
WEQ	m	muni	American Municipal Power, Inc.	Chris Norton, Alice Walker	OH
RGQ	d		American Public Gas Association (APGA)	Alonzo Weaver, Joe Stengel	PA
WEQ	d	muni	American Public Power Association	Allen Mosher	DC
WEQ	g	merc	American Wind Energy Association	Tom Vinson	DC
WGQ	pl		ANR Pipeline Company	Sandy Meyers, Joseph E. Polland, Rene Staeb, Debbie Forth, Carol Wehlmann, Radha Raman	ALB
WGQ	pr		Apache Corporation	Maribeth Bedevian	TX
WEQ	t	iou	Arizona Public Service Company	Mark W. Hackney	AZ
WGQ	e		Arizona Public Service Company	Tom Carlson, Kelly Daly	AZ
WEQ	g	muni	Arkansas Electric Cooperative Corporation	Ricky Bittle	AR
RGQ	s		Asgard Energy, LLC	Rhett C. Shumway	CO
WGQ	pl		Atmos Energy	Steve Easley	TX
WEQ	t	iou	Avista Corporation	Jeff Schlect	WA
WGQ	s		Ballard Natural Gas, LLC	Susan Thibodeaux	TX
REQ	u		Baltimore Gas & Electric Co.	Ruth Kiselewich, Phil Precht	MD
WGQ	l		Baltimore Gas & Electric Co.	Phil Precht, Ron Jennings	MD
WGQ	s		Barclays Bank PLC	Guy Kern-Martin	NY
WEQ	g	muni	Basin Electric Power Cooperative	Jason Doerr	ND
WEQ	m	nd	Basin Electric Power Cooperative	David Raatz	ND
WEQ	t	muni	Basin Electric Power Cooperative	Dan Klempel	ND
WGQ	s		Bentek Energy, LLC	E. Russell Braziel	CO
WGQ	s		BG Energy Merchants, LLC	Martha Braddy, Denise Almoina, Susan Bailey, Melody Fontenot	TX
WEQ	t	iou	Black Hills Corporation	Larry D. Williamson	SD
WGQ	pl		Boardwalk Pipelines, LP	Randy Young, Mitch Whitehead	TX
WGQ	e		Boeing Company	Tina Burnett	WA

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Membership Roster Sorted by Company as of June 10, 2010

Quadrant	Segment	Sub-Segment	Member Company	Contact	State / Province
WEQ	d	other	Bonneville Power Administration	Sydney D. Berwager	OR
WEQ	g	fed	Bonneville Power Administration	Francis Halpin, Robin Chung	OR
WEQ	m	fed	Bonneville Power Administration	Brenda Anderson	OR
WEQ	t	fed	Bonneville Power Administration	Barbara Rehman, Tom Davis	OR
WEQ	e	lind	BP America, Inc.	Rhonda Denton	TX
WGQ	pr		BP Energy	Mark Stultz, Rhonda Denton	TX
WEQ	t	fed	British Columbia Transmission Corporation	Rohan Soulsby	BC
WEQ	m	niou	Brookfield Energy Marketing, Inc.	Nicolas Bosse	QUE
WEQ	g	fed	California Department of Water Resources	Glenn Solberg, Chi Doan	CA
WEQ	i		California ISO	Yakout Mansour	CA
WGQ	e		Calpine Energy Services, LP	Shonnie Daniel, Jay Dibble	TX
RGQ	s		Capacity Center	Greg Lander	MA
WGQ	s		Cargill Incorporated	Kathy Gerken	MN
WGQ	pl		Carolina Gas Transmission Corporation	Rae Davis, Dana B. Randall	SC
WGQ	s		Cenovus Energy, Inc.	Paul Kahler	CAN
WGQ	s		CenterPoint Energy Gas Services, Inc.	James G. Beste, Larry Kunkle	TX
WGQ	pl		CenterPoint Energy Gas Transmission Company	Larry Thomas	TX
WGQ	pl		CenterPoint Energy Mississippi River Transmission Corp.	Robert Trost	TX
WEQ	d	muni	Central Electric Power Cooperative	Arthur Fusco	SC
WGQ	pl		Cheniere Pipeline Company	Whit Scott	TX
WGQ	pr		Chevron Natural Gas	Charles (Chuck) Cook	TX
WGQ	pl		Chevron Pipe Line Company	Mary Ann Collins, Deborah Plattsmier, Jeff Kirk	TX
WGQ	pr		Cimarex Energy Co	Charlotte Baker	OK
WGQ	s		Citigroup Energy Inc.	Carrie Southard, Angela Davis	TX
REQ	e		City of Houston	James P. Cargas	TX
RGQ	s		Clarity Systems, Ltd.	Steve O'Neil	ONT
WEQ	t	iou	Cleco Power, LLC	Cindy Guillot	LA
WGQ	l		Colorado Springs Utilities	Joe M. Holmes	CO
WGQ	pl		Columbia Gas Transmission	Claire Burum	VA
WEQ	e	enduse	Comprehensive Energy Services	Jim Templeton	TX
WGQ	e		Comprehensive Energy Services	Jim Templeton	TX
REQ	s		Comverge, Inc.	Wendell Miyaji	GA
WEQ	g	merc	Conectiv Energy Supply, Inc.	Gloria Godson	DE
WGQ	pr		ConocoPhillips Gas and Power	Peter Frost	TX
WGQ	l		Consolidated Edison Company of NY	Scott Butler, Paul Olmsted	NY
WEQ	t	iou	Consolidated Edison Company of NY, Inc.	Scott Butler	NY
WGQ	s		Constellation Energy Commodities Group, Inc.	Lisa Simpkins, Joseph Kirwan, Andrea Kullman, Jennifer Scott	MD
WEQ	d	iou	Consumers Energy Company	Andrew C. Dotterweich, Frank Johnson	MI
WEQ	t	muni	Dairyland Power Cooperative	Chuck Callies	WI
WGQ	pl		Dauphin Island Gathering Partners	Katie Rice	CO

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Home Page: www.naesb.org

Attachment 6

Membership Roster Sorted by Company as of June 10, 2010

Quadrant	Segment	Sub-Segment	Member Company	Contact	State / Province
WGQ	s		DB Energy Trading	William Donnelly, Travis McCullough	NY
WGQ	e		Defense Energy Support Center	Veronica Jones, Kevin Ahern	VA
WGQ	e		Department of Energy	Christopher Freitas	DC
WEQ	g	muni	Deseret Generation & Transmission Co-operative	Curtis Winterfeld	UT
WGQ	pr		Devon Energy Corporation	Bill Green, Dianne Dunbar	OK
WEQ	g	iou	Dominion Energy Marketing, Inc.	Lou Oberski, Jalal Babik	VA
WGQ	l		Dominion Resources (Previously CNG)	Craig Columbo	VA
REQ	s		Dominion Retail	William Barkas, Richard Zelenko	VA
RGQ	s		Dominion Retail, Inc.	Richard A. Zollars	VA
WGQ	pl		Dominion Transmission, Inc.	Gary Sypolt, Ron Tomlinson	VA
REQ	u		Dominion Virginia Power	David F. Koogler, Mary Edwards	VA
WGQ	s		DTE Energy Trading, Inc.	Gregory V. Staton, James Buck, Dena Crawford, Marcia L. Hissong, Ann Marie Jambor, Cynthia Klots, Shelley Greene	MI
WEQ	g	iou	Duke Energy Americas, LLC (DEA)	Walt Yeager	OH
RGQ	d		Duke Energy Corp.	Dan Jones	OH
WEQ	d	iou	Duke Energy Corp.	Alan Pritchard	NC
WEQ	g	merc	Dynegy Power Marketing, Inc.	Ben Trammell	TX
WGQ	l		Eastern Shore Natural Gas Company	Elaine B. Bittner	DE
WEQ	n	n	Edison Electric Institute	David Owens, Dave Dworzak, James P. Fama	DC
WGQ	pr		El Paso Exploration & Production Company	David A. Webster, Stephanie Karm	TX
WGQ	pl		El Paso Natural Gas	William Griffith	TX
WEQ	m		Electric Power Supply Association	Jack Cashin, Barry Green	DC
REQ	s		Electric Reliability Council of Texas (ERCOT)	Susan Munson, Kent Saathoff	TX
WEQ	i		Electric Reliability Council of Texas (ERCOT)	Bill Blevins, Paul Wattles, Joel Mickey	TX
WEQ	t	iou	Empire District Electric Company, The	Bary K. Warren	MO
WGQ	pl		Enbridge (U.S.) Inc.	Brad Petzold	TX
WGQ	s		EnCana Marketing (USA) Inc.	Keith Sappenfield	CO
WGQ	pr		EnCana Oil & Gas (USA) Inc.	Keith Sappenfield	ALB
WEQ	e	enduse	Energy Curtailment Specialists, Inc. (ECS)	Marie Pieniazek	NY
WGQ	pl		Energy Transfer Partners, L.P.	Josie Castrejana, Miki Kolobara	TX
WEQ	e	enduse	EnerNOC, Inc.	Aaron Breidenbaugh	MA
WEQ	g	merc	Entegra Power Group, LLC	Rebecca Turner	FL
WEQ	t	iou	Entergy Services, Inc.	Edward J. Davis, Narinder Saini	LA
WGQ	e		Entergy Services, Inc.	Laura Berryman, Terry Shields	LA
WGQ	pl		Enterprise Products Partners, LP	Jeff Molinaro	TX
WGQ	pl		Equitrans, L.P.	Joseph M. Dawley	PA

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RGQ	s		Exelon Energy	Sheree M. Petrone	PA
REQ	u		Exelon Energy Delivery	Toni Garza	IL
WEQ	m	iou	Exelon Generation - Power Team	Jack Crowley	IL
WGQ	pr		ExxonMobil Gas & Power Marketing Company a division of Exxon Mobil Corporation	Randy E. Parker, John W. Poe	TX
WEQ	d	iou	First Energy Service Company	Robert M. Martinko, Thomas C. Burgess	OH
WEQ	m	iou	FirstEnergy Solutions Corp.	Mark Travaglianti	OH
WEQ	d	muni	Florida Municipal Power Agency	Frank Gaffney	FL
WEQ	g	muni	Florida Municipal Power Agency	Frank Gaffney	FL
WEQ	m	iou	Florida Power & Light Company	Gerry Yupp, Tim Gerrish	FL
WEQ	t	iou	Florida Power & Light Company	Marty Mennes, Bob Birch	FL
WGQ	e		Florida Power & Light Company	Dona Gussow, Art Morris	FL
WGQ	pl		Gas Transmission Northwest Corporation	Joseph Pollard	OR
WEQ	t	muni	Georgia Transmission Corporation	Patrick McGovern	GA
WGQ	pl		Golden Pass Pipeline, LLC	Susan Braden	TX
WGQ	pl		Great Lakes Gas Transmission	Joseph Pollard	MI
WGQ	pr		High Mount Exploration and Production, LLC	David Ogden, Sheri Heslington, Gary Weaver	VA
WEQ	t	fed	Hydro - Quebec Transenergie	Glenn Sylvain	QUE
WEQ	t	iou	Iberdrola USA Management Corporation	Mark Marini	NY
WGQ	l		Iberdrola USA Management Corporation	Mark Marini	NY
WEQ	t	iou	Idaho Power Company	Kathy Anderson	ID
WGQ	e		Imperial Irrigation District	Susie Carrillo	CA
WEQ	i		Independent Electricity System Operator (IESO)	Cristian Dragnea, Biju Gopi	ONT
WEQ	g	muni	Indiana Municipal Power Agency	Scott Berry	IN
WGQ	l		Integrys Energy Group, Inc.	David E. Wear	WI
RGQ	s		International LNG Alliance	David Sweet	DC
WGQ	pl		Iroquois Gas Transmission System	Tom Gwilliam	CT
WEQ	i		ISO New England, Inc.	Matthew F. Goldberg	MA
REQ	s		ista	Judy Bailey, J. Cade Burks, Jennifer Teel	TX
WGQ	s		JP Morgan Ventures Energy Corp	Paul Tramonte	TX
WGQ	pl		Kern River Gas Transmission Company	Brenda Horton	UT
WGQ	l		Laclede Gas Co.	Kenneth Neises	MO
RGQ	s		Latitude Technologies	Leigh Spangler	TX
WGQ	s		Latitude Technologies	Leigh Spangler	TX
WEQ	g	muni	Lincoln Electric System	Douglas Bantam	NE
WEQ	m	muni	Los Angeles Department of Water and Power	Bradford Packer, Joel F. Cordero	CA
WEQ	t	muni	Los Angeles Department of Water and Power	Mohammed Johar Beshir	CA
WGQ	s		Louis Dreyfus Energy Services L.P.	Jennifer Farris, W. Scott Harwood	CT
WGQ	e		Lower Colorado River Authority	Mickey Bell	TX
WGQ	s		Macquarie Cook Energy, LLC	Angela Jones	CA
WEQ	m	fed	Manitoba Hydro	Blaine Poff	CAN

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WEQ	t	fed	Manitoba Hydro	Blaine Poff	CAN
WGQ	pr		Marathon Oil Company	Robin Perrine	TX
REQ	e		Maryland Public Service Commission	Dan Norfolk	MD
WGQ	pr		Mewbourne Oil Company	Michael F. Shepard	TX
WEQ	d	muni	Michigan Public Power Agency	James R. Nickel	MI
WEQ	m	iou	MidAmerican Energy Company	Dennis Kimm	IA
WEQ	i		Midwest Independent Transmission System Operator	Bill Phillips, Ed Skiba	IN
WEQ	t	at large	Midwest Reliability Organization	Dan Schoenecker	MN
WEQ	d	muni	Missouri River Energy Services	Brian Zavesky	MO
WEQ	t	muni	Modesto Irrigation District	Roger Van Hoy	CA
WEQ	e	reg	National Association of Regulatory Utility Commissioners	Lou Ann Westerfield	DC
WGQ	l		National Fuel Gas Distribution	Michael Novak	NY
RGQ	d		National Fuel Gas Distribution Corporation	Mike Novak	NY
WGQ	pl		National Fuel Gas Supply Corp.	Joseph Kardas	NY
WEQ	t	iou	National Grid	Edward M, Kremzier	MA
WGQ	l		National Grid Gas Distribution Companies	Bob Superty	NY
WEQ	ts		National Institute of Standards and Technology	David A. Wollman	MS
WEQ	d	muni	National Rural Electric Cooperative Assoc.	Paul McCurley	VA
WGQ	pl		Natural Gas Pipeline Co of America	Paul Love, Stan Thomas, Mike Schisler, Paul Haas	TX
WEQ	d	muni	NCMPA1	Martin Summe, George Landis	NC
WEQ	t	muni	Nebraska Public Power District	Don Schmit	NE
WEQ	i		New York Independent System Operator	Rana Mukerji	NY
WEQ	d	at large	New York State Reliability Council	P. Donald Raymond	NY
WGQ	s		Nexen Marketing	Shelley Leavitt	ALB
WGQ	e		NextEra Energy Power Marketing, LLC	Marty Jo Rogers	FL
WGQ	l		NiSource, Inc.	George Simmons, Sorana Linder	IN
WGQ	pl		Noble Americas Corp.	Joseph Limone	CT
WGQ	pr		Noble Energy, Inc.	Richard D. Smith, Tammy M. Stevens	TX
WEQ	d	at large	North American Electric Reliability Corporation (NERC)	Gerry Adamski, Andy Rodriquez	NJ
REQ	s		North Carolina Advanced Energy Corporation	Robert K. Koger	NC
WEQ	d	muni	North Carolina Electric Membership Corporation	David Beam	NC
WEQ	t	iou	Northeast Utilities Service Company	David Boguslawski, Calvin A. Bowie	CT
WGQ	pl		Northern Border Pipeline Company	Joseph Pollard	NE
WGQ	pl		Northern Natural Gas	Nancy A. Hetrick	NE
WGQ	l		Northwest Natural Gas Company	Randolph Friedman	OR
WEQ	t	iou	Northwestern Corporation	Mike Cashell	MT
WGQ	pl		NOVA Gas Transmission Ltd.	Doug Miller	ALB
WEQ	g	merc	NRG Energy, Inc.	Alan Johnson, Jennifer J. Vosburg	NJ

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WEQ	m	iou	NV Energy	Sheryl Torrey	NV
WEQ	t	iou	NV Energy, Inc.	Patricia Englin	NV
WGQ	s		OGE Energy Resources, Inc.	Cary Metz	OK
REQ	u		Oncor	Larry Williford, Debbie McKeever	TX
WGQ	l		ONEOK	Richard Tangeman	OK
WGQ	pl		ONEOK Partners GP, LLC	Teri Tingler	NE
WEQ	e	at large	Open Access Technology International, Inc.	Michehl Gent	MN
WEQ	t	at large	Open Access Technology International, Inc.	Paul R. Sorenson	MN
WEQ	ts		Organization for the Advancement of Structured Information Standards (OASIS)	Laurent M. Miscia	MA
WEQ	m	iou	PacifiCorp	John Apperson	OR
WEQ	t	iou	PacifiCorp	Shay Labray	OR
WGQ	pl		Panhandle Eastern Pipe Line Co.	William Grygar, Kim Van Pelt	TX
WGQ	l		PECO Energy Co.	Carlos Thillet	TX
WGQ	s		Pemex Gas Y Petroquimica Basica	Juan Enrique Gonzalez Azuara	MEXICO
REQ	e		Pennsylvania Office Of Consumer Advocate	Tanya J. McCloskey, Sonny A. Popowsky	PA
RGQ	e		Pennsylvania Office of Consumer Advocate	Tanya J. McCloskey	PA
REQ	e		Pennsylvania Public Utility Commission	Robert F. Wilson, Annunciata E. Marino	PA
WGQ	l		Peoples Gas System (A division of Tampa Electric Co)	Wraye Grimard	FL
WEQ	t	iou	PHI Power Delivery	Ken Gates	DE
WEQ	i		PJM Interconnection	Patrick Brown, Cathy Wesley	PA
WGQ	s		Platts	Bill Murphy	CO
WEQ	t	iou	Portland General Electric	Frank Afranji, John Walker	OR
WGQ	pl		Portland Natural Gas Transmission System	David Haag	OR
WEQ	m	fed	Powerex Corp.	Michael L. McWilliams, Sharole Tylor	BC
WEQ	d	muni	PowerSouth Energy Cooperative	William Ronald Graham	AL
WEQ	t	iou	PPL Electric Utilities Corporation	Randy Kreider	PA
WGQ	e		PPL EnergyPlus, LLC	Anne Lovett	PA
REQ	s		PPL Solutions, LLC	James M. Minneman, Kim Wall	PA
WEQ	t	iou	Progress Energy	Phillip W. Lewis	NC
WEQ	m	iou	Public Service Company of New Mexico	Steven Maestas, Darren Wilkins, Patricia Merville, Roger Vaughn	NM
WEQ	t	nd	Public Service Electric and Gas Company	Kenneth D. Brown	NJ
REQ	e		Public Utilities Commission of Ohio	Christopher Kotting	OH
WEQ	e	reg	Public Utilities Commission of Ohio	Christopher Kotting	OH
WEQ	t	iou	Puget Sound Energy, Inc.	George Marshall, Bob Harshbarger	WA
WGQ	pl		Questar Pipeline Co.	Jerry H. Gross	UT
WGQ	s		Quorum Business Solutions Inc.	Anne Golenternek, Michael	TX

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WGQ	pl		Reliance Gas Transportation Infrastructure Limited	Lewis Jagjit S. Yadav	India
WEQ	g	merc	RRI Energy Services, Inc.	Trent Carlson	TX
WEQ	d	muni	Sacramento Municipal Utility District	Steve Sorey	CA
WGQ	e	fed	Salt River Project Agricultural Improvement & Power District	Lori-Lynn C. Pennock	AZ
WEQ	m	fed	Salt River Project Agricultural Improvement and Power District	Richard Lehman	AZ
WEQ	t	fed	Salt River Project Agricultural Improvement and Power District	Wendy Weathers, Michael J. Pfeister	AZ
WEQ	t	iou	San Diego Gas & Electric Company	Patricia vanMidde	CA
WEQ	t	fed	Santee Cooper	Tom Abrams	SC
WEQ	d	muni	Seattle City Light	Marilynn Semro, Thomas P. Rowan, Doug Rough	WA
WEQ	m	muni	Seminole Electric Cooperative, Inc.	Steve Wallace	FL
WGQ	l		Sempra Energy - Southern California Gas Co.	Lee Stewart, Rodger Schwecke	CA
WGQ	s		Sequent Energy Management, L.P.	Pat Metteauer	TX
WEQ	m	niou	Shell Energy North American (US), L.P.	Robert Reilley, Paul Kerr	TX
WGQ	s		Shell Energy North American (US), L.P.	Eric Gillaspie	TX
WEQ	e	at large	Shift Research, LLC	Jesse D. Hurley	NV
RGQ	s		Sierra Southwest Cooperative Services, Inc.	Rick Vogel	AZ
WGQ	s		SolArc, Inc.	Mark Davis	TX
WEQ	e	enduse	SonicWALL, Inc.	Boris Yanovsky	CA
WEQ	m	iou	South Carolina Electric & Gas Company	Kevin Spitzform	SC
WEQ	t	iou	South Carolina Electric & Gas Company	S. Porcher Stoney	SC
WEQ	t	iou	Southern California Edison	Weston Williams	CA
WEQ	g	iou	Southern California Edison Company	Tracy Bibb	CA
WGQ	e		Southern California Edison Company	Roman Bakke, Curt Roney	CA
REQ	s		Southern Company Services	Barbara Hingst	GA
WEQ	g	iou	Southern Company Services, Inc.	John Ciza	GA
WEQ	m	iou	Southern Company Services, Inc.	Joel Dison	GA
WEQ	t	iou	Southern Company Services, Inc.	R.D. (Dean) Ulch, John Lucas, JT Wood, James Y. Busbin, Daryl McGee	GA
WGQ	e		Southern Company Services, Inc.	Alan Kilpatrick	GA
WGQ	pl		Southern Natural Gas Co.	Renee Hyde, Tracey Nicholson, Ludean Wyatt	AL
WGQ	pl		Southern Star Central Gas Pipeline	Philip Rullman, Tim L. Thompson	KY
WGQ	l		Southwest Gas Corporation	Larry Black	NV
WEQ	i		Southwest Power Pool	Carl Monroe, Michael Desselle, Charles Yeung	AR
WEQ	t	muni	Southwest Transmission Cooperative, Inc.	Larry D. Huff	AR
WEQ	t	fed	Southwestern Power Administration	Tracey Stewart	OK
WGQ	pl		Spectra Energy Transmission	Richard Kruse, Kathryn Burch	NC
RGQ	s		Sprague Energy Corp.	Paul Scoff	NH

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WEQ	e	at large	Sungard	Andrew Tritch	TX
WGQ	s		SunGard	Lucia Nail	TX
REQ	s		SunGard Consulting Services, LLC	Austin Morris	TX
RGQ	s		Systrends	Dave Darnell	AZ
WEQ	m	iou	Tampa Electric Company	Gail M. McKaig	FL
WEQ	g	merc	Tenaska, Inc.	Scott Helyer	NE
WGQ	pl		Tennessee Gas Pipeline Company	Sue Barry, Mark Gracey	TX
WEQ	g	fed	Tennessee Valley Authority	Kathy York	TN
WEQ	m	fed	Tennessee Valley Authority	Belinda Thornton, Valerie Crockett	TN
WEQ	t	fed	Tennessee Valley Authority	Chuck Feagans	TN
WGQ	e		Tennessee Valley Authority	Valerie Crockett	TN
WGQ	s		Tiger Natural Gas	Tracy Phillips	OK
WEQ	m	niou	TransAlta Energy Marketing Canada	Kim McRunnel	ALB
WGQ	pl		TransCanada Pipelines	Doug Miller	ALB
WGQ	pl		Transwestern Pipeline Company, LOC	B lair V. Lichtenwalter, Mary Dramer, David Mendoza	TX
WEQ	g	muni	Tri-State G&T Association, Inc.	Janelle Marriott	CO
WEQ	t	muni	Tri-State Generation and Transmission Association, Inc.	Carla Javornik, Doug Reese	CO
WEQ	t	iou	Tucson Electric Power Company	Raquel Aguilar, Judy Fregoso, Ed Beck	AZ
RGQ	d		UGI Utilities, Inc.	Paul Szykman	PA
WEQ	t	iou	United Illuminating Company, The	Rose Pysh	CT
WGQ	pl		Vector Pipeline L.P.	Amy Bruhn	MI
RGQ	s		Vectren Retail, LLC	Tami Wilson	IN
WGQ	s		Vega Energy Partners, Ltd.	Julie Pincus, Lori Leeder	TX
REQ	s		Ventyx, Inc.	Nathan Chang	TX
WEQ	g	muni	Vermont Public Power Supply Authority	William J. Gallagher	VT
WGQ	l		Washington Gas Light Co.	Adrian Chapman, Mark Lowe, Paul Buckley	DC
WEQ	d	iou	We Energies	Linda Horn	WI
WEQ	g	iou	We Energies	James R. Keller	WI
WEQ	g	iou	Westar Energy, Inc.	Shah Hossain, Grant Wilkerson	KS
WEQ	m	fed	Western Area Power Administration	Jeffrey Ackerman	CO
WEQ	t	fed	Western Area Power Administration	JB Hite	CO
WEQ	t	at large	Western Electricity Coordinating Council	Michelle Mizumori, Louise McCarren	UT
WGQ	s		Williams Gas Marketing, Inc.	Rich Ficken	OK
WGQ	pl		Williams Gas Pipeline	Dale Davis, Christopher Burden	TX
WGQ	pl		Williston Basin Interstate Pipeline	Keith Tiggelaar, Gwen Schoepp, Kelly Brooks, Lori Myerchin	ND
REQ	u		Wisconsin Public Service Corporation	Dennis Derricks, Ken Thiry	WI
RGQ	d		Wisconsin Public Service Corporation	Dennis Derricks, Ken Thiry	WI

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WEQ	d	muni	WPPI Energy	Mike Stuart	WI
WEQ	m	iou	Xcel Energy Inc.	David Lemmons	CO

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via posting

TO:	NAESB Board Critical Infrastructure Committee Members and posting for Interested Industry Parties
FROM:	Jonathan Booe, NAESB Counsel
RE:	Meeting Notes for the NAESB Board Critical Infrastructure Committee
DATE:	March 22, 2010

Dear Critical Infrastructure Committee Members,

A Critical Infrastructure Committee meeting was held on March 22, 2010. The meeting was called to order at 2:00 pm C. Mr. Burks and Mr. Hurley presided over the meeting and Mr. Booe served as counsel for the meeting. The notes below serve as a record for the meeting.

Notes for the March 22, 2010 NAESB Board Critical Infrastructure Meeting

Administrative :	Ms. McQuade welcomed the participants to conference call and thanked them for attending. She noted that the Critical Infrastructure Committee is a named Board Committee and that only named participants may vote, although any interested party is welcome to participate. Ms. McQuade reviewed the roster of Committee Members and Mr. Booe provided the antitrust guidance. Mr. Burks reviewed the draft agenda. Mr. Hurley proposed that the agenda be modified to include a review of an executive summary from a whitepaper he drafted with Dr. Adams of the Department of Homeland Security ("DHS"). Mr. Burks suggested the review of the executive summary be included in the agenda as item 4c. Mr. Hurley made a motion to adopt the agenda as modified. Mr. Templeton seconded the motion and the motion passed without opposition.
Discussion and Adoption of the Scope & Mission of the Committee:	Mr. Burks reviewed the proposed scope and mission of the Committee: *The NAESB Board Critical Infrastructure Committee is created to formulate positions and identify actions and assignments that should be taken regarding cyber security and other critical infrastructure issues that affect NAESB and NAESB standards development, for Board consideration.* Mr. Gallagher asked if the scope and mission proposed by Mr. Burks accurately describes the Board's intent for the Committee when it was formed. Ms. McQuade confirmed that the Board's intent is captured by the proposed language and noted that the scope was drafted intentionally broad. Mr. McCurley confirmed that the Committee would not be responsible for drafting standards but would serve in an advisory capacity to the NAESB Board of Directors regarding critical infrastructure security issues. Mr. Hurley noted that there is currently a bill in congress that proposes the creation of a new public/private critical infrastructure protection group. Mr. Gent asked if the protection group would address design based threats. Mr. Burke suggested that the participants focus on the proposed language before addressing other issues. Mr. Templeton moved to adopt the language proposed by Mr. Burks as the scope and mission of the Critical Infrastructure Committee. Mr. Hurley seconded the motion and the motion passed without opposition.

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Notes for the March 22, 2010 NAESB Board Critical Infrastructure Meeting

Discussion and Adoption of the Scope & Mission of the Committee

National Energy Sector Cyber Organization: Ms. McQuade noted that a funding opportunity has been announced for the creation of the National Energy Sector Cyber Organization. She stated that the Organization has not yet been formed but NAESB should stay abreast of developments as there could be some overlap between the Organization's activities and the NAESB PKI standards and NERC CIP standards. Mr. Hurley stated that private industry has an interest in staying active in the cyber security field as implementation of government mandated standards can be costly. Mr. Gent stated that he would contact NERC to determine if they had any insight or information regarding the creation of the new Organization. Ms. McQuade stated that she would contact Annabelle Lee with NIST to determine if the NIST Cyber-Security Work Group is monitoring the formation of the Organization. Mr. Hurley stated that he would also contact Hank Kenchington at the Department of Energy for additional information. Mr. Gallagher stated that he has not heard anything about the funding opportunity from APPA or NRECA. He also noted the apparent shift from NERC to other standards organizations under the current Administration. Ms. Ogg suggested that NAESB be proactive in the cyber security initiative because it can be difficult to get involved in projects once groups have been formed and activities are underway. Mr. Hurley noted the severity of the consequences to the country if an attack on the U.S. electric grid is attempted and reemphasized the need to make cyber-security protection a top priority. Mr. Burks supported the participants' comments and recommended that everyone address their action items prior to the next meeting.

Mr. Hurley's White Paper: Next, Mr. Hurley reviewed the executive summary of a white paper he developed with Dr. Adam of the Department of Homeland Security. He noted that the proposal in the white paper discusses the need for accurate, real-time information concerning attacks and other reliability concerns to be communicated across the electric grid. He stated that the white paper requests funding for a research product and that he would be happy to share the proposal with the participants on the conference call. Ms. McQuade stated that the project would have to be done in coordination with NERC as there are obviously reliability implications. Mr. Gallagher asked if there are cyber security standards for the natural gas industry. Ms. Van Pelt stated that the standards might be mandated by the Department of Transportation. Mr. Hurley confirmed Ms. Van Pelt's statement and undertook to discuss the activities of the Committee with the Jeff Weeks at the Department of Transportation. Mr. Burks stated the Committee needs to develop a recommendation to be given to the Board of Directors concerning the white paper. Ms. McQuade suggested that the Managing Committee review the whitepaper before any Board action is taken and noted that it is positive to let others know that NAESB is involved in cyber security. Mr. Hurley stated it is important for the Administration to see that the industry is moving quickly on the issue.

Smart Grid Cyber Security Report: Ms. McQuade reviewed the NIST Smart Grid Cyber Security Report. Mr. Hurley stated that Report is inconsistent and a bit ambiguous, in that it is very specific in some areas and very broad in others. He also noted that if the FERC mandates cyber security standards it could be very expensive for the industry to implement. Mr. Gent supported Mr. Hurley's statement and asked about NERC's involvement in the development of the report. Mr. McCurley stated that he is chairing the NERC Smart Grid Task Force and that Aaron Bennett, the NERC staff representative, has been monitoring the NIST activities. Ms. McQuade asked Mr. McCurley if the NERC Task Force has been coordinating with NIST Cyber Security Work Group. Mr. McCurley responded that the Task Force has focused on developing a report regarding reliability concerns of smart grid applications and has not provided any direct review or analysis of the NIST Report to the Work Group. Mr. Hurley stated that NIST is leading the development of standards that will have a direct impact on NERC standards and overlap is inevitable. He also questioned whether the FERC is aware of the lack of coordination. Mr. McCurley stated that the NERC CIP standards group is aware of the NIST activities but he does not know how involved they are in the development of the Report. He and Mr. Rodriquez undertook to contact Mark Lauby with NERC for more information.

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Notes for the March 22, 2010 NAESB Board Critical Infrastructure Meeting

Other Business/Next Meeting and Action Items:

Ms. McQuade reviewed the action items from the meeting:

1. Mr. Gent to contact NERC to gain information on the development of the National Energy Sector Cyber Organization
2. Ms. McQuade to contact Annabelle Lee of NIST to gain information on the development of the National Energy Sector Cyber Organization
3. Mr. Hurley to contact Hank Ketchington of the DoE to gain information on the development of the National Energy Sector Cyber Organization
4. Mr. Hurley to contact Jeff Weeks of the DoE to discuss the activities of the Committee and the existence of cyber security standards related to the natural gas industry
5. Managing Committee to review executive summary of Mr. Hurley's white paper
6. Mr. McCurley and Mr. Rodriquez to contact Mark Lauby with NERC to gain information concerning NERC's involvement in the NIST Smart Grid Cyber Security Report.

Mr. Burks reviewed the schedule of conference calls for the Critical Infrastructure Committee and the participants agreed to meet at 2 month intervals. The next meeting is scheduled for May 13, 2010.

Ms. Van Pelt asked if the Committee will address physical infrastructure as well as cyber infrastructure security issues. Ms. McQuade stated that the Committee will address but that the focus will be on cyber security. Ms. Van Pelt stated that it would be helpful if the participants could limit the use of acronyms as the new participants come up to speed on the topics. Ms. McQuade directed her to the documents posted that provided context for the discussion, including the descriptions of the acronyms used.

Adjourn:

Mr. Templeton moved to adjourn and Mr. Hurley seconded the motion. The motion passed without opposition and the meeting was adjourned at 3:16 pm Central.

Work Papers Provided for the Meeting:

Meeting Related Documents:

NIST Draft Smart Grid Cyber Security Strategy Press Release: http://www.nist.gov/public_affairs/releases/smartgrid_020310.html

Smart Grid Cyber Security Strategy and Requirements Draft Report: http://csrc.nist.gov/publications/drafts/nistir-7628/draft-nistir-7628_2nd-public-draft.pdf

Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0000245: http://www.security-innovation.org/pdfs/NoticeofIntent-01-2010.pdf

Roadmap to Secure Control Systems in the Energy Sector: http://www.oe.energy.gov/DocumentsandMedia/roadmap.pdf

U.S. Department of Energy Control System Security Program: http://www.oe.energy.gov/controlsecurity.htm

Article: U.S. Fails in Simulated Cyber attack: http://www.darkreading.com/security/cybercrime/showArticle.jhtml?articleID=222900775&cid=nl_DR_DAILY_2010-02-18_h

Article: Mock cyber attack shows U.S. unpreparedness: http://www.net-security.org/secworld.php?id=8878

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Notes for the March 22, 2010 NAESB Board Critical Infrastructure Meeting

CRITICAL INFRASTRUCTURE COMMITTEE MEMBERS

Name	Organization	Attendance
Jim Buccigross	8760, Inc.	Phone
Ralph Cleveland	AGL Resources, Inc.	
Joelle Ogg	Brunenkant & Cross, LP	Phone
Chris Eisenbrey	Edison Electric Institute	
Bob Gee	Gee Strategies Group	Phone
J. Cade Burks	ista	Phone
Leigh Spangler	Latitude Technologies	
Paul McCurley	NRECA	Phone
Bill Boswell	NAESB General Counsel	
Rick Smead	Navigant Consulting, Inc.	
Diane Barney	New York State Department of Public Service Staff	
Bruce Ellsworth	New York State Reliability Council	
Michehl Gent	Open Access Technology International, Inc	Phone
Chris Kotting	Public Utilities Commission of Ohio	
Thomas Pearce	Public Utilities Commission of Ohio	Phone
Jesse D. Hurley	Shift Research, LLC	Phone
Michael Desselle	Southwest Power Pool	
Dave Darnell	Systrends USA	
Susanna B. Barry	Tennessee Gas Pipeline Company	
Chuck Feagans	Tennessee Valley Authority	Phone
Valerie Crockett	Tennessee Valley Authority	Phone
Christopher Freitas	US Department of Energy	
Brett Perlman	Vector Consultants	
William Gallagher	Vermont Public Power Supply Authority	Phone

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Notes for the March 22, 2010 NAESB Board Critical Infrastructure Meeting

OTHER ATTENDEES

Attendee	Organiz ation
Jim Templeton	Comprehensive Energy Services
Jeanne Kurzynowski	Consumers Energy
Phyllis Withers	Duke Energy
Bill Griffith	El Paso
Mike Stender	El Paso
Keith Sappenfield	Encana Oil & Gas
Ed Davis	Entergy Services
Rob Martinko	FirstEnergy
Tom Gwilliam	Iroquois Gas Transmission System
Jason Marshall	Midwest ISO
Ed Skiba	Midwest ISO
Jonathan Booe	NAESB
Rae McQuade	NAESB
Andy Rodriquez	NERC
Kim Van Pelt	Panhandle Eastern Pipe Line
Richard Ishikawa	Southern California Gas Company
Steve Ritter	Southern Union
Kathryn Burch	Spectra Energy Transmission
Kathy York	Tennessee Valley Authority
Christopher Burden	Williams Gas Pipeline
Dale Davis	Williams Gas Pipeline
Jeremy Zins	Williston Basin Interstate Pipeline Company

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via posting

TO: NAESB Board Critical Infrastructure Committee Members and posting for Interested Industry Parties

FROM: Cory Galik Cummings, NAESB Counsel

RE: Meeting Notes for the NAESB Board Critical Infrastructure Committee

DATE: June 10, 2010

Dear Critical Infrastructure Committee Members,

A Critical Infrastructure Committee meeting was held on May 13, 2010. The meeting was called to order at 1:00 pm C. Mr. Hurley presided over the meeting and Ms. Cummings served as counsel for the meeting. The notes below serve as a record for the meeting.

Notes for the May 13, 2010 NAESB Board Critical Infrastructure Meeting

Administrative: Mr. Hurley welcomed the participants to conference call and thanked them for attending. Ms. Cummings provided the antitrust guidance. The draft agenda was reviewed. Mr. Buccigross made a motion to adopt the agenda as modified. Ms. Ogg seconded the motion and the motion passed without opposition.

Review of the NERC CIP Standards Mr. Hurley noted that the NERC CIP standards were currently available in draft form. There was discussion regarding whether or not NIST would provide its NISTIR specifications to NERC to go through the standards development process in order to be incorporated into the NERC CIPC standards. It was noted that NERC reliability standards development procedures require all work products to go through this process. Ms. McQuade also noted that NERC's standards development process would allow NERC to modify the NISTIR specifications if NERC members determine it is necessary to do so. Mr. Marshall will ask NERC for its position on this issue. *[After the meeting, Mr. Marshall noted that NERC had not been approached by NIST regarding this issue.]*

Sate of the Industry Briefing by Jesse Hurley Mr. Hurley presented his State of the Industry slide show to participants. He noted that the telecom industry has a unique interest in critical infrastructure. Speaking with Verizon, AT&T and U.S. Telecom, Mr. Hurley noted that the telecom industry understands there is a disjointed process between telecom representatives and the utility sector. He further noted that a partnership with NAESB to develop a joint statement in federal space would not meet much opposition. He asked if NAESB was doing enough to make membership aware of potential new efforts of federal regulators. Ms. McQuade stated that NAESB would keep in touch with regulators on this issue, particularly NARUC. She noted that NAESB and NARUC have a close working relationship. Membership is being made aware of changes to the industry. If there will be an impact on NAESB's standards, the NAESB office will work to ensure that membership is informed. She added that if the effect of pending legislation or regulations is not specific to NAESB standards, then typically trade associations represent their membership. Mr. Hurley noted that the FCC views telecom security standards development as their responsibility. Ms. McQuade responded that the market is in a transformative period and the telecom industry will play a bigger role in this area. Ms. Ogg noted that those participants producing the current work products related to smart grid would benefit from education on this topic. Ms. McQuade suggested a brief presentation at the board meeting on how working with the telecom industry may change and the potential impact of these changes. She also suggested establishing liaisons with both the Utilities Telecom Association and US Telecom.

In reviewing the slide on Solutions, Ms. McQuade asked if NERC had made arrangements to discuss this issue. Mr. Hurley stated that there are facilities that allow for confidential disclosure but discussion between regulators is not currently taking place. During the discussion, it was noted that there was a North American Transmission Forum, which consists of most transmission owners and operators in North America and they have a cyber security group. They share information amongst themselves, which may include information of a sensitive nature, but do not necessarily communicate with the telecom industry.

Mr. Hurley asked the group to consider what would happen if an energy marketer takes an action that resulted in major industrial users of power being forced offline. Mr. Gent noted that there are many circuit breakers in the industry to avoid such a disruption or to minimize its reach. Mr. Hurley responded that that type of information does not have a clearinghouse or best practices guide. Mr. Gent noted that the NERC CIP drafting team has this as one of its tasks. Mr. Hurley responded that there was a question on whether or not NERC has the authority on this issue at the retail level. In looking at this issue at the retail level, Ms. McQuade noted that it may be helpful for NERC to discuss these issues with NARUC, which has probably already happened. *[in discussions after the*

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Notes for the May 13, 2010 NAESB Board Critical Infrastructure Meeting

meeting, it was noted that NERC communications with NARUC and much of this work is coordinated.] It was noted that the North American Transmission Forum and the Institute of Nuclear Power Operators were both addressing these issues, but their work remains confidential. It was suggested that Mike Asante be invited to the next Board Critical Infrastructure meeting to discuss this issue.

It was noted that the Interstate Natural Gas Association of America had formed a control system cyber security working group to develop industry specific guidelines for control systems based on TSA guidelines. There were questions among participants regarding the public availability of this information.

Other Business/Next Meeting and Action Items:

There were five action items discussed at the meeting:

1) Mr. Marshall and Mr. Gent will talk to NIST about whether or not the NISTIR specifications will be provided to NERC to be incorporated into the NERC CIPC standards.
2) Mr. Hurley and Ms. McQuade will talk with Robert Mayer and Jeff Goldthorpe regarding the establishment of telecom liaisons.
3) Mr. Gent and Ms. McQuade will talk with NARUC about the Retail CIP efforts.
4) Mr. Hurley will ask Mike Asante to be on the next Board Critical Infrastructure conference call.
5) Mr. Buccigross, Mr. Hurley and Ms. Barry will research the requirement of publicly available information and restricted information.

Adjourn:

Mr. Buccigross moved to adjourn the meeting at 2:30 pm Central.

Work Papers Provided for the Meeting:

Meeting Related Documents:

CIP-010-1: http://www.naesb.org/pdf4/bd_cic_051310w1.pdf

CIP-011-1: http://www.naesb.org/pdf4/bd_cic_051310w2.pdf

NERC Announcement on Informal Comment Period for CIP-010-1 and CIP-011-1: http://www.naesb.org/pdf4/bd_cic_051310w3.pdf

National Broadband Plan on Critical Infrastructure Protection and Cyber security: http://www.naesb.org/pdf4/bd_cic_051310w5.pdf

FCC Notice of Inquiry on the Effects of Broadband Communications Networks: http://www.naesb.org/pdf4/bd_cic_051310w6.doc

Federal Register: Implementing the National Broadband Plan by Empowering Consumers and the Smart Grid: http://www.naesb.org/pdf4/bd_cic_051310w7.pdf

Federal Register: Cyber Security Certification Program: http://www.naesb.org/pdf4/bd_cic_051310w8.pdf

Federal Register: Effects on Broadband Communications Networks of Damage to or Failure of Network Equipment of Severe Overload: http://www.naesb.org/pdf4/bd_cic_051310w9.pdf

Federal Register: Implementing the National Broadband Plan by Studying the Communications Requirements of Electric Utilities to Inform Federal Smart Grid Policy: http://www.naesb.org/pdf4/bd_cic_051310w10.pdf

State of the Industry Power Point Presentation: http://www.naesb.org/pdf4/bd_cic_051310w11.ppt

Smart Grid Summit – Draft Agenda as of 051010: http://www.naesb.org/pdf4/bd_cic_051310w12.pdf

Scientific American Article: Securing the Smart Grid: http://www.scientificamerican.com/article.cfm?id=securing-the-smart-grid

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Chris Eisenbrey	Edison Electric Institute	
Bob Gee	Gee Strategies Group	
J. Cade Burks	ista	
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Bill Boswell	NAESB General Counsel	
Rick Smead	Navigant Consulting, Inc.	
Diane Barney	New York State Department of Public Service Staff	
Bruce Ellsworth	New York State Reliability Council	
Michehl Gent	Open Access Technology International, Inc	Phone
Chris Kotting	Public Utilities Commission of Ohio	
Thomas Pearce	Public Utilities Commission of Ohio	
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Notes for the May 13, 2010 NAESB Board Critical Infrastructure Meeting

OTHER ATTENDEES

Attendee	Organiz ation
Jason Marshall	Midwest ISO
Cory Galik Cummings	NAESB
Rae McQuade	NAESB
Kathryn Burch	Spectra Energy Transmission
Christopher Burden	Williams Gas Pipeline
Jeremy Zins	Williston Basin Interstate Pipeline Company
Debbie McKeever	Oncor
Larry Kershaw	Boardwalk Pipeline Partners

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(a)
Request Title: Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

1. RECOMMENDED ACTION:

X	Accept as requested
	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:		Per Recommendation:	
X	Initiation	X	Initiation
	Modification		Modification
	Interpretation		Interpretation
	Withdrawal		Withdrawal
X	Principle	X	Principle
X	Definition	X	Definition
X	Business Practice Standard	X	Business Practice Standard
	Document		Document
	Data Element		Data Element
	Code Value		Code Value
	X12 Implementation Guide		X12 Implementation Guide
	Business Process Documentation		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 OASIS[1] eMIX. These requirements should also be used as an input to the CIM maintained by UCAIug.

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

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

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UCAIug, OpenSG Task Force, the IRC Council, and other organizations, has developed 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. This document also contains an overview of the most common retail rate structures and price-related use cases. 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.

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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 6(a-c)

NOTE: Many of the new terms are being used in the three PAP recommendations rather than duplicating the abbreviations/acronyms in multiple documents they are only listed in this recommendation.)

Note: If the Executive Committee agrees to proposed changes to WEQ 016-018 some of the items listed in the Abbreviation/Acronym list can be deleted.

000-1 ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response
EA	Environmental Authority
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commisssion Technical Committee 57
IETF	Internet Engineering Task Force

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Abbreviation / Acronym	Meaning
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid
PUC	Public Utility Commission
SE	Scheduling Entity
SGTF	Smart Grid Task Force
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language

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000-2 DEFINITION OF TERMS

Term	Definition
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	The responsible entity that secures energy and Transmission Service (and related Interconnected Operations Services) to serve the electrical demand and energy requirements of its end-use customers.
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.

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Term	Definition
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
Scheduling Entity(SE)	A role which carries the responsibility of submitting bids/offers and receives schedules and awards.
Service Provider (SP)	A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.
State Regulator (SR)	A regulatory authority responsible for the oversight and administration of electric utilities.

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Term	Definition
Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
Utility Customer (UC)	An end-use customer of the Utility Distribution Operator that takes on roles such as Premise or Resource.
Utility Distribution Operator (UDO)	An entity which carries the responsibility of operating an electricity distribution system.
Zone	A physical or electrical region.

WEQ-016

New Business Practice Standards WEQ-016 – Specificaitons for Common Electricity Product and Pricing Definition

RECOMMENDED STANDARDS:

Introduction

Specifications for Common Electricity Product and Pricing Definition

Purpose: The purpose of the following is to document use cases related to the definition of a common model for capturing the attributes of an electricity product offered at wholesale and/or retail level. The use cases included in this Business Practice Standard are not intended to be required or exhaustive and are provided for clarification purposes.

Scope: The following provides a representative sample of use cases, not implementation requirements, of a common pricing model for electricity product.

Business Practice Standards

016-1 Specifications for Common Electricity Product and Pricing Definition

016-1.1 ACTORS LIST

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Wholesale Electric Quadrant (WEQ)
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The actors listed in the table below are specific to this Business Practice Standard 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
Utility Customer	2.4	Residential, industrial
Utility Distribution Operator	2.3	Distribution operator

[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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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 this Business Practice Standard are not intended to be required or exhaustive and are provided for clarification purposes.

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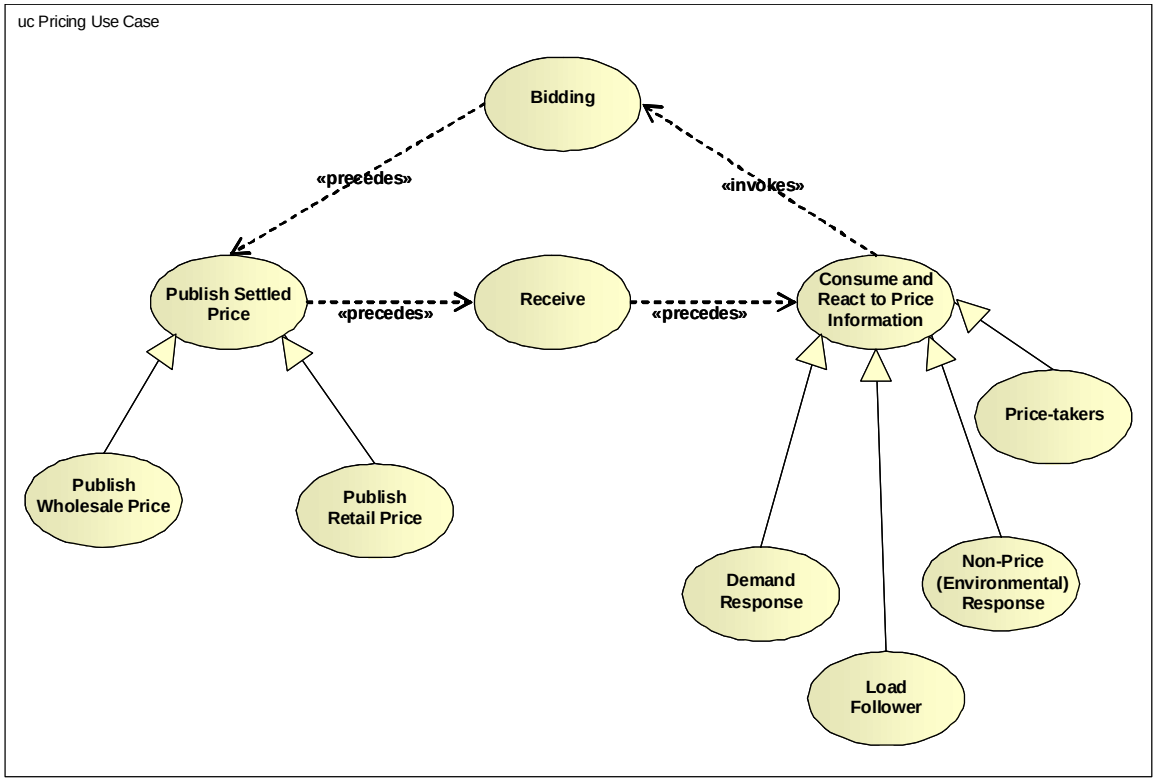
016-2.2 PRICING USE CASE

The Pricing Use Case below provides an overview of the specific use cases described in this document. 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 this document:

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



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Request Title: Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

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.

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(a)
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Use Case	Actors	Description	SAMPLE Scenarios
Non-Price (Environmental) Response	Resource ED Premise	Product characteristics (other than price) are used to influence either the quantity or the time at which the customer uses electricity.	Utility Customer sets a price 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 available at the desired price.

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Use Case	Actors	Description	SAMPLE Scenarios
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 Premise contains one or more End Devices. 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 documents 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 is related to one-or-more End Devices (reading top to bottom) and every End Device is related to exactly-one Premise (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.

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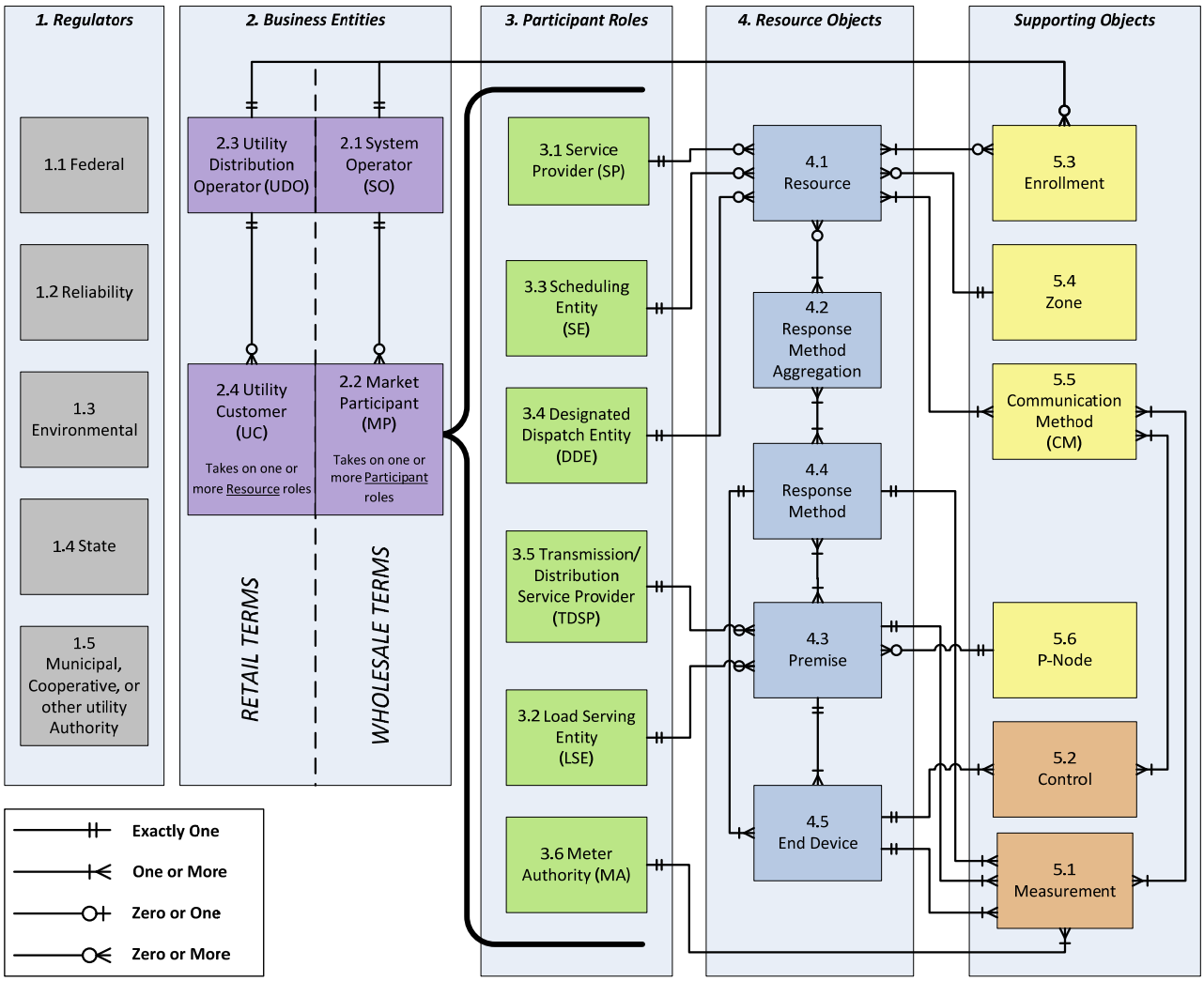
Figure 1A. Entity-Relationship Model for Smart Grid Use Cases



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4. Supporting Documentation

a. Description of Request:

On September 30, 2009 the National Institute of Standards and Technology officially assigned NAESB the responsibility to develop Requirements and Use Cases pertinent to Priority Action Plan items 3, 4 and 9. A complete description of each item is available on the NIST Web site located at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome

This recommendation specifically pertains to PAP 03[3], "Develop Common Specification for Price and Product Definition".

b. Description of Recommendation:

See Section 3 Summary

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):

Joint Smart Grid Standards Task Force and Fix Protocol Meeting Notes/Documents:

- September 17, 2009 Meeting Notes – To be posted
- October 1, 2009 Meeting Notes – To be posted
- October 15, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Sub-Group Meeting Notes/Documents:

- October 13, 2009 Meeting Notes – To be posted
- October 20, 2009 Meeting Notes – To be posted
- October 27, 2009 Meeting Notes – To be posted
- November 3, 2009 Meeting Notes – To be posted
- November 4-6, 2009 Meeting Notes – To be posted
- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted

[3] http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP03PriceProduct

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- November 13, 2009 Meeting Notes – To be posted
- December 3, 2009 Meeting Notes – To be posted
- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted
- February 5, 2010 Meeting Notes – To be posted
- February 18, 2010 Meeting Notes – To be posted

Considerations:

- Wholesale market price signals may have different characteristics than retail market signals.
- Attempts to standardize pricing signals must not hinder regulatory changes or market innovations.
- Price signals should be flexible enough to accommodate regulatory changes or market innovations.

e. Additional Documentation from Subcommittee(s)/Task Force(s):

- The Task Force is including the following materials to include complete set of abbreviations, acronyms, and definitions. The changes to the abbreviations, acronyms, and definitions are only listed in the Recommended Standards.

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response
EA	Environmental Authority
ED	End Device

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Abbreviation / Acronym	Meaning
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commisssion Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
LSE	Load Serving Entity
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
MWh	Megawatt Hour
NIST	National Institute of Standards and Technology
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid
PUC	Public Utility Commission
SE	Scheduling Entity

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Abbreviation / Acronym	Meaning
SGTF	Smart Grid Task Force
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language
XML	Extensible Markup Language

Term	Definition
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 Reduction Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact.
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.

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Term	Definition
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	The responsible entity that secures energy and Transmission Service (and related Interconnected Operations Services) to serve the electrical demand and energy requirements of its end-use customers
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Maximum Base Load (MBL)	A performance evaluation methodology based solely on a Demand Resource's ability to reduce to a specified level of electricity Demand, regardless of its electricity consumption or Demand at Deployment.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.

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Term	Definition
Meter Before /Meter After (MB/MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
Metering Generator Output (MGO)	A performance evaluation methodology, used when a generation asset is located behind the Demand Resource's revenue meter, in which the Demand Reduction Value is based on the output of the generation asset.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
Scheduling Entity (SE)	A role which carries the responsibility of submitting bids/offers and receives schedules and awards.
Service Provider (SP)	A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.
State Regulator (SR)	A regulatory authority responsible for the oversight and administration of electric utilities.
Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.

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Term	Definition
System Operator (SO)	A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment, and Release/Recall instructions.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
Utility Customer (UC)	An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource.
Utility Distribution Operator (UDO)	An entity which carries the responsibility of operating an electricity distribution system.
Zone	A physical or electrical region.

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.

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 document 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 in the recommendation 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

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Tariff Rate Type	Target Customers	Description
		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.
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.

Product and Pricing Attributes Considered for Use Cases

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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.

Product Identification

Attribute	Description	Considerations
Product Identifier	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.	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	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	A product type.	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.
Unit of Measure for Product	Unit of measure the product.	The unit of measure such as MWh or kWh.

Pricing Attributes

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Attribute	Description	Considerations
Total Price	Total Price of the product at point of delivery	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 Total Price.
Set of 1..n Price Components		
Price Component	A component of the price.	Price may have one or more components.
Price Component Type	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	Type of price	A standard set of price types will need to be defined real time, 5 minute, day ahead, as examples for price types
Override Unit of Measure for the Product	Unit of measure which is used to determine the price	Alternative unit of measure used in calculating the price.
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.
Time and Interval	Interval of energy delivery	Timezone conventions and use need to be unambiguously defined. Daily blocks, hourly markets, 5 minute markets. A decision in how basic product information will reference and interact with the WS-Calendar initiative being completed as part of PAP-04.

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Attribute	Description	Considerations
Source Location Identifier	Location of the source of the electric energy	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 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.

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 1010

For Quadrant: **Retail Electric Quadrant (REQ)**
Requesters: **NAESB Smart Grid Task Force (SGTF)**
Request No.: **2010 REQ Annual Plan Item 9(a)**
Request Title: **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03**

1. RECOMMENDED ACTION:

X	Accept as requested
	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:		**Per Recommendation:**	
X	Initiation	X	Initiation
	Modification		Modification
	Interpretation		Interpretation
	Withdrawal		Withdrawal
X	Principle	X	Principle
X	Definition	X	Definition
X	Business Practice Standard	X	Business Practice Standard
	Document		Document
	Data Element		Data Element
	Code Value		Code Value
	X12 Implementation Guide		X12 Implementation Guide
	Business Process Documentation		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 OASIS[1] eMIX. These requirements should also be used as an input to the CIM maintained by UCAIug.

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

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 1010

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REQ.0

New Abbreviations/Acronyms and Defined Terms to be added to REQ.0 in support of 2010 REQ AP Items 9(a-c)
(NOTE: NAESB Retail numbering convention will be applied in the final action)

NOTE: Many of the new terms are being used in the three PAP recommendations rather than duplicating the abbreviations/acronyms in multiple documents they are only listed in this recommendation.)

ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response
EA	Environmental Authority
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commisssion Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission

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Abbreviation / Acronym	Meaning
	Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid
PUC	Public Utility Commission
SE	Scheduling Entity
SGTF	Smart Grid Task Force
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language

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DEFINITION OF TERMS

Term	Definition
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	A role which carries the responsibility of serving end-users and selling electric energy to end-users.
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.

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Term	Definition
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
Scheduling Entity(SE)	A role which carries the responsibility of submitting bids/offers and receives schedules and awards.
Service Provider (SP)	A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.

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Term	Definition
State Regulator (SR)	A regulatory authority responsible for the oversight and administration of electric utilities.
Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
Utility Customer (UC)	An end-use customer of the Utility Distribution Operator that takes on roles such as Premise or Resource.
Utility Distribution Operator (UDO)	An entity which carries the responsibility of operating an electricity distribution system.
Zone	A physical or electrical region.

REQ.15

New Model Business Practices REQ.15 – Specificaitons for Common Electricity Product and Pricing Definition
(NOTE: NAESB Retail numbering convention will be applied in the final action)

RECOMMENDED MODEL BUSINESS PRACTICES:

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 use cases that provide requirements for electricity price and product signal Model Business Practices.

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 Model Business Practices also contains an overview of the most common retail rate structures and price-related use cases. Finally, a representative list of price and product attributes is provided.

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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.

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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Model Business Practices

REQ.15.1 Specifications for Common Electricity Product and Pricing Definition

REQ.15.1.1 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 REQ.0. 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 REQ.0.

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

REQ.15.1.2 USE CASE DATA CONSIDERATIONS

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

REQ.15.1.2.1 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 these Model Business Practices 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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REQ.15.1.2.2 Product and Pricing Attributes Considered for Use Cases

For the purpose of the development of the use cases in Model Business Practice REQ.15.2, the following price and product attributes were considered.

REQ.15.1.2.2.1 Product Identification

Attribute	Description	Considerations
Product Identifier	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.	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	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	A product type.	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.
Unit of Measure for Product	Unit of measure the product.	The unit of measure such as MWh or kWh.

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REQ.15.1.2.2.2 Pricing Attributes

Attribute	Description	Considerations
Total Price	Total Price of the product at point of delivery	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 Total Price.
Set of 1..n Price Components		
Price Component	A component of the price.	Price may have one or more components.
Price Component Type	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	Type of price	A standard set of price types will need to be defined real time, 5 minute, day ahead, as examples for price types
Override Unit of Measure for the Product	Unit of measure which is used to determine the price	Alternative unit of measure used in calculating the price.
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.

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Attribute	Description	Considerations
Time and Interval	Interval of energy delivery	Timezone conventions and use need to be unambiguously defined. Daily blocks, hourly markets, 5 minute markets. A decision in how basic product information will reference and interact with the WS-Calendar initiative being completed as part of PAP-04.
Source Location Identifier	Location of the source of the electric energy	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 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.

REQ.15.2 Product and Pricing Use Cases

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REQ.15.2.1 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 Model Business Practices are not intended to be required or exhaustive and are provided for clarification purposes.

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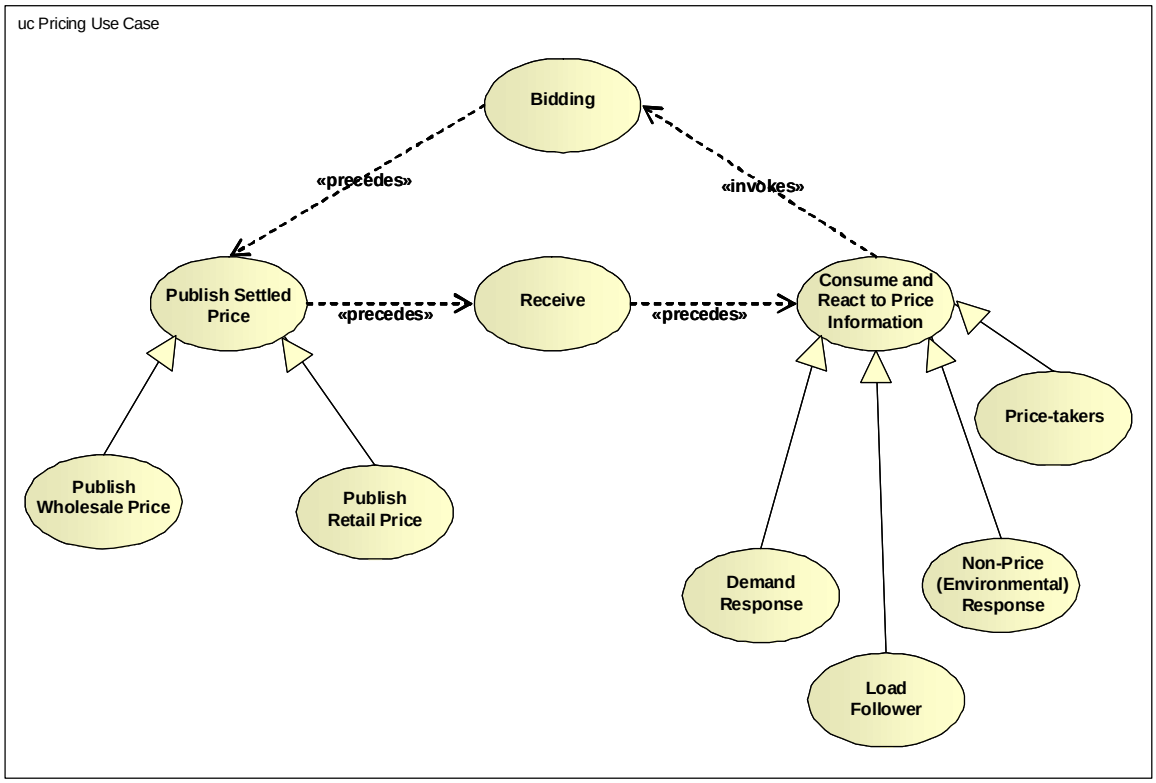
REQ.15.2.2 PRICING USE CASE

The Pricing Use Case below provides an overview of the specific use cases described in these Model Business Practices. 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 Model Business Practices:

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



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REQ.15.2.3 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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REQ.15.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 Premise contains one or more End Devices. 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 Model Business Practices.

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 documents 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 is related to one-or-more End Devices (reading top to bottom) and every End Device is related to exactly-one Premise (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.

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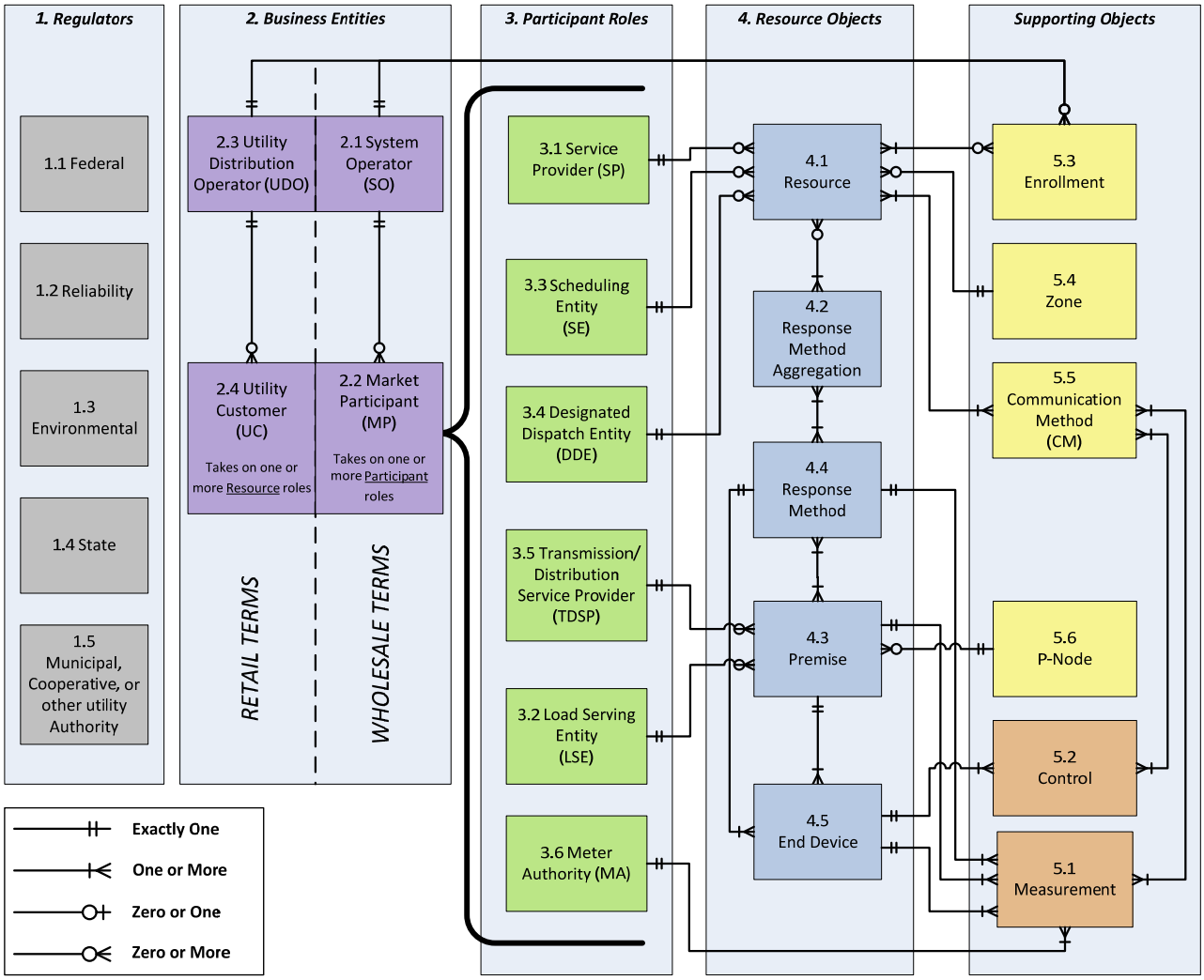
Figure 1A. Entity-Relationship Model for Smart Grid Use Cases



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4. Supporting Documentation

a. Description of Request:

On September 30, 2009 the National Institute of Standards and Technology officially assigned NAESB the responsibility to develop Requirements and Use Cases pertinent to Priority Action Plan items 3, 4 and 9. A complete description of each item is available on the NIST Web site located at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome

This recommendation specifically pertains to PAP 03[3], "Develop Common Specification for Price and Product Definition".

b. Description of Recommendation:

See Section 3 Summary

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):

Joint Smart Grid Standards Task Force and Fix Protocol Meeting Notes/Documents:

- September 17, 2009 Meeting Notes – To be posted
- October 1, 2009 Meeting Notes – To be posted
- October 15, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Sub-Group Meeting Notes/Documents:

- October 13, 2009 Meeting Notes – To be posted
- October 20, 2009 Meeting Notes – To be posted
- October 27, 2009 Meeting Notes – To be posted
- November 3, 2009 Meeting Notes – To be posted
- November 4-6, 2009 Meeting Notes – To be posted
- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted

[3] http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP03PriceProduct

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- November 13, 2009 Meeting Notes – To be posted
- December 3, 2009 Meeting Notes – To be posted
- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted
- February 5, 2010 Meeting Notes – To be posted
- February 18, 2010 Meeting Notes – To be posted

Considerations:

- Wholesale market price signals may have different characteristics than retail market signals.
- Attempts to standardize pricing signals must not hinder regulatory changes or market innovations.
- Price signals should be flexible enough to accommodate regulatory changes or market innovations.

e. Additional Documentation from Subcommittee(s)/Task Force(s):

- The Task Force is including the following materials to include complete set of abbreviations, acronyms, and definitions. The changes to the abbreviations, acronyms, and definitions are only listed in the Recommended Model Business Practices.

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response
EA	Environmental Authority

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Abbreviation / Acronym	Meaning
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commisssion Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
LSE	Load Serving Entity
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
MWh	Megawatt Hour
NIST	National Institute of Standards and Technology
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid

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Request No.: 2010 REQ Annual Plan Item 9(a)
Request Title: Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

Abbreviation / Acronym	Meaning
PUC	Public Utility Commission
SE	Scheduling Entity
SGTF	Smart Grid Task Force
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language
XML	Extensible Markup Language

Term	Definition
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 Reduction Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact.
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.

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Term	Definition
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	A role which carries the responsibility of serving end-users and selling electric energy to end-users.
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Maximum Base Load (MBL)	A performance evaluation methodology based solely on a Demand Resource's ability to reduce to a specified level of electricity Demand, regardless of its electricity consumption or Demand at Deployment.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.

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Term	Definition
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
Meter Before /Meter After (MB/MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
Metering Generator Output (MGO)	A performance evaluation methodology, used when a generation asset is located behind the Demand Resource's revenue meter, in which the Demand Reduction Value is based on the output of the generation asset.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
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Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.
System Operator (SO)	A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment, and Release/Recall instructions.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
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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(b)
Request Title: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

1. RECOMMENDED ACTION:

X	Accept as requested
	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:		Per Recommendation:	
X	Initiation	X	Initiation
	Modification		Modification
	Interpretation		Interpretation
	Withdrawal		Withdrawal
X	Principle	X	Principle
X	Definition	X	Definition
X	Business Practice Standard	X	Business Practice Standard
	Document		Document
	Data Element		Data Element
	Code Value		Code Value
	X12 Implementation Guide		X12 Implementation Guide
	Business Process Documentation		Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The NAESB Smart Grid Task Force (SGTF) submits this Recommendation 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.

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[1].

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

[1] http://tools.ietf.org/html/rfc5545

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Request Title:	**Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04**

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. The vocabularies from the appropriate domain experts to compose the message that flow between domains on the smart grid are used within the NIST process.

In the following, transactions are defined 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 20022[2] 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 5545[3]) 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.

[2] International Organization for Standardization ISO 20022 Universal financial industry message scheme
[3] Internet Calendaring and Scheduling Core Object Specification (iCalendar)

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WEQ-000

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

WEQ-017

New Business Practice Standards WEQ-017 – Specifications for Common Scheduling Mechanism for Energy Transactions

RECOMMENDED STANDARDS:

Introduction

Specifications for Common Scheduling Mechanism for Energy Transactions

The purpose of this Business Practice Standard is to provide a representative sample of use cases for standard communication of date, time, schedule, and interval by smart grid actors, with particular attention to DR.

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 use cases to be exhaustive, merely illustrative of the full scope.

Business Practice Standards

017-1 Specification for Common Scheduling Mechanism for Energy Transactions

017-1.1 ACTORS LIST

There were no actors provided for the associated use cases.

017-2 Common Scheduling Mechanism for Energy Transactions Use Cases

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017-2.1 USE CASE OVERVIEW

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

The use cases included in this Business Practice Standard are not intended 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 standard that is applicable to Demand Response programs must 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 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 Effective start date and time	2009-11-01 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 System Frequency	Every 5 minutes 60 cycles per second
Absolute Duration	Outage Duration Minimum Run Time	2 days 4 hours

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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.

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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 Premise contains one or more End Devices. 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 documents 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 is related to one-or-more End Devices (reading top to bottom) and every End Device is related to exactly-one Premise (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.

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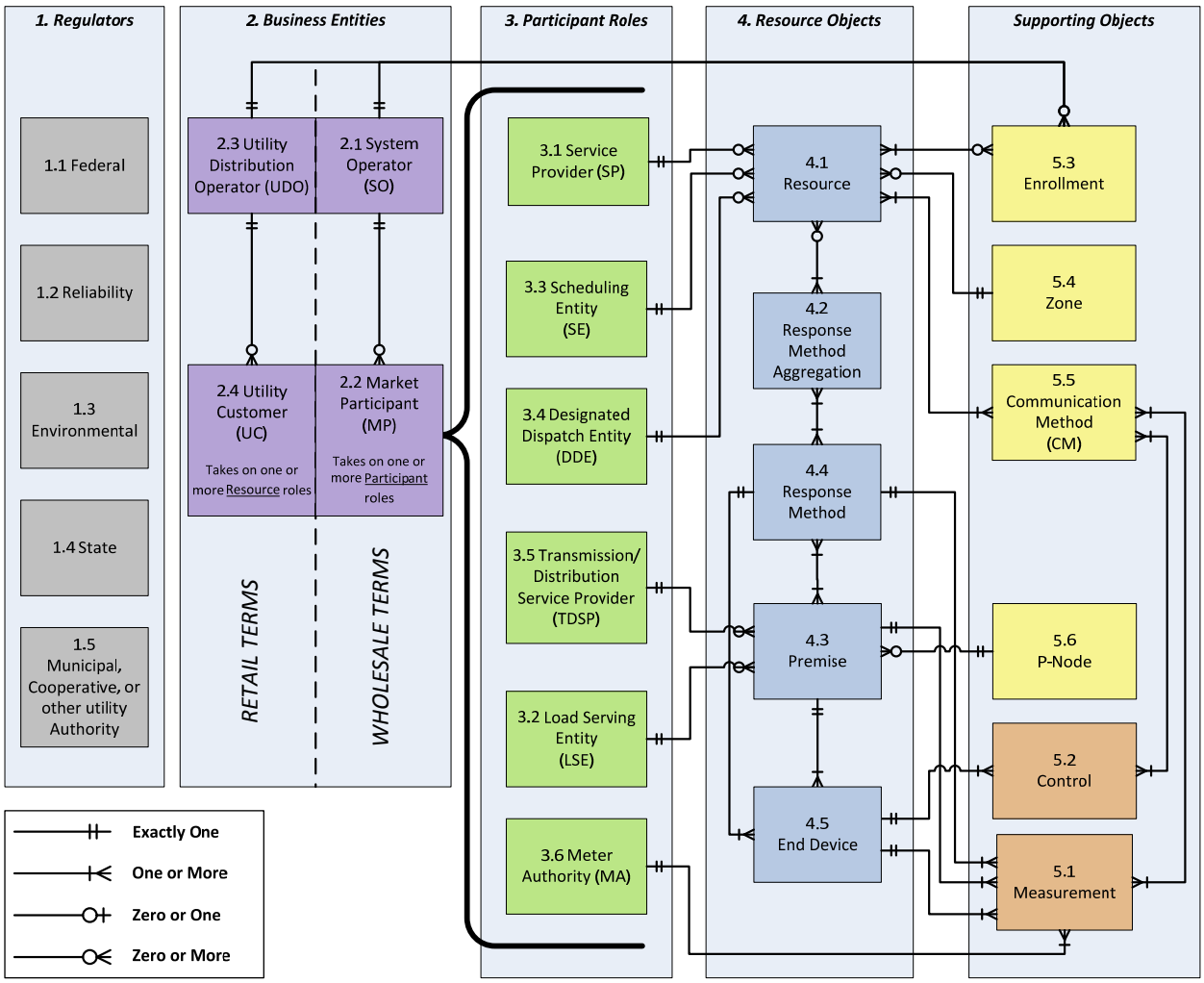
Figure 1A. Entity-Relationship Model for Smart Grid Use Cases



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4. SUPPORTING DOCUMENTATION

a. Description of Request:

On September 30, 2009, the National Institute of Standards and Technology officially assigned NAESB the responsibility to develop Requirements and Use Cases pertinent to Priority Action Plan items 3, 4 and 9. A complete description of each item is available on the NIST Web site located at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome in the section titled Priority Action Plans (PAPs).

This recommendation specifically pertains to PAP 04[4], "A Common Scheduling Mechanism for Energy Transactions".

b. Description of Recommendation:

The scope of this recommendation 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.

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.

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

Assumptions – The Smart Grid Task Force assumes as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

Joint Smart Grid Standards Task Force and Fix Protocol Meeting Notes/Documents:

- September 17, 2009 Meeting Notes – To be posted
- October 1, 2009 Meeting Notes – To be posted
- October 15, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Sub-Group Meeting Notes/Documents:

- October 13, 2009 Meeting Notes – To be posted
- October 20, 2009 Meeting Notes – To be posted
- October 27, 2009 Meeting Notes – To be posted
- November 3, 2009 Meeting Notes – To be posted
- November 4-6, 2009 Meeting Notes – To be posted
- November 10, 2009 Meeting Notes – To be posted

[4] http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP04Schedules

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NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted
- November 13, 2009 Meeting Notes – To be posted
- December 3, 2009 Meeting Notes – To be posted
- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted

e. Additional Documentation from Subcommittee(s)/Task Force(s):

- The Task Force is including the following materials to include complete set of abbreviations, acronyms, and definitions. The changes to the abbreviations, acronyms, and definitions are only listed in the Recommended Standards.

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response
EA	Environmental Authority
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol

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Abbreviation / Acronym	Meaning
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commission Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
LSE	Load Serving Entity
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
MWh	Megawatt Hour
NIST	National Institute of Standards and Technology
PAP	Priority Action Plan
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RMA	Response Method Aggregation
OpenSG	Open Smart Grid
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Request Title: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

1. RECOMMENDED ACTION:

X	Accept as requested
	Accept as modified below
	Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

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2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:		Per Recommendation:	
X	Initiation	X	Initiation
	Modification		Modification
	Interpretation		Interpretation
	Withdrawal		Withdrawal
X	Principle	X	Principle
X	Definition	X	Definition
X	Business Practice Standard	X	Business Practice Standard
	Document		Document
	Data Element		Data Element
	Code Value		Code Value
	X12 Implementation Guide		X12 Implementation Guide
	Business Process Documentation		Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The NAESB Smart Grid Task Force (SGTF) submits this Recommendation 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.

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant:	**Retail Electric Quadrant (REQ)**
Requesters:	**NAESB Smart Grid Task Force (SGTF)**
Request No.:	**2010 Retail Annual Plan Item 9(b)**
Request Title:	**Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04**

REQ.0

New Abbreviations/Acronyms and Defined Terms to be added to REQ.0 are Included in the Recommendation Request Titled Requirements Specifications for Common Electricity Product and Pricing Definitions – for NIST PAP03 to avoid redundancy between recommendations.

REQ.16

New Model Business Practices REQ.16 – Specifications for Common Scheduling Mechanism for Energy Transactions

(NOTE: NAESB Retail numbering convention will be applied in the final action)

RECOMMENDED MODEL BUSINESS PRACTICES:

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[1].

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

[1] http://tools.ietf.org/html/rfc5545

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Request No.:	**2010 Retail Annual Plan Item 9(b)**
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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 20022[2] 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 5545[3]) 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 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 Advancement of Structured

[2] International Organization for Standardization ISO 20022 Universal financial industry message scheme
[3] Internet Calendaring and Scheduling Core Object Specification (iCalendar)

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Information Standards and CalConnect technical committee to define the applicable communication standards to support them.

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.

Model Business Practices

REQ.16.1 Specification for Common Scheduling Mechanism for Energy Transactions

REQ.16.1.1 ACTORS LIST

There were no actors provided for the associated use cases.

REQ.16.2 Common Scheduling Mechanism for Energy Transactions Use Cases

REQ.16.2.1 USE CASE OVERVIEW

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

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

REQ.16.2.1.1 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 Model Business Practice that is applicable to Demand Response programs must be capable of supporting this range of requirements.

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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 Model Business Practice.

Type of Representation	Representative Instance	Sample Data
Absolute date/time	Effective start date Effective start date and time	2009-11-01 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 System Frequency	Every 5 minutes 60 cycles per second
Absolute Duration	Outage Duration Minimum Run Time	2 days 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.

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REQ.16.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 Premise contains one or more End Devices. 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 Model Business Practices.

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 documents 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 is related to one-or-more End Devices (reading top to bottom) and every End Device is related to exactly-one Premise (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.

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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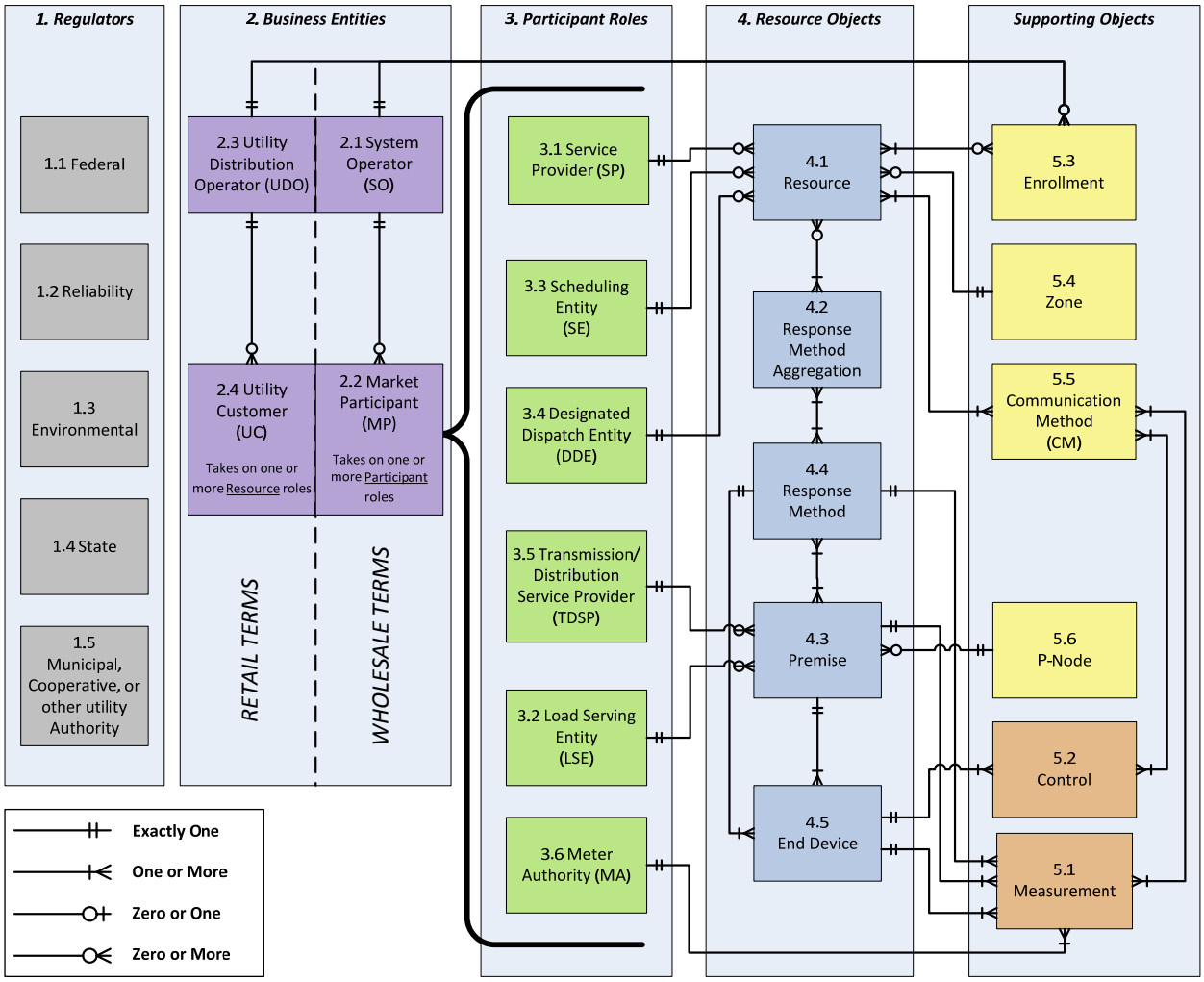
Request Title: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

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



RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

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4. SUPPORTING DOCUMENTATION

a. Description of Request:

On September 30, 2009, the National Institute of Standards and Technology officially assigned NAESB the responsibility to develop Requirements and Use Cases pertinent to Priority Action Plan items 3, 4 and 9. A complete description of each item is available on the NIST Web site located at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome in the section titled Priority Action Plans (PAPs).

This recommendation specifically pertains to PAP 04[4], "A Common Scheduling Mechanism for Energy Transactions".

b. Description of Recommendation:

The scope of this recommendation 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.

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.

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

Assumptions – The Smart Grid Task Force assumes as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

Joint Smart Grid Standards Task Force and Fix Protocol Meeting Notes/Documents:

- September 17, 2009 Meeting Notes – To be posted
- October 1, 2009 Meeting Notes – To be posted
- October 15, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Sub-Group Meeting Notes/Documents:

- October 13, 2009 Meeting Notes – To be posted
- October 20, 2009 Meeting Notes – To be posted
- October 27, 2009 Meeting Notes – To be posted
- November 3, 2009 Meeting Notes – To be posted
- November 4-6, 2009 Meeting Notes – To be posted

[4] http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP04Schedules

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Retail Electric Quadrant (REQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 Retail Annual Plan Item 9(b)
Request Title: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted
- November 13, 2009 Meeting Notes – To be posted
- December 3, 2009 Meeting Notes – To be posted
- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted

e. Additional Documentation from Subcommittee(s)/Task Force(s):

- The Task Force is including the following materials to include complete set of abbreviations, acronyms, and definitions. The changes to the abbreviations, acronyms, and definitions are only listed in the recommended Model Business Practices.
-

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response
EA	Environmental Authority
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Retail Electric Quadrant (REQ)
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Abbreviation / Acronym	Meaning
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commission Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
LSE	Load Serving Entity
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
MWh	Megawatt Hour
NIST	National Institute of Standards and Technology
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid
PUC	Public Utility Commission
SE	Scheduling Entity
SGTF	Smart Grid Task Force

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Abbreviation / Acronym	Meaning
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language
XML	Extensible Markup Language

Term	Definition
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 Reduction Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact.
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.

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Term	Definition
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	A role which carries the responsibility of serving end-users and selling electric energy to end-users.
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Maximum Base Load (MBL)	A performance evaluation methodology based solely on a Demand Resource's ability to reduce to a specified level of electricity Demand, regardless of its electricity consumption or Demand at Deployment.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.

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Term	Definition
Meter Before /Meter After (MB/MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
Metering Generator Output (MGO)	A performance evaluation methodology, used when a generation asset is located behind the Demand Resource's revenue meter, in which the Demand Reduction Value is based on the output of the generation asset.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
Scheduling Entity (SE)	A role which carries the responsibility of submitting bids/offers and receives schedules and awards.
Service Provider (SP)	A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.
State Regulator (SR)	A regulatory authority responsible for the oversight and administration of electric utilities.

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Term	Definition
Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.
System Operator (SO)	A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment, and Release/Recall instructions.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
Utility Customer (UC)	An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource.
Utility Distribution Operator (UDO)	An entity which carries the responsibility of operating an electricity distribution system.
Zone	A physical or electrical region.

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE ON June 16, 2010

For Quadrant: Wholesale Electric Quadrant (WEQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(c)
Request Title: Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

1. RECOMMENDED ACTION:

X	Accept as requested
	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:		**Per Recommendation:**	
X	Initiation	X	Initiation
	Modification		Modification
	Interpretation		Interpretation
	Withdrawal		Withdrawal
X	Principle	X	Principle
X	Definition	X	Definition
X	Business Practice Standard	X	Business Practice Standard
	Document		Document
	Data Element		Data Element
	Code Value		Code Value
	X12 Implementation Guide		X12 Implementation Guide
	Business Process Documentation		Business Process Documentation

3. RECOMMENDATION

SUMMARY:
The business process flows and use cases presented in this document 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.

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.

The business process flows and use cases contained in this recommendation 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 documents under development through the NAESB SGTF will focus on other aspects of the PAP 09

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE ON June 16, 2010

For Quadrant:	**Wholesale Electric Quadrant (WEQ)**
Requesters:	**NAESB Smart Grid Task Force (SGTF)**
Request No.:	**2010 WEQ Annual Plan Item 6(c)**
Request Title:	**Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09**

objectives. To maintain consistency throughout materials developed by the NAESB SGTF, a common set of actors, terms and definitions have been adopted.

The following describes the end-to-end business process flows relating to the wholesale market communications between the SO and the SP common to all ISOs/RTOs that offer opportunities for demand resources to participate in organized wholesale electric markets.

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 PAPs[1]. 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 Interoperability[2] 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.

RECOMMENDED STANDARDS:

In response to NIST's Priority Action Plan 9, this document contains draft requirements specifications, in the form of business process flows and use cases, 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 flows and use cases. As a result of the development of

[1] 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.

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE ON June 16, 2010

For Quadrant:	**Wholesale Electric Quadrant (WEQ)**
Requesters:	**NAESB Smart Grid Task Force (SGTF)**
Request No.:	**2010 WEQ Annual Plan Item 6(c)**
Request Title:	**Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09**

this document, a standard set of actors and additional terminology will expand the existing NAESB documentation of associated terms and definitions for demand response.

WEQ-000

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

WEQ-018

New Business Practice Standards WEQ-018 – Specifications for Wholesale Standard DR Signals

RECOMMENDED STANDARDS:

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 scenarios 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 this document is to emphasize the importance of interoperability at all levels of the GWAC interoperability framework.

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 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.

RECOMMENDATION AS REVISED BY THE NAESB WEQ EXECUTIVE COMMITTEE ON June 16, 2010

For Quadrant:	**Wholesale Electric Quadrant (WEQ)**
Requesters:	**NAESB Smart Grid Task Force (SGTF)**
Request No.:	**2010 WEQ Annual Plan Item 6(c)**
Request Title:	**Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09**

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 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 process flow and provides the necessary business context and reference architecture for use cases that connect to the retail level. The descriptions provide a common linkage to the retail use cases presented in the companion specification for the Retail Electricity Quadrant.

018-1.1 Conventions

- Implementation does not require every communication flow shown in the process flows.

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.

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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

018-1.3 USE CASE OVERVIEW

The use cases presented in this document 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.

[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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The use cases included in this Business Practice Standard are not intended 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

A sample of the use case list is shown in the table below. Appendix B contains the complete list of 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

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The Figure 1 illustrates the process flows for use cases combinations that are considered to be representative of the types of demand response in wholesale electricity markets today. Each process flow description includes a table of the use cases to which the process flow applies.

The wholesale Demand Response end-to-end business process flow for the communications between the SO and the Service Provider SP is comprised of four major functions:

- Enrollment & Qualification,
- Scheduling & Award Notification,
- Deployment & Real-Time Communications,
- Measurement & Performance.

Two additional processes are shown in the high-level business process flow, but are considered outside the scope of what is required for the communications flow for demand response:

- Market Participant Registration
- Settlements

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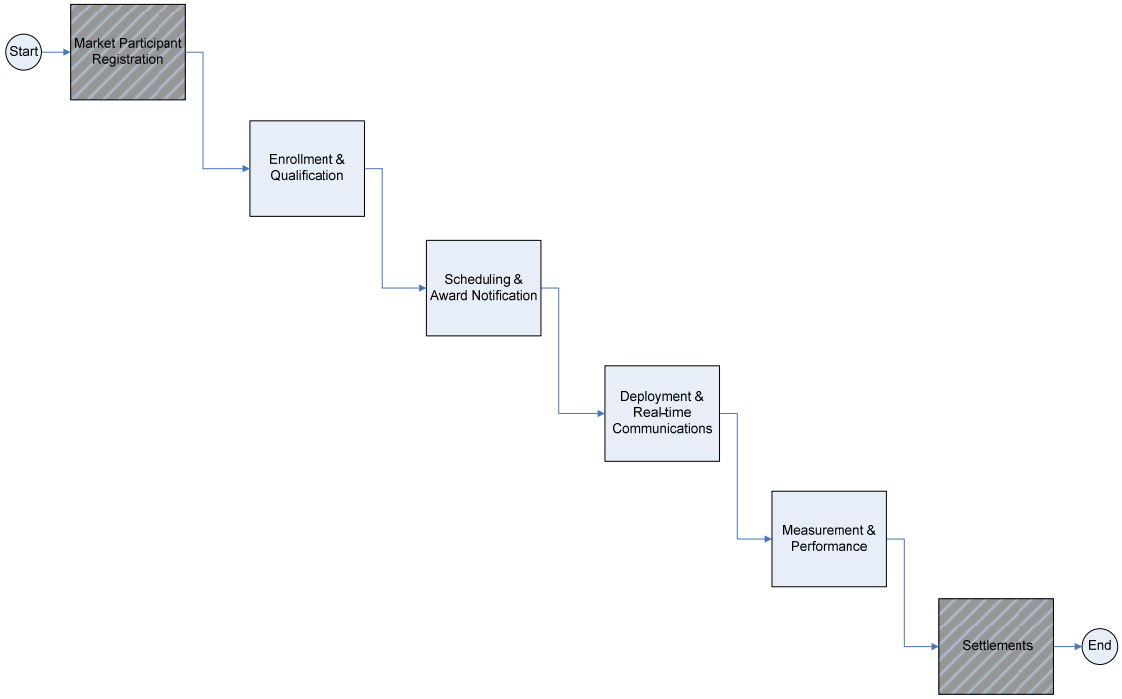
Figure 1 - Demand Response



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018-1.4 SPECIFIC USE CASES

018-1.4.1 Enrollment and Qualification

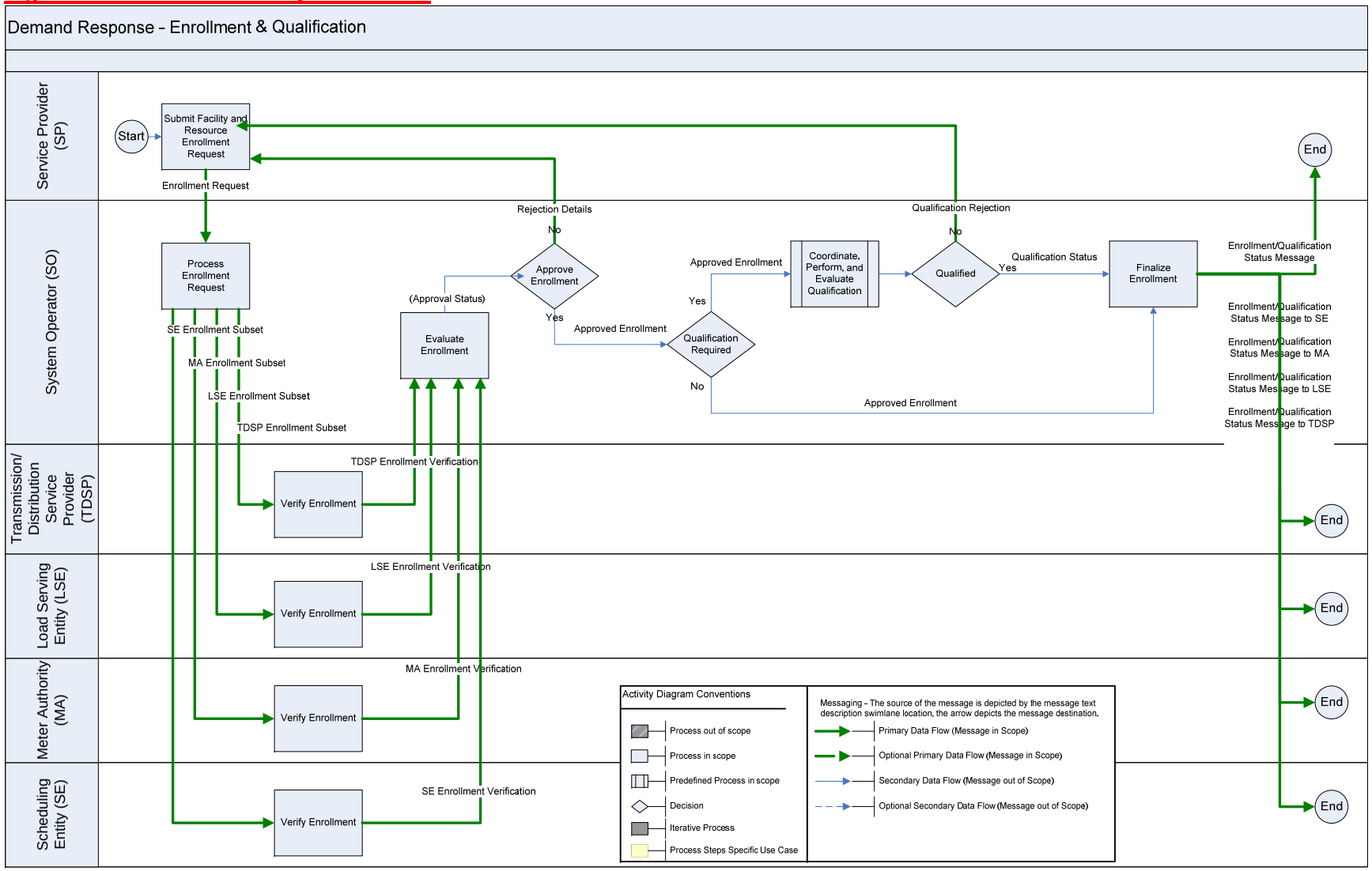
Overview: The Enrollment and Qualification process documents the steps required to enroll a Resource in a wholesale demand response program.

Use Cases: All valid use cases defined in this document (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.
  - If the enrollment request has been rejected, the SO sends information to the SP, indicating the rejection details.
  - 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.

Activity Diagram and Data Flow:

Figure 2 - Enrollment and Qualification



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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.

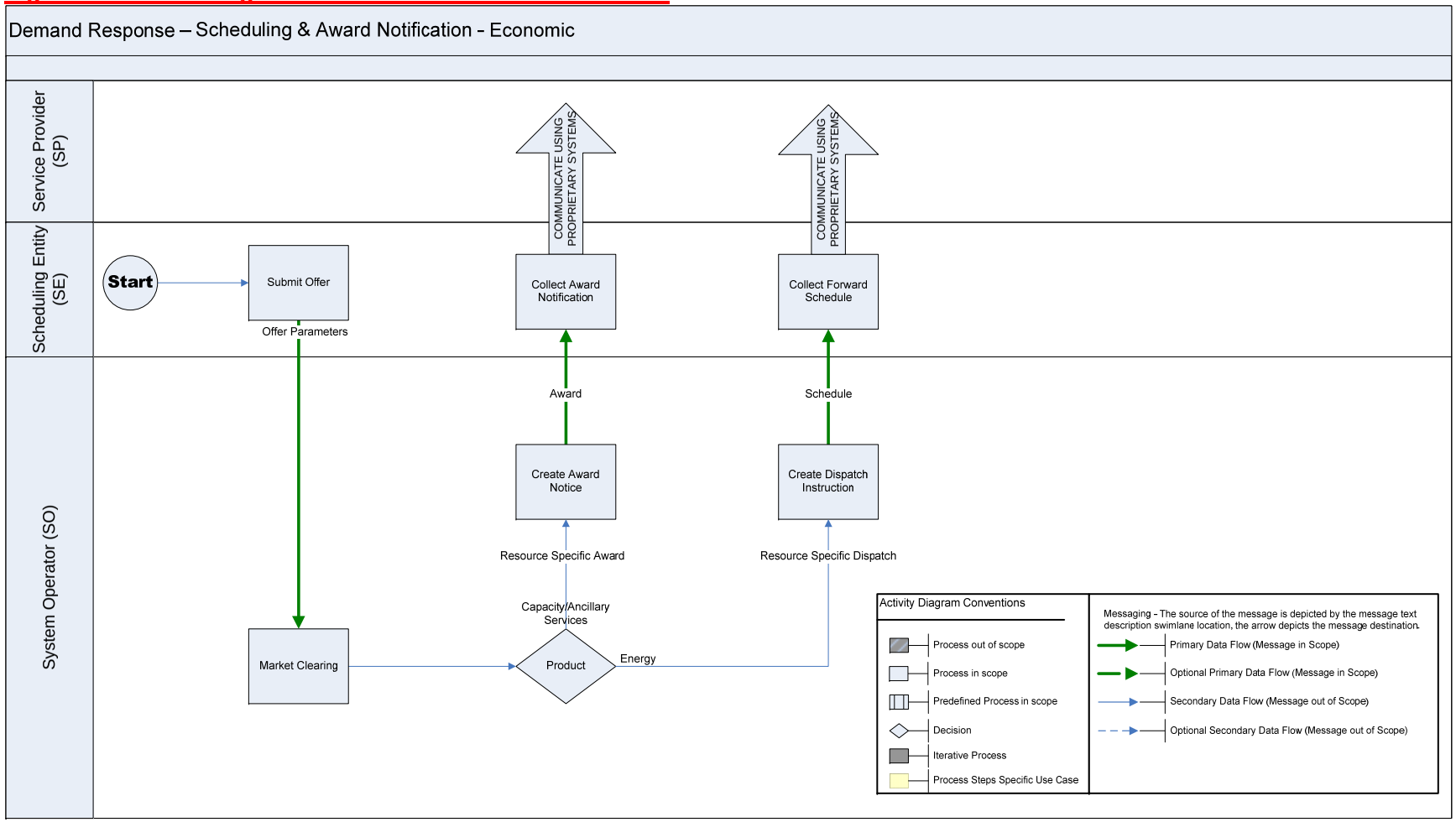
Table 4 - Use Cases for Figure 3

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.

Activity Diagram and Data Flow:

Figure 3 - Scheduling and Award Notification - Economic



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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

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).
  - 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.
  - 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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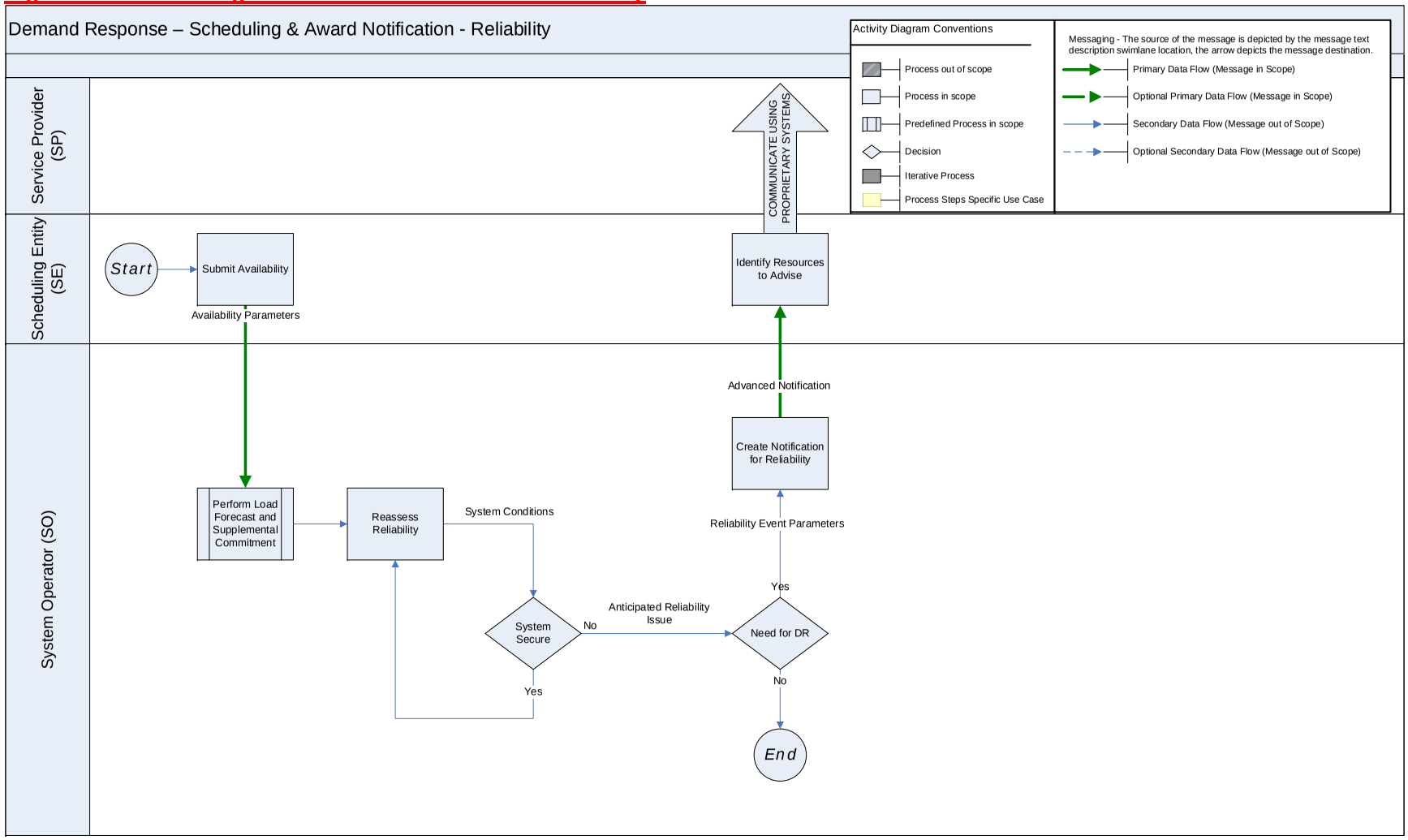
- If the SO determines that demand response will be provided with an advance notification, the reliability event parameters are prepared by the SO to create a reliability event notification.
  - The advance notification message is sent to the SE.
  - The SE identifies the demand resources to notify and relays the message to SPs through the proprietary communication system of the SE.

Activity Diagram and Data Flow:

Figure 4 - Scheduling and Award Notification - Reliability



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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 flows 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.

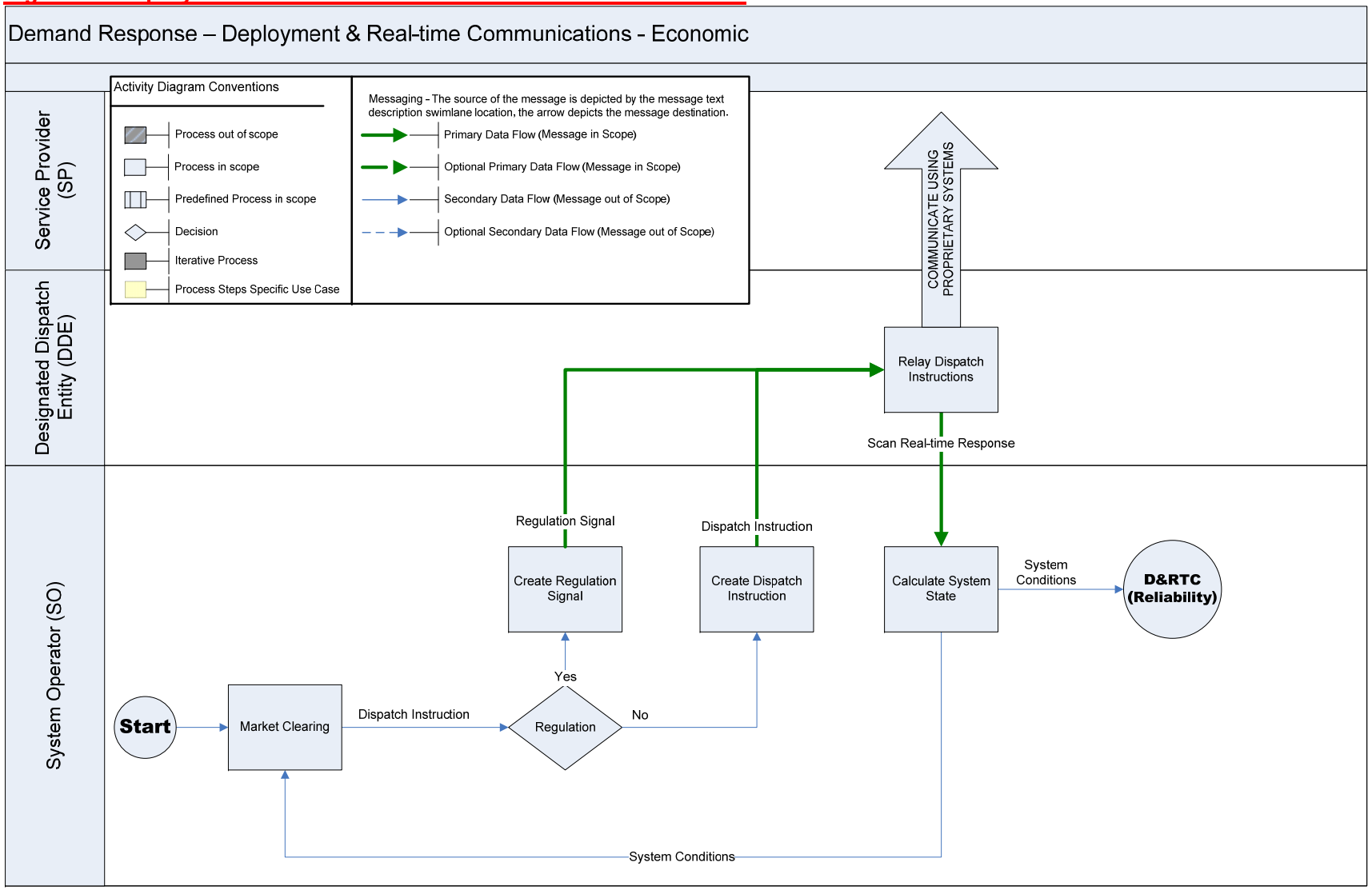
Table 6 - Use Cases for Figure 5

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.
  - If the dispatch instruction is for Regulation, the SO sends the Regulation signal to the DDE.
  - 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.

Activity Diagram and Data Flow:

Figure 5 - Deployment and Real-Time Communications - Economic



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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 flows 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

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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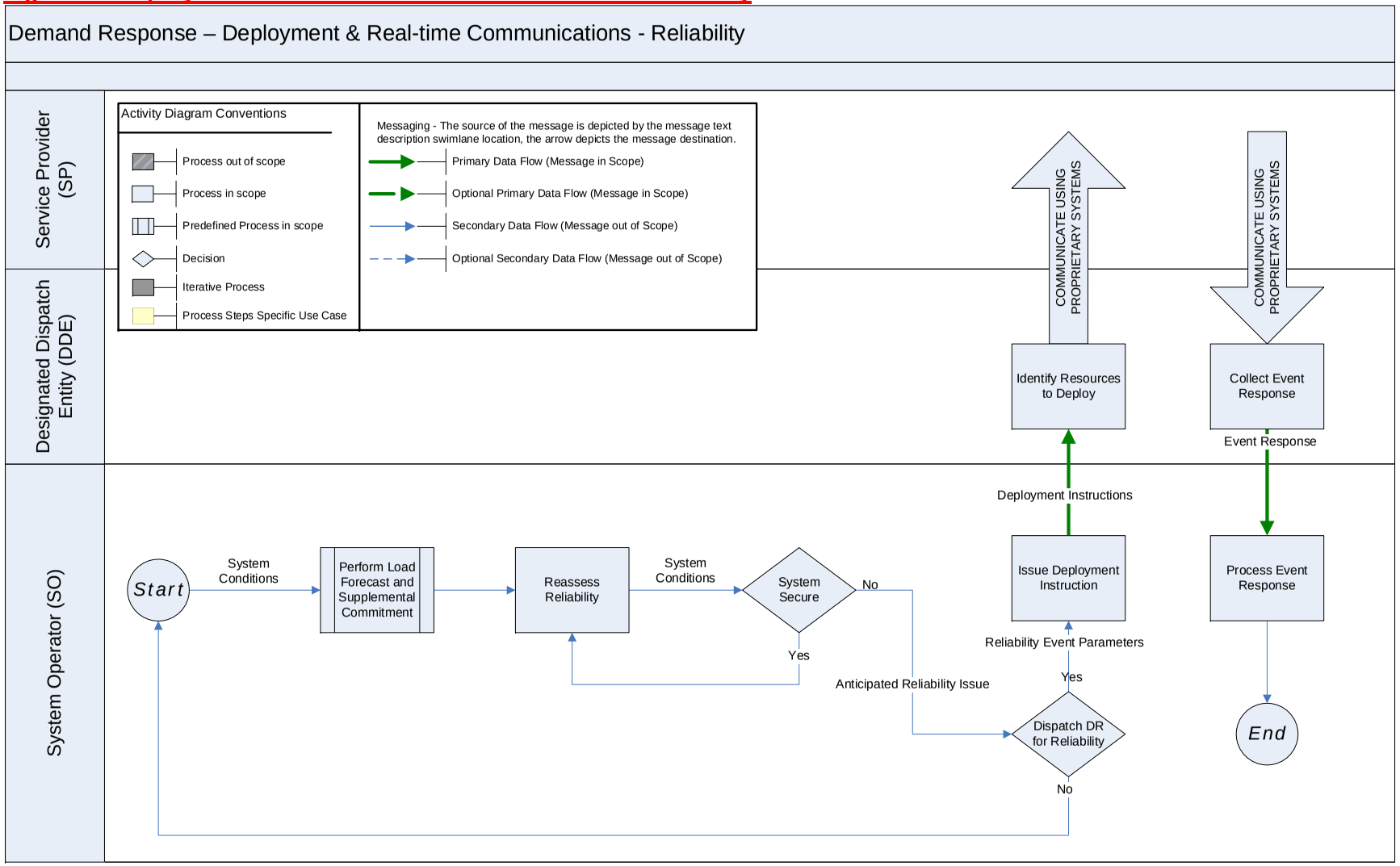
- o If SO anticipates that a reliability issue is expected, the SO decides whether demand response is needed for reliability.
  - If demand response will not be needed, the process ends.
  - If the SO determines that demand response will be deployed, the reliability event parameters are prepared by the 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.

Activity Diagram and Data Flow:

Figure 6 - Deployment and Real-Time Communications - Reliability



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018-1.4.6 Measurement and Performance – Baseline

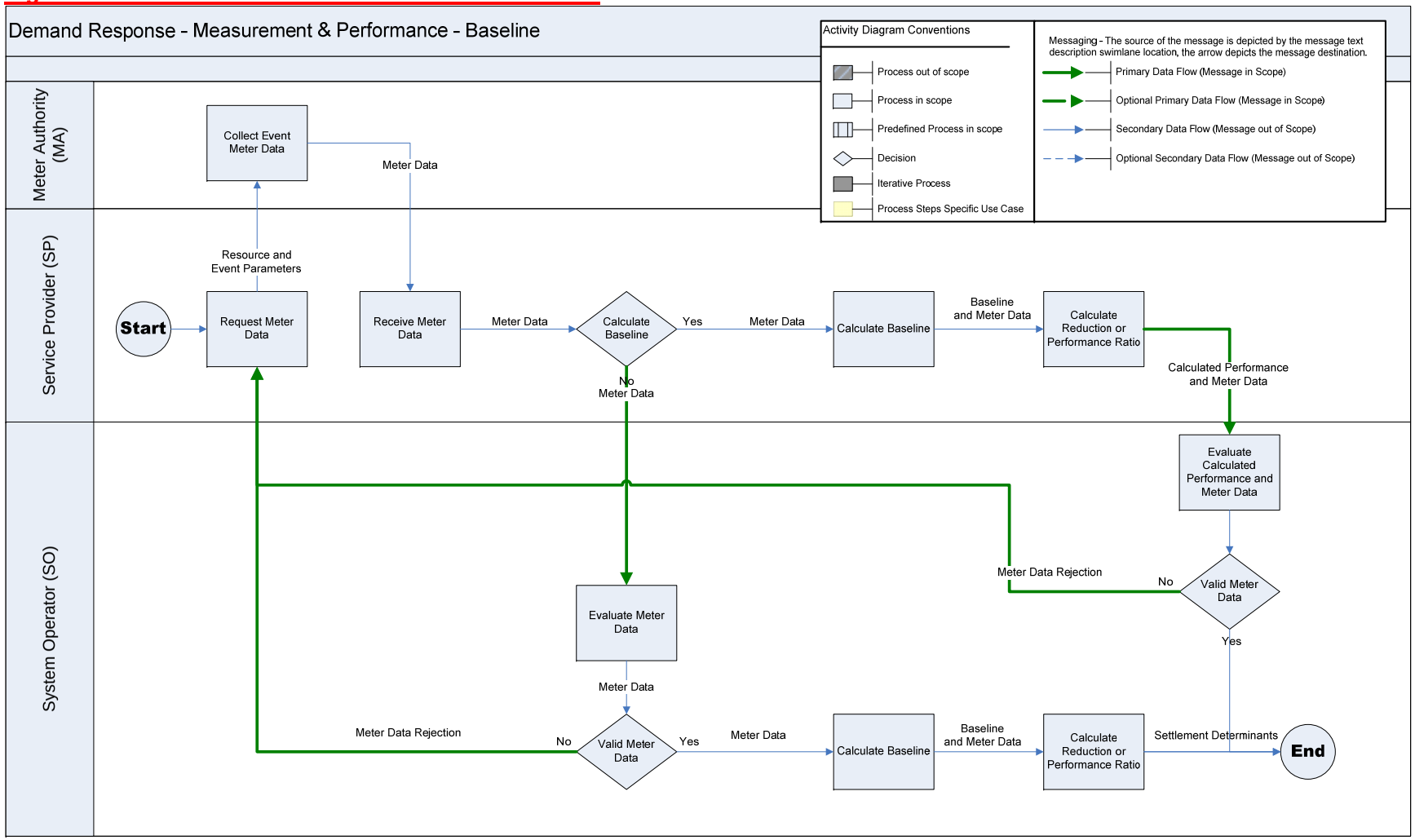
Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

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.
  - The SP uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
  - The SP sends the calculated event performance and meter data to the SO.
  - 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.
  - 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.
  - If the event meter data are incomplete, the SO sends an event data rejection to the SP.

Activity Diagram and Data Flow:

Figure 7 - Measurement and Performance – Baseline



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018-1.4.7 Measurement and Performance - All Others

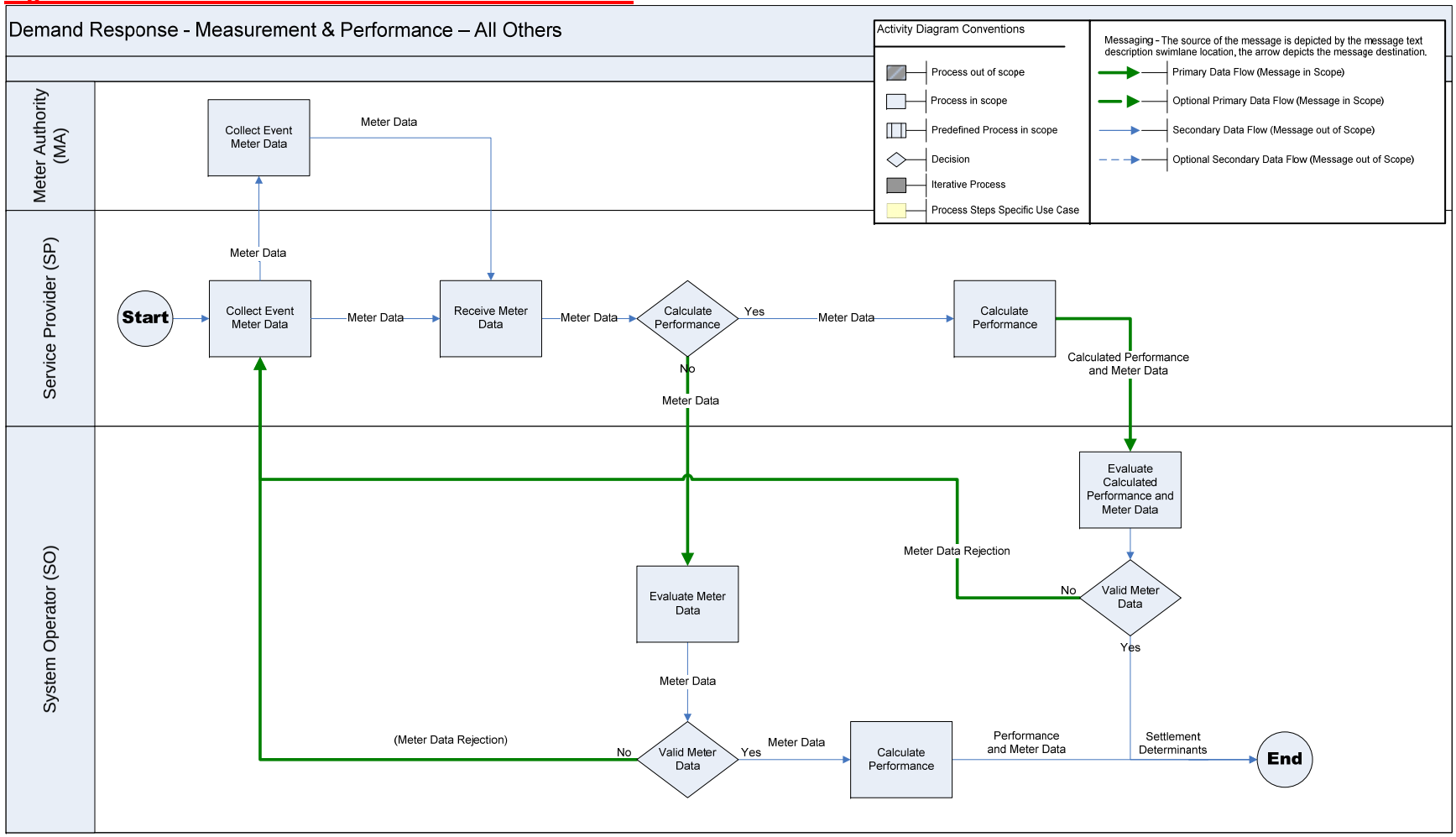
Overview: The Measurement and Performance process documents the steps to collect demand resource meter data and prepare the determinants for settlement.

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.
  - If the performance evaluation method is Meter Before/Meter After or Maximum Base Load, the MA sends the event meter data to the SP.
  - 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.
  - The SP uses the meter data to calculate the event reduction amount or event performance ratio.
  - The SP sends the calculated event performance and meter data to the SO.
  - 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.
  - 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.
  - If the event meter data are incomplete, the SO sends an event data rejection to the SP.

Activity Diagram and Data Flow:

Figure 8 - Measurement and Performance – All Others



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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 contains one or more End Devices. 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 documents 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 is related to one-or-more End Devices (reading top to bottom) and every End Device is related to exactly-one Premise (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.

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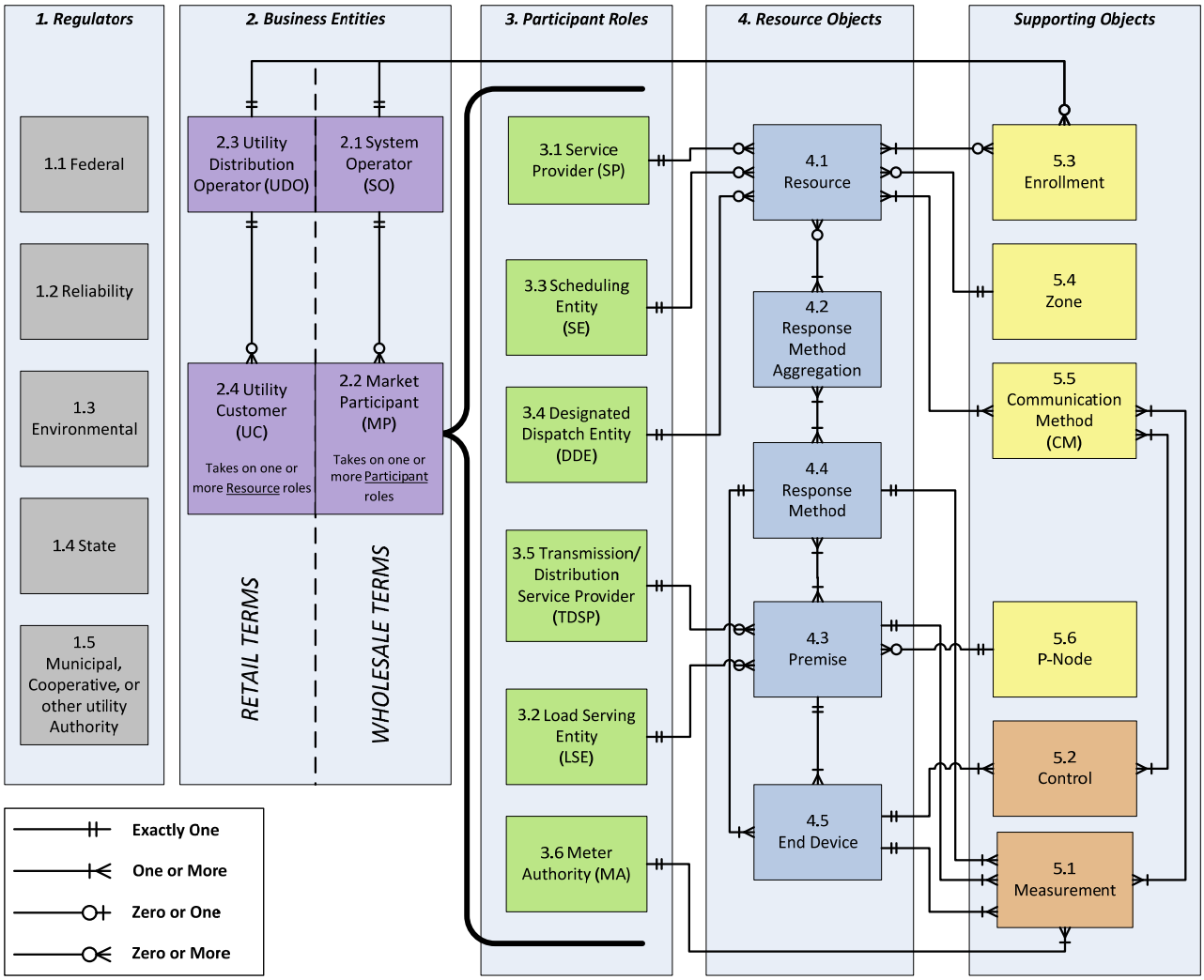
Figure 1A. Entity-Relationship Model for Smart Grid Use Cases



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018-B

Appendix B – Use Case Combinations

The following table is a complete list of use case combinations included in this 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 AS REVISED BY NAESB WEQ EXECUTIVE COMMITTEE on June 16, 2010

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Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 WEQ Annual Plan Item 6(a)
Request Title: Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

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:

On September 30, 2009, the National Institute of Standards and Technology officially assigned NAESB the responsibility to develop Requirements and Use Cases pertinent to Priority Action Plan items 3, 4 and 9. A complete description of each item is available on the NIST Web site located at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome in the section titled Priority Action Plans (PAPs).

This recommendation specifically pertains to PAP 09[4], "Standard DR Signals".

b. Description of Recommendation:

See Section 3 Summary

c. Business Purpose:

This recommendation describes the end-to-end business process flows relating to the wholesale market communications between the System Operator (SO) and the Service Provider (SP) common to all ISOs/RTOs that offer opportunities for demand resources to participate in organized wholesale electric markets.

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

Joint Smart Grid Standards Task Force and Fix Protocol Meeting Notes/Documents:

- September 17, 2009 Meeting Notes – To be posted
- October 1, 2009 Meeting Notes – To be posted
- October 15, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Sub-Group Meeting Notes/Documents:

- October 13, 2009 Meeting Notes – To be posted
- October 20, 2009 Meeting Notes – To be posted
- October 27, 2009 Meeting Notes – To be posted
- November 3, 2009 Meeting Notes – To be posted
- November 4-6, 2009 Meeting Notes – To be posted
- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted
- November 13, 2009 Meeting Notes – To be posted

[4] http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP09Schedules

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- December 3, 2009 Meeting Notes – To be posted
- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted
- February 5, 2010 Meeting Notes – To be posted

Considerations:

- The scope of DER applications will be limited to the context of grid-connected DR use cases and does not include the other possible applications of DER.
- The standards shall not prescribe a specific implementation technology.
- Information Technology security is explicit in the information model but is implicit in the business process models.
- Outputs from one process flows are considered inputs to subsequent following flows.
- A single entity may have multiple roles (e.g., a participant can function in the roles of DDE and MA).
- The process flows describe the standard path. Subsequent use cases will address exceptions other than standard data validation procedures.

e. Additional Documentation from Subcommittee(s)/Task Force(s):

- The Task Force is including the following materials to include complete set of abbreviations, acronyms, and definitions. The changes to the abbreviations, acronyms, and definitions are only listed in the Recommended Standards.

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response

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Abbreviation / Acronym	Meaning
EA	Environmental Authority
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commission Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
LSE	Load Serving Entity
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
MWh	Megawatt Hour
NIST	National Institute of Standards and Technology
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid

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Abbreviation / Acronym	Meaning
PUC	Public Utility Commission
SE	Scheduling Entity
SGTF	Smart Grid Task Force
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language
XML	Extensible Markup Language

Term	Definition
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 Reduction Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact.
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.

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Term	Definition
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	The responsible entity that secures energy and Transmission Service (and related Interconnected Operations Services) to serve the electrical demand and energy requirements of its end-use customers.
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Maximum Base Load (MBL)	A performance evaluation methodology based solely on a Demand Resource's ability to reduce to a specified level of electricity Demand, regardless of its electricity consumption or Demand at Deployment.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.

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Term	Definition
Meter Before /Meter After (MB/MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
Metering Generator Output (MGO)	A performance evaluation methodology, used when a generation asset is located behind the Demand Resource's revenue meter, in which the Demand Reduction Value is based on the output of the generation asset.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
Scheduling Entity (SE)	A role which carries the responsibility of submitting bids/offers and receives schedules and awards.
Service Provider (SP)	A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.
State Regulator (SR)	A regulatory authority responsible for the oversight and administration of electric utilities.
Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.

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Term	Definition
System Operator (SO)	A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment, and Release/Recall instructions.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
Utility Customer (UC)	An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource.
Utility Distribution Operator (UDO)	An entity which carries the responsibility of operating an electricity distribution system.
Zone	A physical or electrical region.

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1. RECOMMENDED ACTION:

- X Accept as requested
- ___ 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:	Per Recommendation:
X Initiation	X Initiation
___ Modification	___ Modification
___ Interpretation	___ Interpretation
___ Withdrawal	___ Withdrawal
X Principle	X Principle
X Definition	X Definition
X Business Practice Standard	X Business Practice Standard
___ Document	___ Document
___ Data Element	___ Data Element
___ Code Value	___ Code Value
___ X12 Implementation Guide	___ X12 Implementation Guide
___ Business Process Documentation	___ Business Process Documentation

3. RECOMMENDATION

SUMMARY:

The business process flows, use cases and data requirements presented in this document illustrate the standard interactions between Utility Distribution Operator, Service Provider (Demand Response) and Utility Customer for the administration and deployment of demand response resources retail markets.

RECOMMENDED STANDARDS:

In response to NIST's Priority Action Plan 9, this document provides requirements specification, in the form of business process flows, use cases and data requirements in certain areas, to support the standardization of the information exchange between Utility Distribution Operator, Service Provider (Demand Response) and Utility Customer. This document shares a standard set of actors and terminologies with the companion Requirements Specification for Wholesale Standard DR Signals.

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REQ.17.2.B

New REQ.17.2.B Technical Abbreviations/Acronyms and Defined Terms to be added to REQ.17 are included in the Recommendation Request Titled Requirements Specfications for Common Electricity Product and Pricing Definitions – for NIST PAP03 to avoid redundancy between recommendations.

REQ.17

New Model Business Practices REQ.17 – Specifications for Retail Standard DR Signals

RECOMMENDED STANDARDS:

Executive Summary

Specifications for Retail Standard Demand Response Signals

The North America Energy Standards Board (NAESB) Smart Grid Task Force (SGTF) took the responsibility of consolidating and developing DR use cases that provide requirements for developing DR control and pricing signal standards, which is called for by National Institute of Standards and Technology (NIST) Priority Action Plans (PAP) 03 and 09. This document addresses the business and data requirements for standardizing control and pricing signals for Retail level Demand Response (DR) and Distributed Energy Resources (DER) as part of the Smart Grid implementation. Wholesale market DR and DER information exchanges are outside the scope of this document and are addressed in the Requirements Specification for Wholesale DR signals. The first step of use case development is the development of the Framework for Integrated DR and DER Models document, which provides an overall business context for DR and DER Models.

According to the Framework Document findings:

1. DR signals standardization must support all four market types; i.e. regions with a) no open wholesale and no retail competition, b) open wholesale market only, c) open retail competition only, d) open wholesale and open retail competition. It must also consider key differences that exist and will continue to exist in all four market types.
2. Wholesale market DR and pricing signals have different characteristics than retail market DR and pricing signals, although commonality in format is feasible.
3. Most Customers (with a few exception of Commercial and Industrial (C&I) Customers) will not interact directly with wholesale market when it comes to DR and pricing signals.
4. Retail pricing models are complex, due to the numerous tariff rate structures that exist in both regulated and un-regulated markets. Attempts to standardize DR control and

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pricing signals must not hinder regulatory changes or market innovations when it comes to future tariff or pricing models.

5. New business entities (Energy Service Providers (ESP), Demand Response Providers (DRP), Service Providers, and Energy Information Service Providers (ESIP)) as well as new customer energy management systems will play an increasing role in DR implementation.
6. DER may play an increasingly important role in DR, yet the development of tariff and/or pricing models that support DER's role in DR is still in its infancy.
7. The Customer's perspective and ability to react to DR control and pricing signals must be a key driver during the development of DR standards.

The following deals exclusively with the retail level demand response signals requirements. The requirements are captured in the form of UML models, where business requirements are captured in Use Case narrative format, data requirements are captured in tabular format, and information exchange flows are captured in sequence diagram format. The top level use cases for retail DR are:

1. Administrate DR Program
2. Administrate Customer for DR
3. Administrate DR Resource
4. Execute DR Event
5. Post DR Event Management

Introduction

Specifications for Retail Standard Demand Response Signals

Purpose: The purpose of the following is to capture business and data requirements for Retail Level DR signals between entities that controls and manages the DR programs and entities that provide demand response with DR resources and assets. This is to fulfill the NAESB SGTF responsibility under the NIST Smart Grid Interoperability Standards development PAP09. This requirements document will then be used by other standards development organizations identified by NIST PAP09 for further development of DR signals technical specifications for both C&I customer and residential customer markets.

Scope: The scope of the following is to provide business and data requirements for standardizing Demand Response signals at the retail (distribution) level.

Commentary on Distributed Energy Resources: In the context of this report, Distributed Energy Resources (DER) are dispatchable energy generation and storage technologies, typically up to ten MWs in size, that are interconnected to the distribution grid to provide electric capacity and/or energy to a customer or a group of customers and potentially export the excess to the grid for economical purposes. DER systems can generate electric power, as opposed to curtailable or interruptible loads that can just reduce electric loading on the grid.

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DER may be subdivided into distributed generation (DG), distributed storage, and plug-in electric vehicles (PEVs):
Distributed generation (DG) technologies can be divided into a) **Renewable Generation**, e.g., small wind power systems, solar photovoltaic (PV), Fuel Cells, Bio-fuel generators and Digesters, and other generation resources using renewable fuel, and b) **Non-Renewable Generation**, e.g., micro-turbines, small combustion turbines, diesel, natural gas and dual-fueled engines, etc.

Storage resources could be divided into a) **Electric Storage,** e.g., battery systems and uninterruptible power supplies (UPS), flywheel, superconducting magnetic energy storage (SMES), etc. and b) **Thermal Storage –** These convert electric power to thermal (cooling/heating) energy for later use, e.g., Ice-based air cooling system, and high-capacity brick-based air heating system.

Plug-in electric and hybrid vehicles (PEV/PHEV) may also be considered as DER, The electric vehicles may be used to supply stored electric energy back to the grid, a.k.a. Vehicle-to-grid (V2G).

Behind-the-meter DER may be bundled with regular load and managed alongside the demand response resources – such as a residential roof-top PV solar panel. But often, DER is treated separately in part due to its control capabilities. In addition to a regular retail tariff, behind-the-meter DER may be subject to net-metering or feed-in tariff, where excess generation can be exported to the grid at an established or a dynamic price.

Similar to DR resources, DER assets need to be registered and enrolled into a DR program. Furthermore, DER assets are typically required to meet additional technical requirements and certification for grid interconnection. Depending on the size of a DER and its export capabilities, sub-metering and telemetry capabilities may be required to monitor the impact of the DER operation on the distribution grid reliability and power quality. Also, renewable resources may receive Renewable Energy Credits (RECs) and may also qualify as a must-run resource, e.g., wind power in some regions. These need to be incorporated into pricing and control signals associated with DER operation.

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Model Business Practices

REQ.17.3.1 Specifications for Retail Standard Demand Response Signals

The following describes general business processes for implementing demand response capacities at the retail market level. The following principles apply to the development and application of these business process requirements.

#	Name	Description	Rationale	Implication
1	Scalability	The architecture should allow for the management of millions of Customer premises devices	Scale-out, adding more low-cost machines, has proven to be superior to scale-up, using larger single machines, as a way to handle large loads. For example, high traffic web sites use farms of low-cost machines to serve pages to millions of simultaneous web users.	Architecture should allow the solution to scale-out as more devices are added.
2	Actionable, testable, and transferable work products	Any work (artifacts) that are created can be used by the audience for this work, e.g., utilities, vendors, regulators, etc. There needs to be clear, explicit guidance for how to use the artifacts. There is an expectation that the work products are useful at lower levels of design.	Such work products will promote market adoption and minimize the cost and risk of adoption, leverage open and best practices, and establish repeatable processes, patterns, and templates for all work products.	The use of common tools and methods will be fostered. Organizations that do not follow the use of the common tools and methods may have more difficulty implementing the artifacts.

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#	Name	Description	Rationale	Implication
3	Platform Independence, Vendor Neutral	Requirements and design artifacts shall be platform independent. Implementation technology shall be chosen due to its level of acceptance at the marketplace as open standards.	There is an expectation of differentiation and innovation in the marketplace. With greater dependence on a specific platform, there may be less architectural flexibility.	To achieve both technical and semantic interoperability, certain lower level technologies will need to be chosen. For example, Web Services technology is widely used for integration, and UML is widely used for modeling.
4	Cyber Secure	Architecture must incorporate latest secure computing techniques.	The integrity of the electric grid and market depend on preventing unauthorized actors from manipulating the DR and DER system.	Architecture must comply with the latest security guidance from the NIST SGIP Architecture Committee and CyberSecurity Task Group, when it comes to Web Services security related implementation.
5	Interoperability	DR signaling standards should utilize open, interoperable industry standard control and communication technologies to integrate with both common energy management and control systems that can conduct DR activities	Interoperability across different domains of Smart Grid is key to the success of DR signaling standards as it ensures level playing field for innovative solutions for all participants of the Smart Grid.	DR signaling standards must be developed in harmonization with others relevant standards as identified by the NIST SGIP.

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#	Name	Description	Rationale	Implication
6	Automatic Demand Response	The DR program (analysis, notification, event, action, monitoring, verification, settlement) should be automatic. DR signaling standards should provide secure, reliable communications with consumers for DR operations	Automation is the only way to ensure large scale and repeatable demand response implementation.	Security, reliability and testability must be ensured for DR automation.
7	Cover All Market Types	DR signaling standards should be supported and implementable in all four market types listed in this document	Standards development shall not get in the way of regulatory policy decisions.	DR signals design need to support a wide range of programs and tariff/pricing structures.

REQ.17.3.1.1 Conventions

The use case modeling technique is used for capturing business and date requirements relative to Retail Demand Response. There are two basic diagrams used in this document. The first one is the use case diagram, which shows the scope of business use cases for a given business scenario. The relationships used in the Use Case diagrams are as follows:

- Include: this indicates additional scenarios
- Extend: this indicates alternatives scenarios
- 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 second is the sequence diagram, which shows the information exchange flows between actors for a given use case. The message flows are shown in one way with the convention of verb and noun, verb indicating the action being taken, noun indicating the name of the information being exchanged. The return message flow is the acknowledgement of the main message flow.

REQ.17.3.1.2 ACTORS

The actors listed in the table below are specific to this Model Business Practice 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.

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Table 1 - Actor Roles

Term	Actor ID[1]
Communication Method	5.5
Control	5.2
Designated Dispatch Entity	3.4
Designated Dispatch Entity (DDE)	3.4
End Device (ED)	4.5
Enrollment	5.3
Environmental Authority (EA)	1.3
Federal Regulator (FR)	1.1
Load Serving Entity	3.2
Load Serving Entity (LSE)	3.2
Local Authority (LA)	1.5
Market Participant (MP)	2.2

[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 REQ.17.2

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Term	Actor ID[1]
Measurement	5.1
Metering Authority	3.6
Metering Authority (MA)	3.6
P-Node	5.6
Premise	4.3
Reliability Authority (RA)	1.2
Resource	4.1
Response Method (RM)	4.4
Response Method Aggregation (RMA)	4.2
Scheduling Entity	3.3
Scheduling Entity (SE)	3.3

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Term	Actor ID[1]
Service Provider	3.1
Service Provider (SP)	3.1
State Regulator (SR)	1.4
System Operator	2.1
Transmission/Distribution Service Provider	3.5
Transmission/Distribution Service Provider (TDSP)	3.5
Utility Customer (UC)	2.4
Utility Distribution Operator (UDO)	2.3
Zone	5.4

REQ.17.3.1.3 Use Case Overview

Similar to the Wholesale Demand Response use cases, Retail Demand Response use cases generally follow five main steps, see the Figure 1[2].

1. Administrate DR Program

[2] DR program administration related use cases are determined by the SGTF as out of scope for the NIST PAP09 purpose, and therefore the original content has been removed from the final recommendation and resulting Model Business Practices presented here. NAESB may start a new project to deal with the customer enrollment and DR program administration related business practices.

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2. Administrate Customer for DR

3. Administrate DR Resource
4. Execute DR Event
5. Post DR Event Management

There are many programs that exist in today's retail markets with or without open competition. New programs will be defined and deployed in the future. The goal of this use case analysis is to find commonalities among these programs so that the derived DR signal messaging specification can be implemented to support a large number of DR programs.

The focus of the Standardized DR Signals is the step 4, Execute DR Event, where the DR signals will be communicated between the DR Providers and the DR resources. All other use cases are supporting materials to ensure that DR use case requirements are documented and understood in a complete picture.

The use cases included in this document are not intended to be required or exhaustive and are provided for clarification purposes.

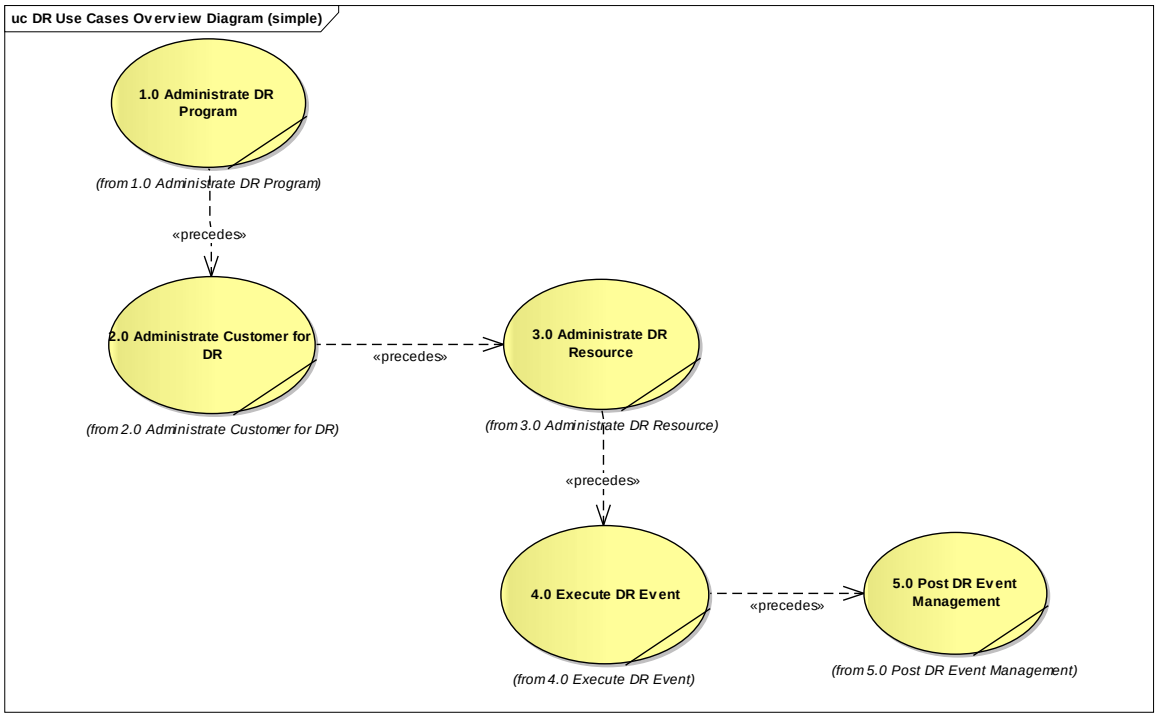

Figure 1. Retail Market DR Use Case Overview

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REQ.17.3.1.4 Specific Use Cases

REQ.17.3.1.4.1 Administrate DR Program

DR program administration related use cases are determined by the SGTF as out of scope for the NIST PAP09 purpose, and therefore the original content has been removed from the final recommendation and resulting Model Business Practices presented here. NAESB may start a new project to deal with the customer enrollment and DR program administration related business practices.

REQ.17.3.1.4.2 Administrate Customer for DR

DR program customer enrollment related use cases are determined by the SGTF as out of scope for the NIST PAP09 purpose, and therefore the original content has been removed from the final recommendation and resulting Model Business Practices presented here. NAESB may start a new project to deal with the customer enrollment and DR program administration related business practices.

REQ.17.3.1.4.3 Administrate DR Resource

DR Resource is an equivalent of Resource and DR Asset is an equivalent of Response Method Aggregation (RMA), defined in the actor list table.

As part of enrolling customers to a DR program, specific DR resources and assets that are associated with customers' accounts and premises will also need to be registered. Figure 4 shows the actors and use cases involved in administrating DR resources and/or assets into DR programs. The following use cases deal with the registration, update, and removal of DR resources and assets associated with a customer. When updating DR resources, there will also be potential use cases of DR bidding process, either for supplying or for buying power. There are also cases where Distributed Energy Resources will act as DR assets.

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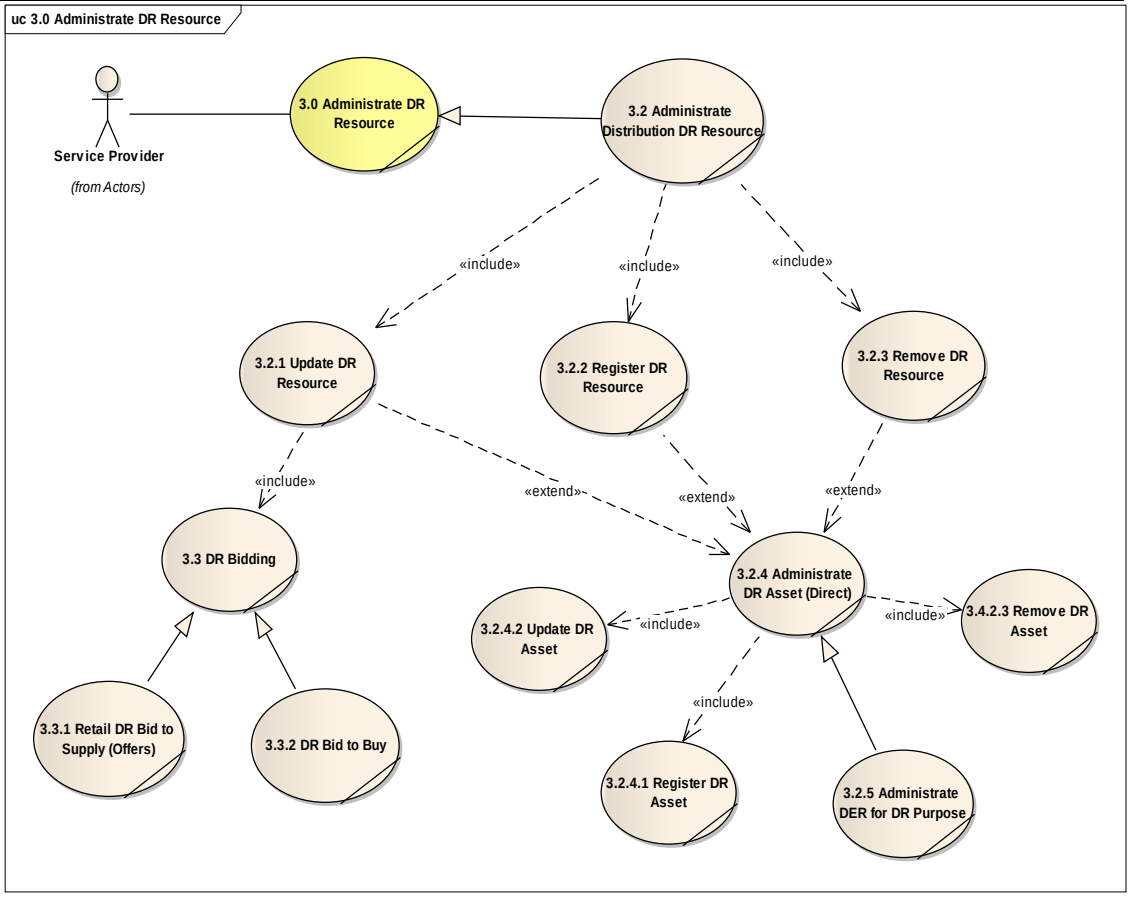

Figure 2. Administrate DR Resources and/or Assets into DR Programs

REQ.17.3.1.4.3.1 Administrate Distribution DR Resource

These activities are used to administer all of the DR Resources and Assets, including a variety of activities surrounding the registration of DR Resources and the management of information surrounding the DR Resources that a Service Provider may call upon during a DR event. Before a DR Resource may be called upon, it must be registered with the Service Provider. The administration of a DR Resource covers the following requirements:

- The need of the Service Provider to identify a DR Resource for communications purposes;
- The need of the Service Provider to establish DR Resource accounts for accounting purposes;
- The need of the Service Provider to collect information from DR Resources prior to DR events for the purposes of determining which DR Resources to call upon during a DR

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Event; and

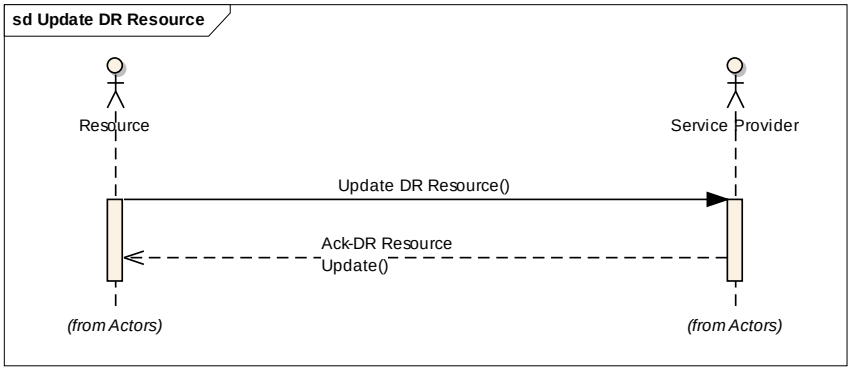
- The need of the Service Provider to collect information from DR Resources prior to DR events for the purposes of determining the nature of the DR signals to send to the DR Resources.

REQ.17.3.1.4.3.2 Update DR Resource

Description

When the base capacity of a DR Resource changes from when it was last registered with the DR provider, customer needs to provide updated information to the DR provider so that such information can be factored into the consideration for DR event planning.

Sequence Diagram



REQ.17.3.1.4.3.3 Register DR Resource

Description

A party with ownership, controlling interest, or administrative responsibilities for a DR Asset or DR Resource that communicates status-related operational information about the DR Asset or DR Resource to a Service Provider. For example, the owner of a DR Resource or Asset may wish to declare their inability to shed load (an outage) due to summer shutdown or may wish to reduce the available capacity of a resource/asset due to equipment maintenance or other causes.

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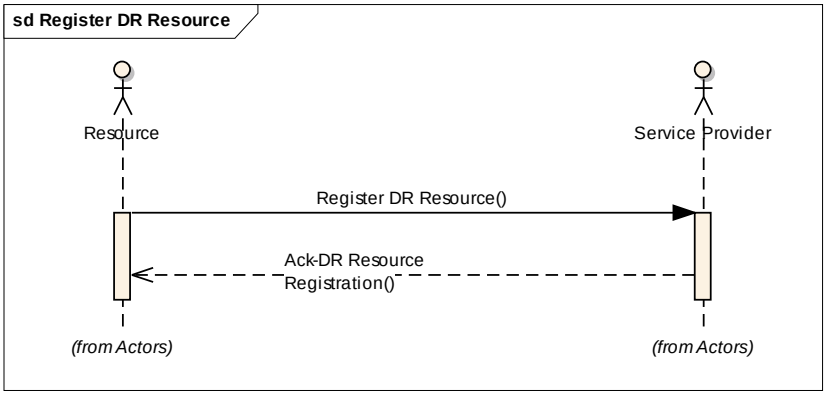
Sequence Diagram

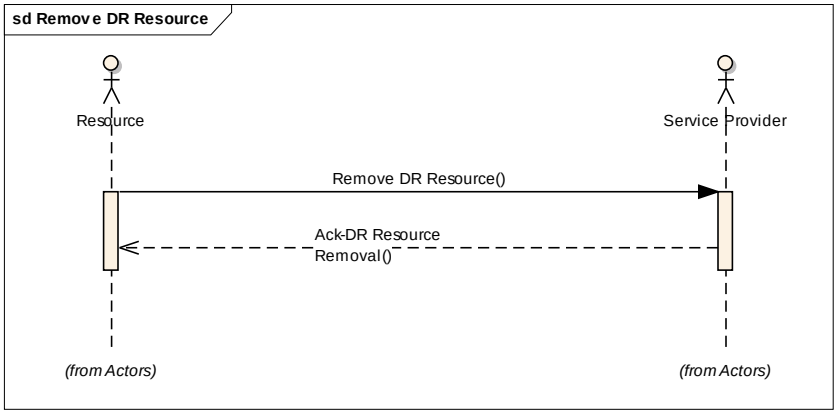


REQ.17.3.1.4.3.4 Remove DR Resource

Description

When a DR resource is no longer available permanently for DR purpose, it needs to be removed from the DR program for that customer so that it will be accounted for DR event planning.

Sequence Diagram



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REQ.17.3.1.4.4 Administrate DR Asset (Direct)

REQ.17.3.1.4.4.1 Register DR Asset

Description

The DR Asset registration process must capture key identifiers to enable accurate tracking of DR assets and their capabilities. A requirement for a System and Market Operator, Load Serving Entity, Service Provider, or other entity facilitating the registration process (hereinafter referred to as DR Asset Administrator) is to track assets. This is done through DR asset registration and association of physical DR assets to DR Resources to recognize the asset and its potential contribution as part of a DR Resource. The DR Asset Administrator ultimately administers the DR Asset registration process to recognize DR Assets that can serve as part of a DR Resource, although the Customer may be party to the registration process.

Sequence Diagram

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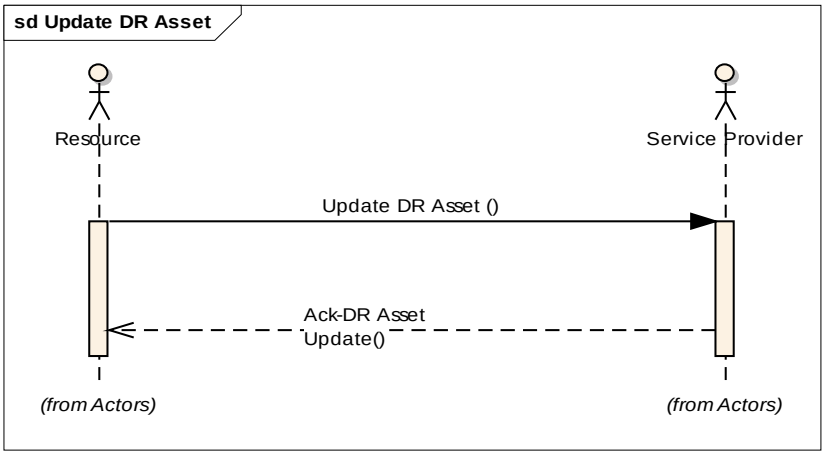
REQ.17.3.1.4.4.2 Update DR Asset

Description

Once a DR asset registration is completed, changes to elements of the registration may be required or desired. After identifying the specific required modification and verifying the authorization to perform the update, each of the considerations identified in the DR Asset registration step should be evaluated and utilized, where necessary, during the update of the DR Asset information. The ability to update DR Asset information helps to ensure the asset information on record is current and complete.

Parties that are privy to and rely on the update should be notified of updates as soon as practicable after they are made. Additionally, these parties should have access to review and, in some cases, to approve/disapprove the update(s).

Sequence Diagram



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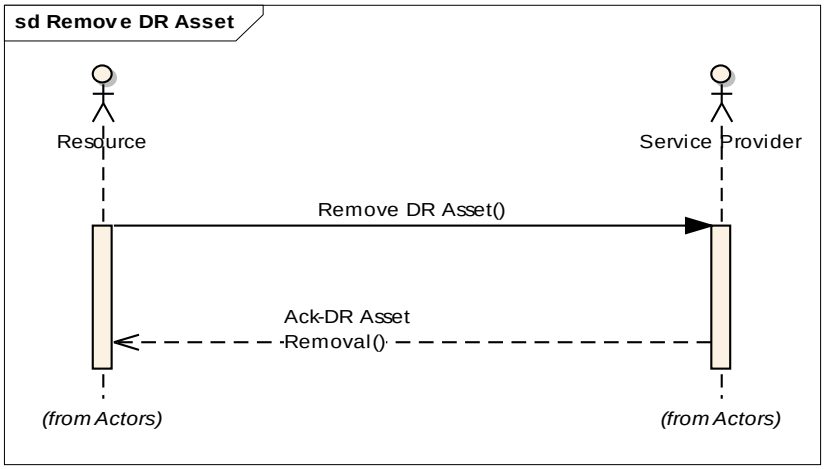
REQ.17.3.1.4.4.3 Remove DR Asset

Description

Removing a DR Asset must take into account any DR Resource long term commitments in System Operator programs and contractual obligations with Service Providers or Load Serving Entities. In addition, applicable regulatory agency filings and approvals must be considered prior to removing a DR Asset from a DR program.

Sequence Diagram



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REQ.17.3.1.4.5 DR Bidding

Description

Demand Response Bidding occurs after the DR Assets and Resources that are to comprise the desired bid have been registered and a bid or an offer is to be formed. The DR Bidding use case has two sub-use cases, depending on the type of bid to be developed for submission: a bid to supply (i.e., an offer), or a bid to buy. The entity operating the DR bidding program (the Bid Receiver) receives bids from participants (the Bidders). The Bidder may be a Customer bidding with either an energy retailer (e.g., LSE, ESP), a Service Provider (e.g., CSP, DRP), or a power marketer (i.e., wholesale market participant). The Bidder may also be a Service Provider bidding up to a LSE or power marketer.

Before the start of the bidding process, it is assumed that DR Resources available for selection are already registered to provide the physical resource participating in the DR Bidding program. It is also assumed that the bidder has already registered to bid with the bid receiver and has been informed on the appropriate timing and parameters for bid participation. The DR bidding process starts with the decision of the Bidder to develop a bid for submission. The Bidder submits its bid to the Bid Receiver within the appropriate time window and following set guidelines for bidding. The Bidder receives information on the outcome of the submitted bid from the Bid Receiver, who notifies of the bid outcome (e.g., a resource award or other DR commitment).

Examples of retail DR Bidding programs include:

- Demand Bidding
- Capacity Bidding

REQ.17.3.1.4.5.1 DR Bid to Supply (Retail Offers)

Description

The Bid Receiver opens the forum/venue for receiving an offer. (This may include initiating the bidding process by sending initial information to Bidders indicating parameters of acceptability for bids to be made). The Bidder communicates an offer to supply a specified product/service and the pricing or other incentive structure the bidder is willing to accept for DR. (This may be as simple as the customer sending a response back to the Bid Receiver that accepts or rejects the initial bid sought, or may involve more complex bid structuring).

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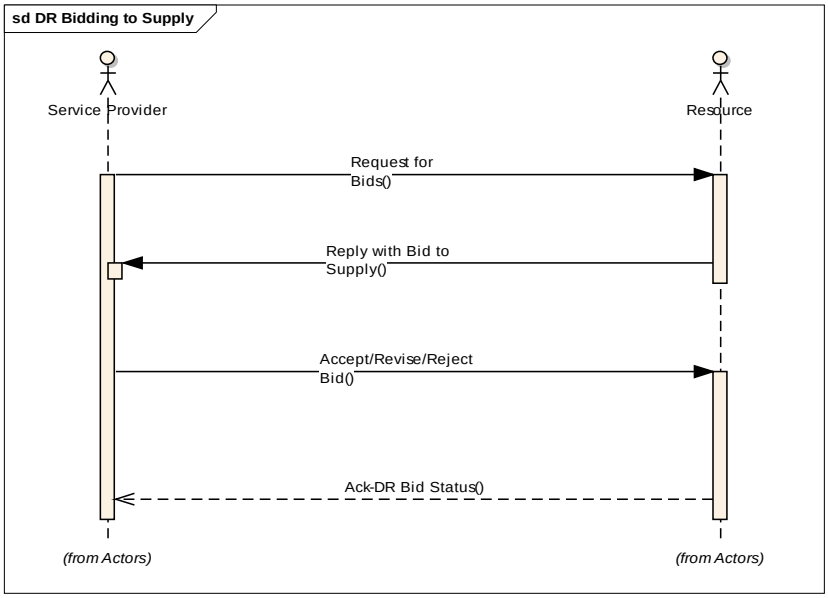
Each offer will have a clearly specified product or service that is being bid and the pricing/incentive structure being offered. The bidder also nominates the amount of and nature of supply being offered, the DR Resource to physically provide the service, and other physical parameters affecting resource availability and capability, in addition to the identity (or ID) of the bidder and resource(s) that comprise the bid.

The Bid Receiver reviews bids (offers) received and clears them, notifying the bidders of the outcome.

The Bidder receives the notification of awards or resource commitments and uses the information internally in preparation for DR Resource Dispatch.

Sequence Diagram

(Note, the Bid in the followign sequence diagram is an offer to supply)



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REQ.17.3.1.4.5.2 DR Bid to Buy

Description

The Bid Receiver opens the forum/venue for receiving a bid. (This may include initiating the bidding process by sending initial information to Bidders indicating parameters of acceptability for bids to be made). The Bidder communicates a bid to buy a specified product/service and the pricing or other incentive structure the bidder is willing to pay to avoid DR. (This may be as simple as the customer sending a response back to the Bid Receiver that accepts or rejects the initial bid sought, or may involve more complex bid structuring).

Each bid will have a clearly specified product or service that is being bid for purchase and the corresponding pricing structure that is acceptable to the Bidder. The Bidder also includes the quantity of product/service in the bid to buy, and specifies any DR Resource(s) that can physically substitute for the product/service in the event the bid to buy is not cleared (i.e., the bidder is unwilling to pay more than the going/market outcome price for the product/service). Other information submitted include physical parameters affecting resource availability and capability, in addition to the identity (or ID) of the bidder and resource(s) that comprise the bid.

The Bid Receiver reviews bids received and clears all bids, notifying the bidders of the outcome. The Bidder receives the notification of resource commitments and uses the information internally in preparation for DR Resource Dispatch.

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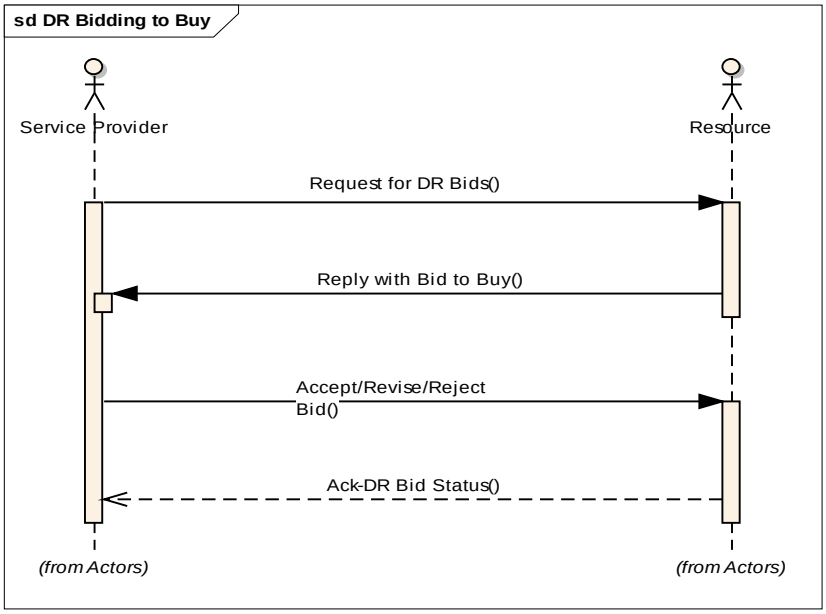
Sequence Diagram



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REQ.17.3.1.4.6 Execute DR Event

The execution of a DR event takes different forms depending on operational situation and the type of DR programs being executed. Typically, they fall into one of the following four use cases, see Figure 5:

1. Advanced DR Notification
2. Broadcast DR Message (price plus information)
3. DR dispatch instruction
4. DR direct load control.

Operational considerations for DR event execution are also associated with DR programs where direct load control or dispatching instructions are carried out.

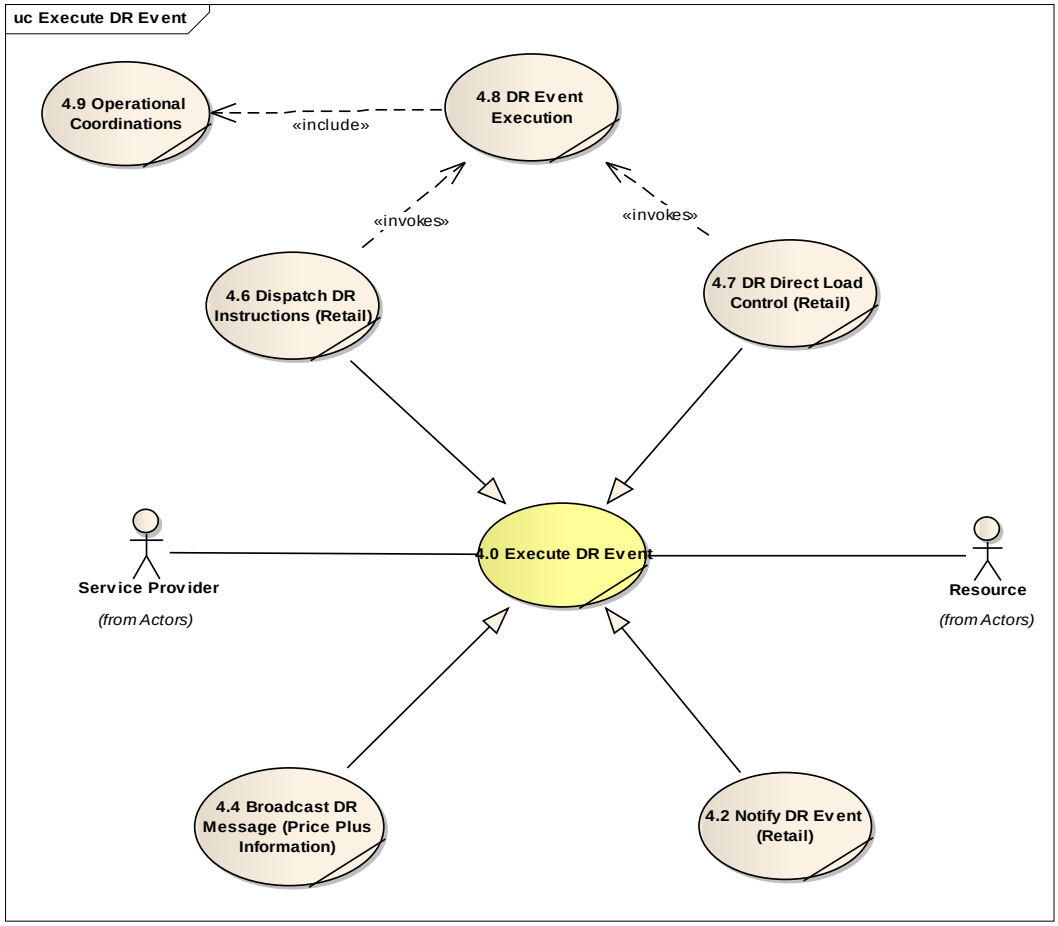

Figure 5. Execute DR Events

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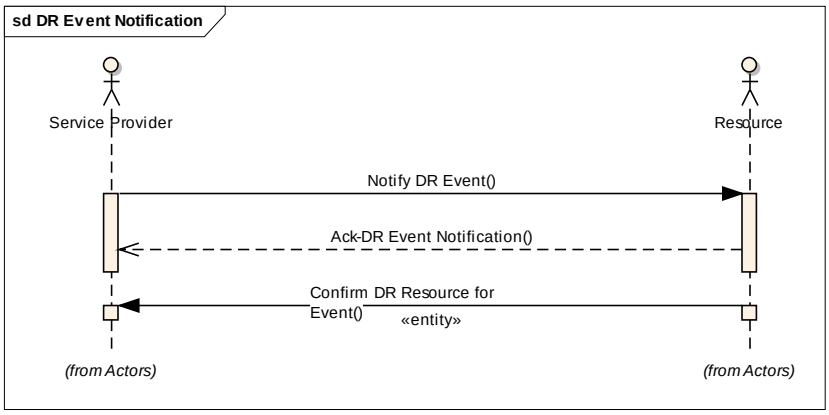
REQ.17.3.1.4.7 Notify DR Event (Retail)

REQ.17.3.1.4.7.1 Advanced Notification for DR (Retail)

Description

This is used by the Service Provider to send the DR Event notification (i.e., DR signal) to the DR Resource.

Sequence Diagram



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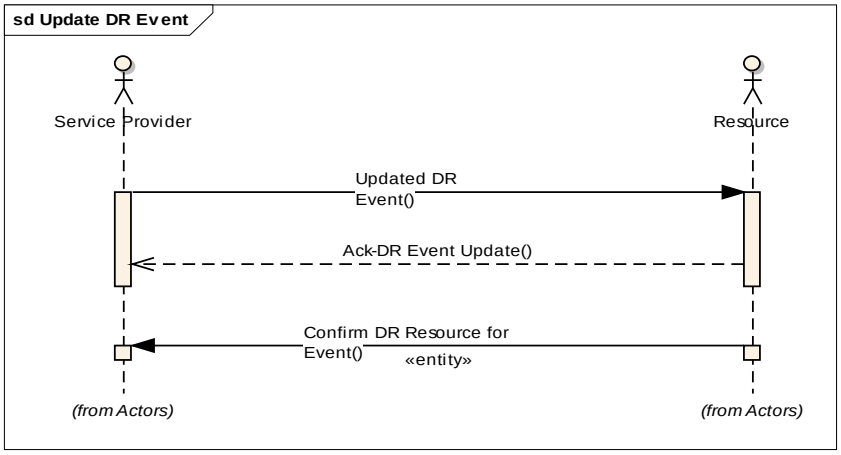
REQ.17.3.1.4.7.2 Update a DR Event (Retail)

Description

This is used to update a DR event that has been previously notified. The requirements for this use case are the same as those for the "Advanced Notification for DR" use case.

Sequence Diagram



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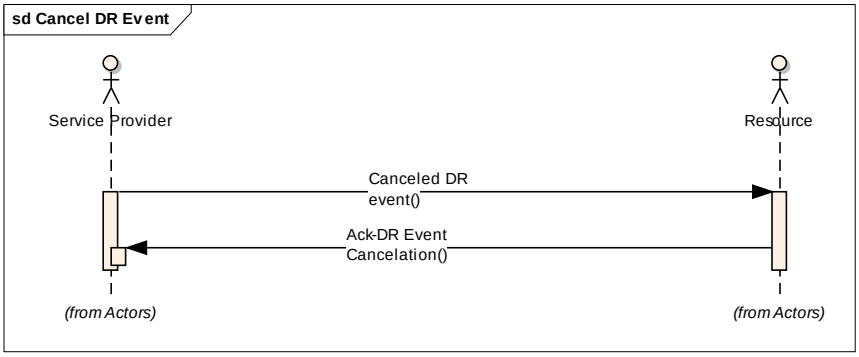
REQ.17.3.1.4.7.3 Cancel a DR Event (Retail)

Description

This is used by the Service Provider to notify the DR Resource that a DR Event is being cancelled. It should only be executed if a DR Resource has previously received notification of a DR Event and that event has subsequently been cancelled.

Sequence Diagram



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REQ.17.3.1.4.7.4 DR Resource Confirmation (Retail)

Description

This is a confirmation message that is sent by a DR Resource to the Service Provider as a result of receiving a DR Signal form the Service Provider. It may be used as an acknowledgement of the receipt of the DR signal, but it may also contain various information used to signify how the DR Resource will respond to the DR Signal.

Sequence Diagram

REQ.17.3.1.4.8 Broadcast DR Message (Price Plus Information)

Description

Demand Response programs are designed to address different power system concerns caused by the imbalance between generation, transmission and consumption, or environmental concerns. Some DR programs are conducted on a voluntary basis, where the customer can opt to maintain the level or load. Some DR programs are mandatory, where either the customer loads will be curtailed under certain conditions or the customer will incur financial penalties for noncompliance.

In retail market, certain “DR Messages” can be broadcasted to DR resources either directly or through Service Providers. DR Message is defined as information about the DR signals that may affect the demand behaviors of the energy consumers. Obviously, the main component of the DR Message is the pricing information. However, there are other attributes of energy being delivered that may be of interest to energy consumers and could be included in the DR Message.

Based on the OpenADR discussion, the broadcasting function is mainly used for volunteer or non-mission critical DR messages. Therefore, message acknowledgement or confirmation is optional.

DR Source of Power/Generation

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"DR Message" also can be source of power or generation. ANSI C12.19-2008 defined the following source of power/generation in Standard Table 12.

Precondition:

The DR Service Provider sends the DR message to service providers. In the case of DR pricing, the DR Service Provider calculates the price per location and communicates the appropriate price associated with the DR product to service providers.

Post Condition:

DR Resources received the DR pricing information, and may or may not act based on the DR agreement or contract.

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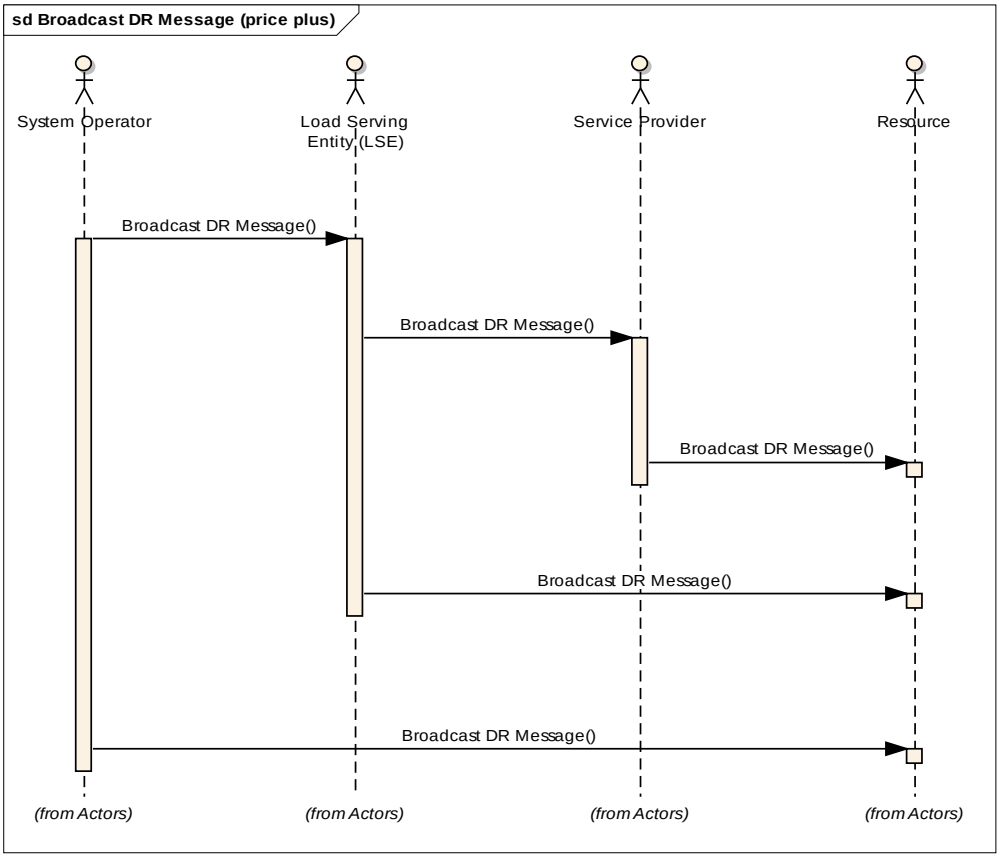
Sequence Diagram



REQ.17.3.1.4.9 Dispatch DR Instructions (Retail)

Description

This interaction is used to dispatch DR Resources. This type of interaction is used when the Service Provider needs to achieve specific objectives from the DR Resources during DR events. This means that specific instructions will be given to the DR Resource with objectives (e.g. shed 100 kW) for the load profile of the DR Resource.

Note that for the retail use cases, a Dispatch is considered a special type of DR Notification, and thus, it is very similar in nature to the requirements given for that interaction.

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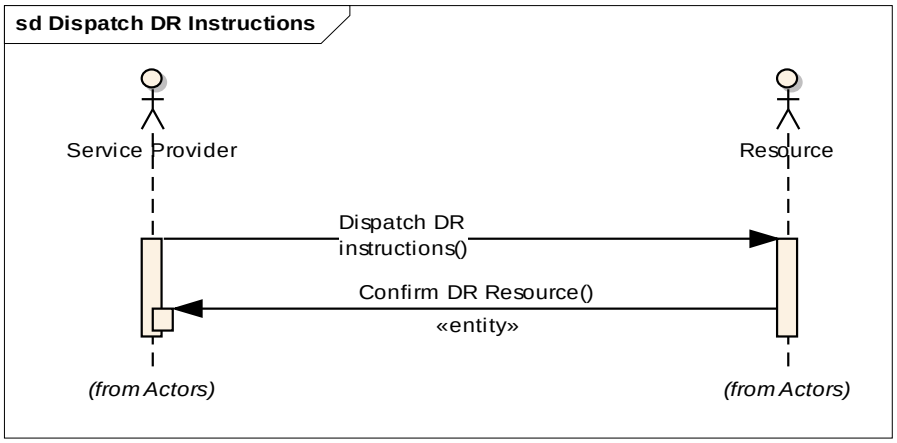
Sequence Diagram



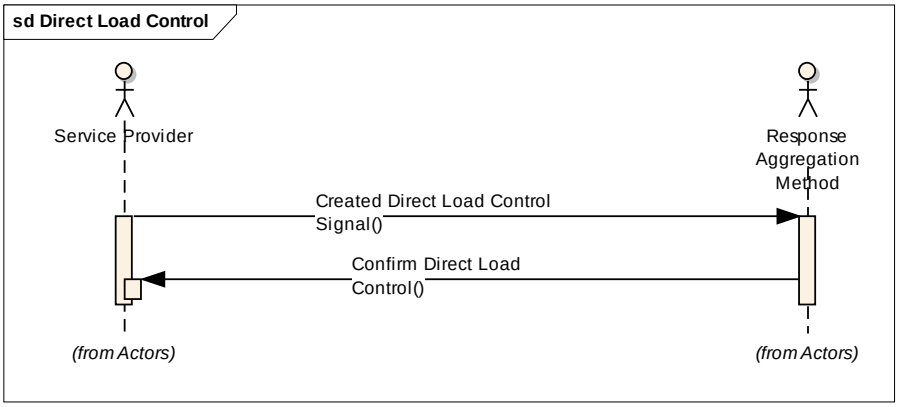
REQ.17.3.1.4.10 DR Direct Load Control (Retail)

Description

This use case covers direct interactions between the DR Service Provider and a specific DR Asset for the purposes of putting that asset into a specific load control state (e.g., to turn it on or off). In this case, the DR Asset is a DR Resource with only one DR Asset, and thus, the interaction is directly with the DR Asset.

See REQ.17.3.1.4.11.3, DR Execution - Direct Load Control (DLC) for more details.

Sequence Diagram



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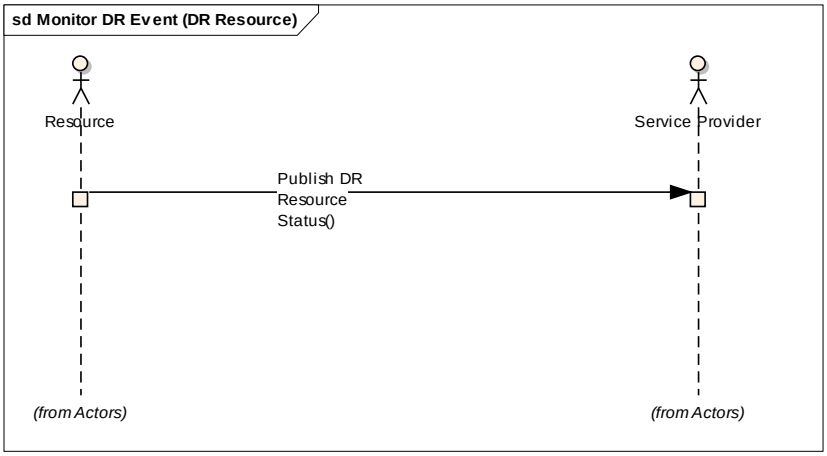
REQ.17.3.1.4.10.1 Monitor DR Event (DR Resource)

Description

This interaction is used to monitor a DR Resource's behavior. It may be executed as a result of the DR Resource receiving a DR signal or it may be conducted continuously.

Sequence Diagram

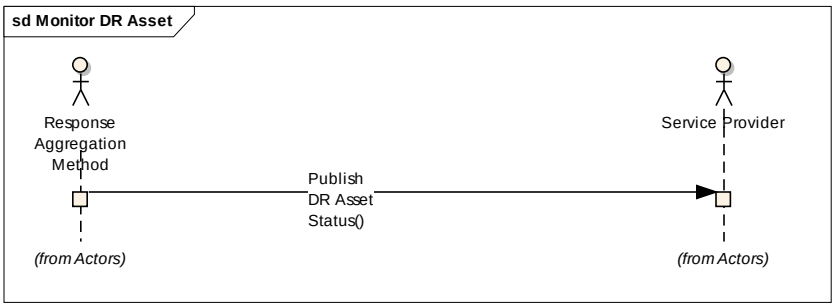


REQ.17.3.1.4.10.2 Monitor DR Event (DR Asset)

Description

This interaction is used to monitor the state of a DR Asset. It may be executed as a result of the DR Asset receiving a DR signal or it may be conducted continuously.

Sequence Diagram



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REQ.17.3.1.4.11 DR Event Execution

Demand Response is deployed for economic or a reliability purposes. At high penetration levels, demand response has to be integrated with the power supply scheduling process, and it may impact the distribution grid operation and reliability, and perhaps the transmission grid operation and reliability. Thus it is important to include the required considerations for the grid and system level operations when developing DR Use Cases and DR signal standards. Such impacts may not be significant at low penetration levels; however, proper considerations must be given to support scalability and expandability for future deployments.

Power system operates based on a real-time balancing of supply and demand. To economically schedule the supply, an accurate load forecast is needed. Traditionally, load forecast was generated using the historical consumption patterns, weather forecast and other similar parameters. With the potential of high-penetration of DR, it will be necessary to incorporate the planned or forecasted DR levels into the load forecast. Also, DR capabilities can be used to support the power system capacity or emergency supply (ancillary service) needs. Such services require proper scheduling and monitoring capabilities.

A demand response event may be initiated by a power system operator in response to a reliability event, e.g., loss of a generating station causing a lack of supply to meet demand, or an uncontrolled set of PEVs overloading of a distribution transformer. A demand response event may also be initiated by utility operational systems based on economic considerations, e.g., reducing or shifting peak load at the system level or at specific feeder or facility. Demand response may also be initiated by a customer in response to a market pricing signal

Considering that the distribution grid in the US is typically a three-phase imbalance circuit, i.e., many customers are on a single-phase or two-phase of the three-phase system. Thus significant changes in customer load patters could result in undesirable imbalanced conditions on a feeder. Also, load pickup following the termination of a major DR event could possibly cause overloads and other operational problems, if the load pickup is not properly scattered/managed.

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The following provides three representative use cases to highlight some the key interactions. These include:

- Dynamic Price-based DR
- Notification-based DR
- Direct Load Control

REQ.17.3.1.4.11.1 DR Execution – Retail Time Pricing (RTP)

Description

Provide real-time or dynamic pricing (RTP) to retail customers so that customers can vary their demand based on pricing signals. RTP represents retail electricity rates that vary as a function of time

Traditionally, retail tariff has based on a fixed or tiered rate structure with possible considerations of static rates for pre-established time of use (TOU) conditions. Real time or dynamic pricing (RTP) represent retail electricity rate that could vary as a function of time and is intended to modify demand. It requires interval metering for accurate billing based on time-varying prices. A number of states have implemented RTP or other dynamic pricing tariffs for large customers. With a broader deployment of advanced meters, RTP rates may become more common nation-wide.

The scenario presented here represents a case where a location-dependent real-time retail pricing for energy is established based on the Locational Marginal Price (LMP) for that location. LMP values are typically established by an ISO (for regions covered by an ISO/RTO) on a day-ahead (hourly resolution) and real-time basis, typically on a five minute resolution. For the RTP, it may be appropriate to use the real-time LMP as the basis for computing the retail dynamic tariff. However, decisions should be made on the time and the spatial resolution of the RTP. For example, an hourly RTP averaging the five minute pricing values, or a Critical Peak Pricing model to reflect the extreme conditions only, may be adopted. In addition to the energy price, the retail RTP rate may also include the appropriate uplift charges to cover for distribution wire/services charges and for the power loss compensations. Note that the uplift charges are typically subject to a regulatory review and approval.

Special care must be given to the RTP rate design to ensure customer acceptance and adaptation. Also grid operational

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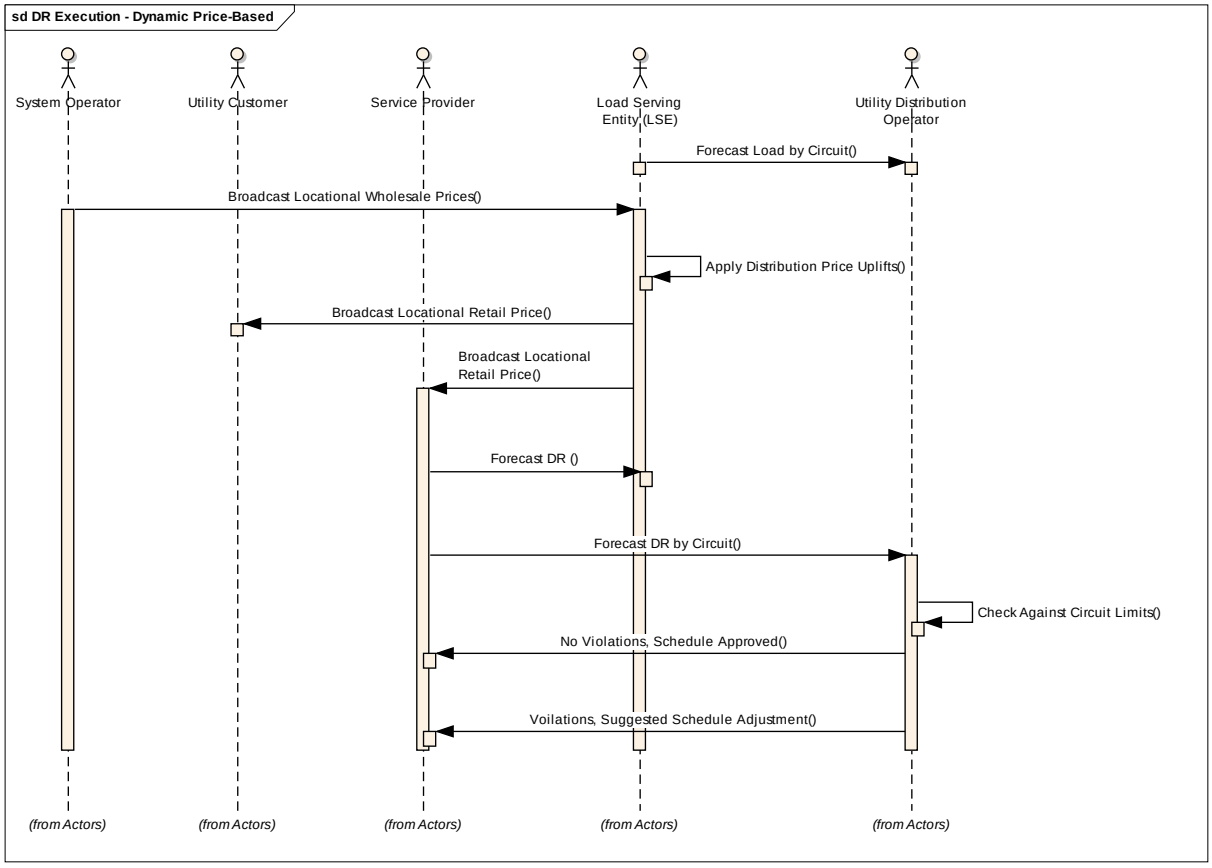
issues may have to be addressed. For example, during low LMP (RTP) periods (e.g., at night), certain distribution circuits may get over loaded (congested), with customers shifting consumption, e.g., charging PEVs, to that period. This improves the overall system economy, but may cause circuit congestion. To combat this, some have proposed use of demand charges or an additional incentive payment for load reduction, a locational incentive to relief congestion.

Sequence Diagram



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REQ.17.3.1.4.11.2 DR Execution – Notification Based

Description

Notification-based DR is mostly used for economic purposes based on a day-ahead or hours or hour-ahead basis. Notification-based DR may also be used for reliability events when the system operator expects a contingency or operating condition (e.g., congestion or planned outage) on the distribution or the transmission grid that requires a reduction (or an increase) on the load at a given location.

Considering that the business processes for demand response have not yet been standardized across the nations, the following is a representative scenario that captures some of the interactions between the key stakeholders (actors).

At high penetration levels, the DR operation, especially on a day-ahead or hour ahead basis, need to be coordinated with the overall operations and supply scheduling process. As is shown in the Sequence Diagram below, this may require a timely update of the "locational" load forecast and an up-to-date nomination of the DR capabilities. This information may be supplied to the "system" and/or market operator to be incorporated in the overall supply and demand scheduling process. The DR capabilities are specified by the DR Provider to the System Operator based on a DR Program, a price curve, or other nomination protocol. The DR Provider may also inform the Load Serving Entity (LSE) of the locational available DR capabilities.

The notification-based DR dispatch process is typically initiated by the System or Market Operator; the process may also be initiated by an LSE or UDO. It is also possible that the DR Provider be the initiator of the DR process based on a market opportunity (economic operation) or based on a pre-established program.

At high DR penetration levels, it is expected that the DR provider will need to clear the DR schedule with the Distribution Grid Operator, the UDO. This is to insure that the high penetration DR has no adverse impact on the distribution grid reliability and power quality, e.g., cause of excessive imbalances, voltage violation, or an overload during load pickup period. The UDO, in a timely fashion, will inform the DR Provider, if the schedule is cleared or requires an adjustment. Please note that if the DR deployed by a utility company that includes both LSE and UDO functions, such coordination is performed within the company's operational

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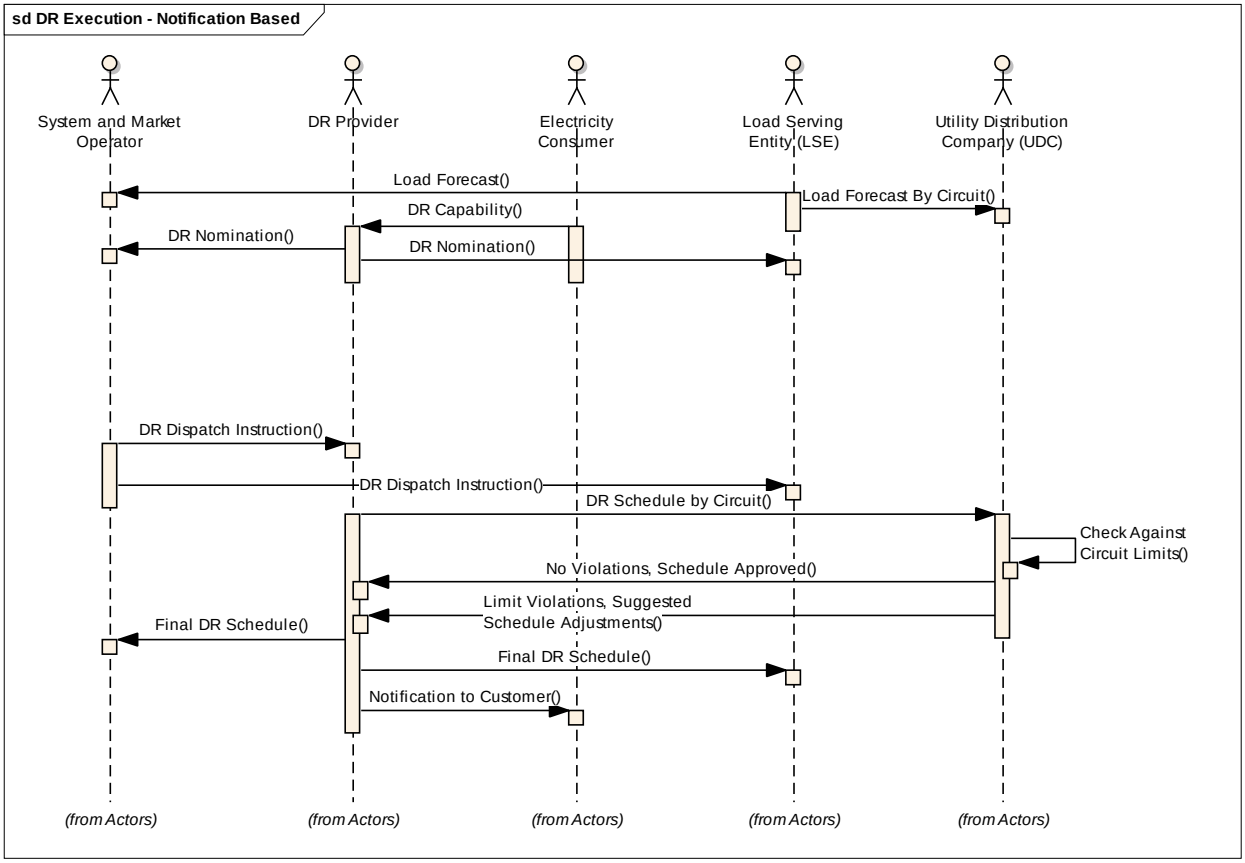
systems (e.g., DRMS, DMS, etc.), or it can be an integral part of the DR scheduling application.

Following the clearing the DR schedule, notifications are sent to customers for DR operation. Under this scenario, the Market Operator and the LSE are also informed of the final DR schedule.

Sequence Diagram



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REQ.17.3.1.4.11.3 DR Execution – Direct Load Control (DLC)

Description

Direct-Load Control is typically used for reliability-based events such as contingency and emergency support, supply of balancing energy or other ancillary service. Many of these programs require quick response time, e.g., five minutes or faster, that is practically only possible through a DLC capability. Direct-Load Control may also be used for economic operations, e.g., water heater programs to reduce or shift peak load.

Considering that the business processes for demand response have not yet been standardized across the nations, the following is a representative DLC scenario that captures the interactions between the key stakeholders (actors).

Direct Load Control is typically called for by a system operator, a transmission or distribution operator. It could be also issued by a Market Operator based on an ancillary service DR award, or by an LSE or DRP for an economic purpose. At high penetration levels, DLC operation needs to be coordinated with the distribution grid operator, the UDO.

As is shown in the sequence diagram below, the customer DR capabilities are aggregated by location and specified/nominated to the Distribution Grid Operator, Load Serving Entity, and/or to the System/Market Operator. In addition to location, the capabilities may also be aggregated by the DR response time, e.g., four seconds, five minutes, 30 minutes, etc.

The DLC Dispatch process is typically initiated by the Transmission or Distribution Operator. The process may also be initiated by the Market Operator or the LSE. The actual control of the DR resources may be done by the DR provider based on the dispatch signal received.

At high DR penetration levels, it is expected that the DLC activation schedule to be coordinated with the Distribution Grid Operator, the UDO. This is to insure that there are no adverse impact on the distribution grid reliability and power quality, e.g., voltage violation, excessive phase imbalances, or an overload during load pickup period. If the DLC deployed by a utility company such coordination can be accomplished within the company's DR and distribution management systems, or performed as an integral part of the DR control functions.

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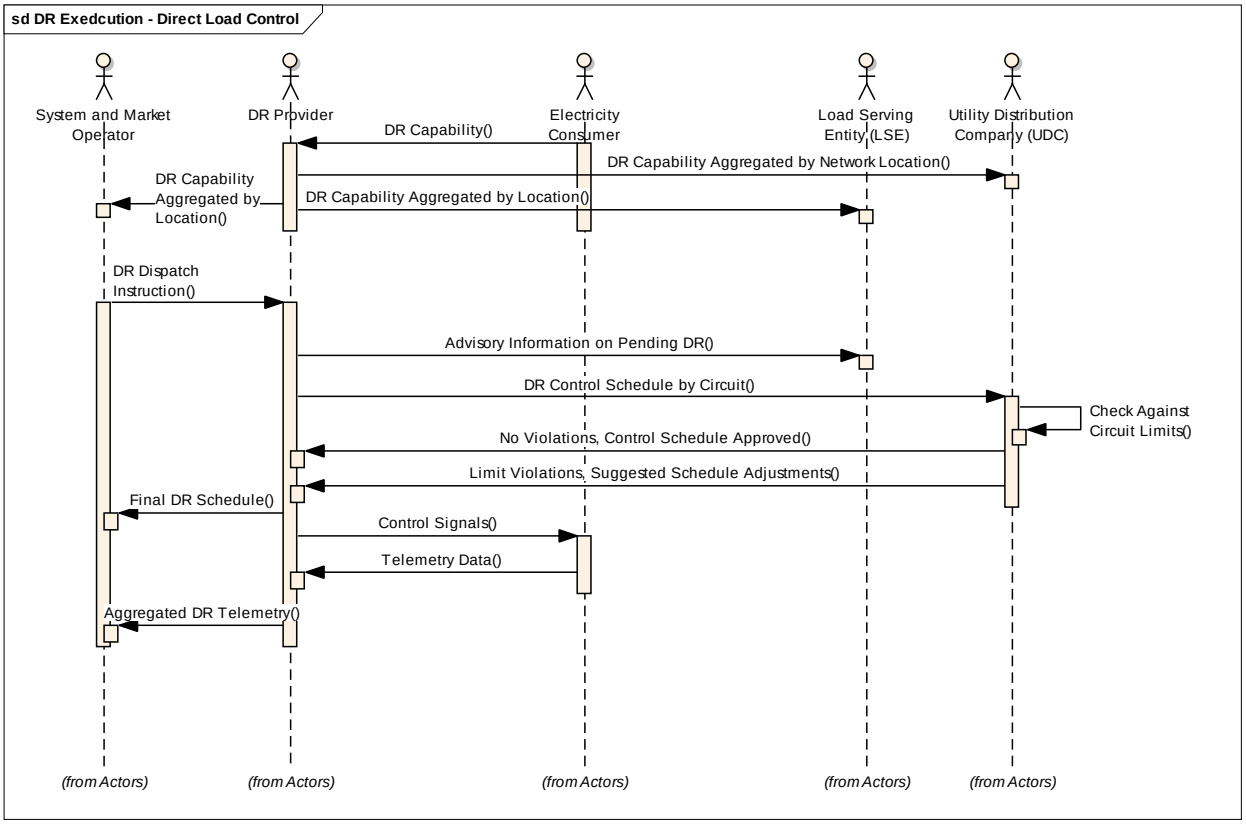
For a "fast" DR, e.g., provision of ancillary services, a telemetry capability is required to enable the real-time monitoring of the resource condition and its response to the DR control signal.

Sequence Diagram



REQ.17.3.1.4.12 Operational Coordination

Due to the existing differences in the regional retail energy market regulations, wholesale market structure and protocols, and supply and demand conditions, currently there are regional differences in business practices and processes governing demand response. As a result, operational coordination requirements for demand response somewhat vary from region to region, depending on the available retail tariff, retail market structure, available wholesale market for DR and the market mechanics.

The following table summarizes the major roles and responsibilities of the key stakeholders with respect to demand response operation. As can be seen in this table, a significant level of stakeholder coordination is required for an end-to-end DR operation spanning from the wholesale markets to the end-use customers.

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Stake Holder	Key Responsibilities
Wholesale Market Operator	• Establish, administer, and operate wholesale demand response programs and markets; • Determine and publish locational prices for wholesale demand response products; • Improve energy market efficiencies (economics) by integrating demand response products and capabilities; • Monitor compliance to wholesale DR instructions and financially settle with the participating stakeholders.
Transmission Grid / System Operator - Balancing Authority	• Monitor and maintain transmission grid reliability, and call upon wholesale demand-side (demand response) capabilities to address contingency/emergency conditions; • Dispatch demand-side capabilities to balance supply and demand, e.g., mitigating impact of variable generation (e.g., wind). • In regions with no organized wholesale energy market, economically dispatch available generation and demand resources including demand response to optimize supply economics.

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Stake Holder	Key Responsibilities
Distribution Grid Operator – Utility Distribution Company	• Monitor and maintain the distribution grid reliability and the quality of power supply (e.g., voltage levels). Call upon DR to mitigate the distribution contingencies and reliability concerns. • Review and approve the integration of distributed energy resources with the distribution grid. • Assess the operational impact of distributed resources and demand response (DR/DER) on power quality and reliability of the distribution grid, approve high-penetration DR schedules (especially cold-load pickup operation). • Coordinate with the respective Load Serving Entity and Energy Service Providers for the assessment of distribution service and loss compensation charges to retail customers.
Load Serving Entity	• Forecast load and economically schedule supply to meet demand at all times. Incorporate demand response capabilities to improve load factor, reducing/shifting peak load. • Establish and obtain regulatory approval for a fair and unbiased retail tariff for all customer classes. For real-time dynamic pricing (RTP) tariff, apply distribution service, loss compensation and other uplifts to the wholesale locational prices. • Establish and administer demand response and distributed resource management programs including DR tariff. • Meet regional requirements for Renewable Portfolio Standards compliance for power delivery. • Aggregate and schedule DR capabilities in wholesale markets, manage DR programs. • Manage customer metering and billing process.

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Stake Holder	Key Responsibilities
Power Marketer	• Forecast load and economically schedule supply to meet demand at all times. Incorporate demand response capabilities to improve load factor, reducing/shifting peak load. • Establish and obtain regulatory approval for a fair and unbiased retail tariff for all customer classes. For real-time dynamic pricing (RTP) tariff, apply distribution service, loss compensation and other uplifts to the wholesale locational prices. • Operate a wholesale and/or retail demand response programs with wholesale and/or retail customers.
Energy Service Provider	• Operate only in regions with competitive retail market • Be an alternative supplier of electric power to end-use customers by offering competitive products, services and prices. • Forecast aggregated load of the enrolled customers by location as required. • Coordinate the power supply with the respective LSE and UDO. • Support demand response programs (DR/DER) for enrolled customers. • Aggregate demand and demand-side capabilities; schedule the aggregated load and DR capabilities in wholesale markets. • Provide for DR telemetry and other monitoring requirements, on a resource or aggregated basis. • Apply the necessary uplifts (e.g., distribution service and loss compensation charges) to the wholesale locational prices. • Meet regional requirements for Renewable Portfolio Standards compliance for power delivery. • Bill and settle with customers for energy supply and DR operation.

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Stake Holder	Key Responsibilities
Demand Response Provider	• Offer competitive demand response services to the end-use customers. • Design and manage DR programs, establish pricing structure and signals for DR operation • Aggregate demand and demand-side capabilities; and offer/schedule these capabilities with the respective LSE or the wholesale market. • Provide for DR telemetry and other monitoring requirements, on a resource or aggregated basis. • Bill and settle with customers for energy supply and DR operation.
Electricity Customer	• Subscribe to a DR program, and update DR availability and capability information as appropriate • Maintain DR resources, data communications, telemetry, metering and control devices as required. • Respond to pricing signals, DR notifications, or control signals as appropriate.

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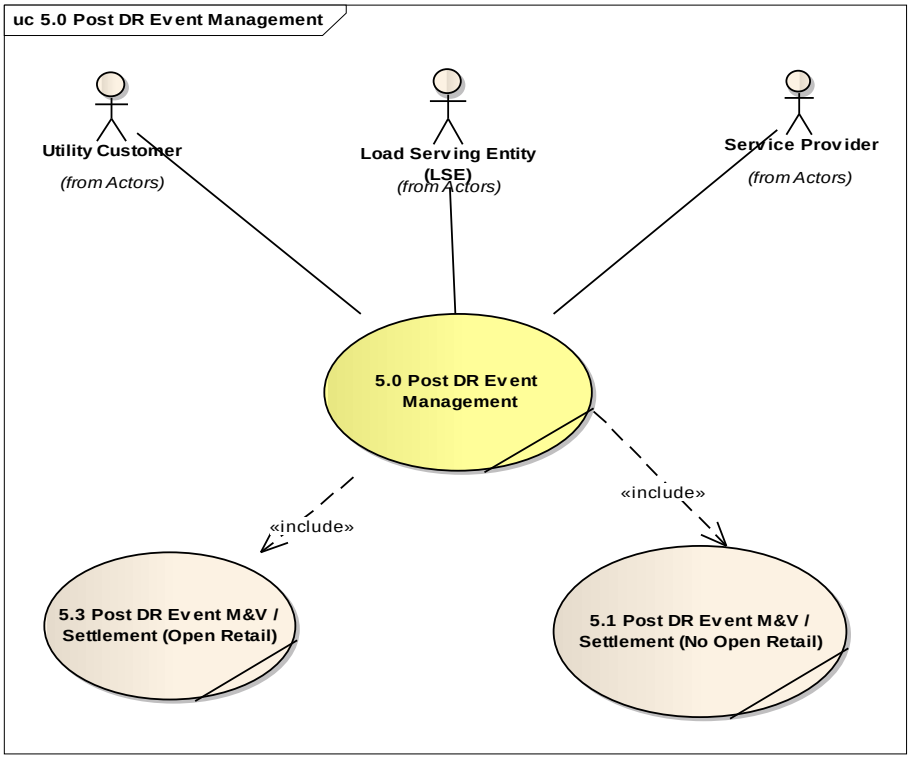
REQ.17.3.1.4.13 Post DR Event Management

Post DR event management mainly concerns with the reconciliation of the actual consumption of energy within the duration of a DR event with the expected behavior so that proper financial reward or penalties could be carried out. The NAESB M&V standard for DR defines the requirements for most of the post event management. The following use cases describe post DR event management for three different market types.



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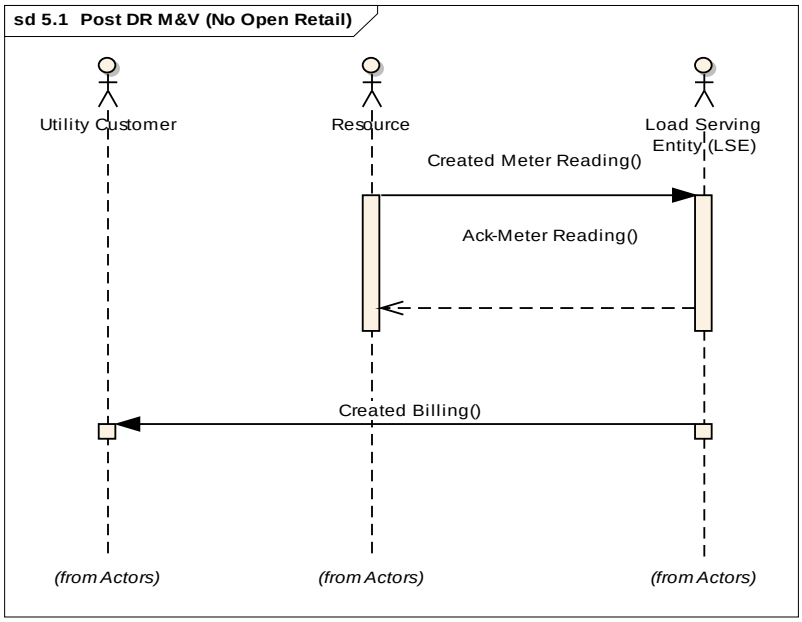
REQ.17.3.1.4.13.1 Post DR Event M&V / Settlement (No Open Retail)

Description

After DR Event has been completed, then Measurement and Verification (M&V) can confirm whether action has been taken or to measure the impact of the response. After the M&V, then the Financial Settlement is calculated and sent to the Electricity Customer[3]. This Use Case covers the scenarios with no Open Retail Markets.

Sequence Diagram



[3] In wholesale markets, the settlement for a DR Event is between the System Operator and Market Participant and possibly between the Market Participant and the Electricity Customer.

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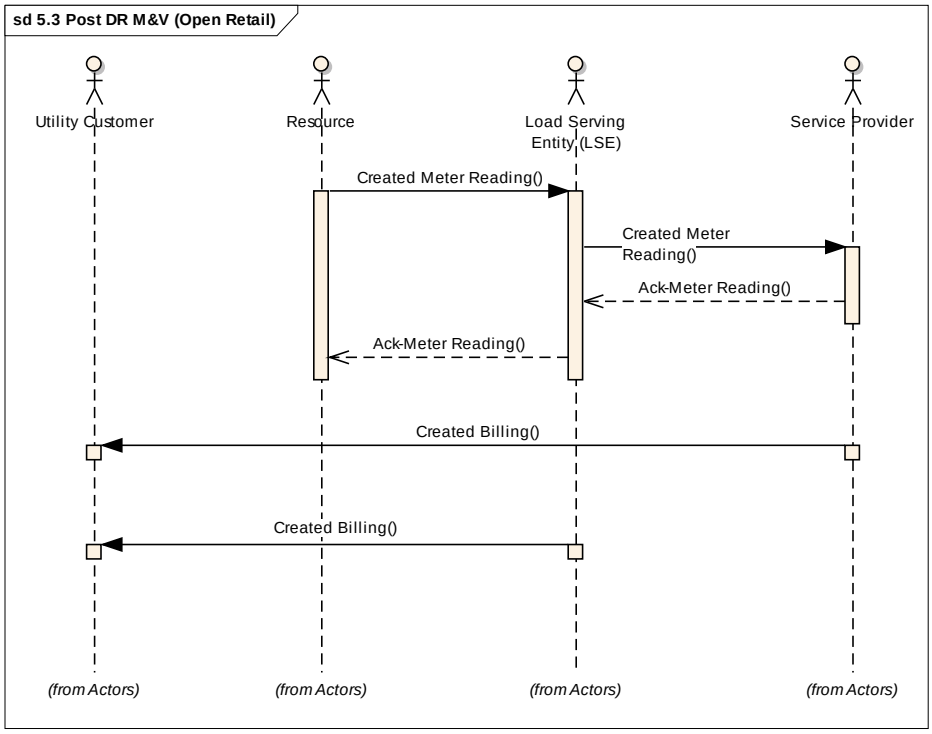
REQ.17.3.1.4.13.2 Post DR Event M&V / Settlement (Open Retail)

Description

After DR Event has been completed, Measurement and Verification (M&V) can confirm action has been taken or to measure the impact of the response. After the M&V, the Financial Settlement is calculated and sent to the Electricity Customer. This Use Case covers the scenarios with Open Retail Markets.

Sequence Diagram



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REQ.17-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 contains one or more End Devices. 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 Model Business Practices.

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 documents 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 is related to one-or-more End Devices (reading top to bottom) and every End Device is related to exactly-one Premise (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.

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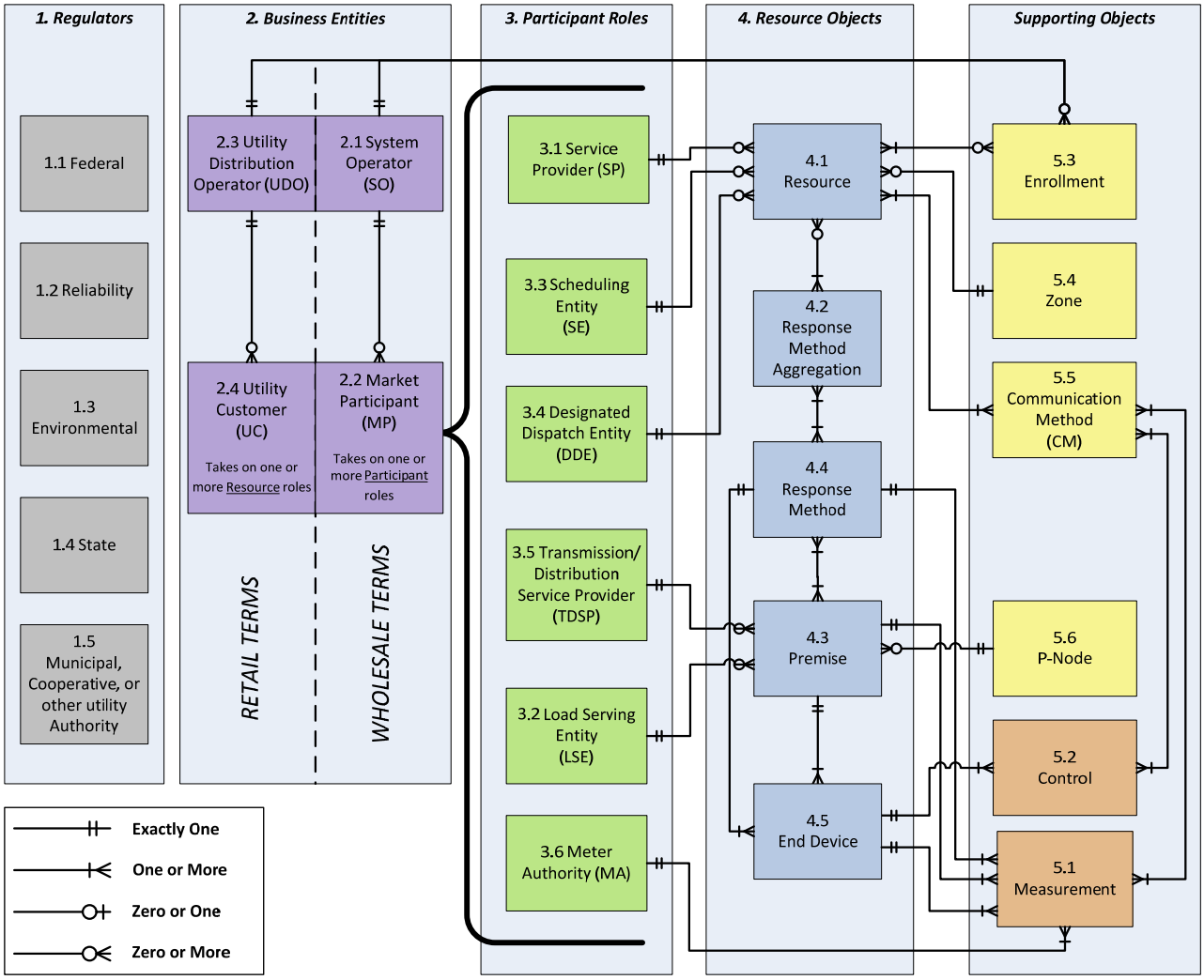
Figure 1A. Entity-Relationship Model for Smart Grid Use Cases



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4. Supporting Documentation

a. Description of Request:

On September 30, 2009 the National Institute of Standards and Technology officially assigned NAESB the responsibility to develop Requirements and Use Cases pertinent to Priority Action Plan items 3, 4 and 9. A complete description of each item is available on the NIST Web site located at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP09DRDER

This recommendation specifically pertains to PAP 09[4], "Standard DR and DER Signals".

b. Description of Recommendation:

See Section 3 Summary

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):

Joint Smart Grid Standards Task Force and Fix Protocol Meeting Notes/Documents:

- September 17, 2009 Meeting Notes – To be posted
- October 1, 2009 Meeting Notes – To be posted
- October 15, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Sub-Group Meeting Notes/Documents:

- October 13, 2009 Meeting Notes – To be posted
- October 20, 2009 Meeting Notes – To be posted
- October 27, 2009 Meeting Notes – To be posted
- November 3, 2009 Meeting Notes – To be posted
- November 4-6, 2009 Meeting Notes – To be posted
- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted
- November 13, 2009 Meeting Notes – To be posted
- December 3, 2009 Meeting Notes – To be posted

[4] http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP09DRDER

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- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted
- February 5, 2010 Meeting Notes – To be posted
- February 15, 2010 Meeting Notes – To be posted
- February 25, 2010 Meeting Notes – To be posted

Considerations:

- The market focus of this framework is the power industry in United States of America with some overlaps to Canada, although much of the business models and practices may apply to other countries and markets.
- The scope of DER applications will be limited to the context of grid-connected DR use cases and does not include the other possible applications of DER.
- The focus of the document is business level and abstracted models of DR and DER, not specific technologies that enable DR/DER implementation.
- The wholesale (bulk power) level DR signals requirements will be captured by the companion document, yet the basic principles and definitions will be common between these two documents.

e. Additional Documentation from Subcommittee(s)/Task Force(s):

- The Task Force is including the following materials to include complete set of abbreviations, acronyms, and definitions. The changes to the abbreviations, acronyms, and definitions are only listed in the Recommended Standards.

Abbreviation / Acronym	Meaning
BAS	Building Automation System
CalConnect	Calendaring and Scheduling Consortium
CIM	Common Information Model
C&I	Commercial and Industrial
DDE	Designated Dispatch Entity
DER	Distributed Energy Resource
DR	Demand Response

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Abbreviation / Acronym	Meaning
EA	Environmental Authority
ED	End Device
EMS	Energy Management System
ESI	Energy Services Interface
FIX	Financial Information eXchange protocol
FR	Federal Regulator
GWAC	GridWise Architecture Council
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC TC57	International Electrotechnical Commisssion Technical Committee 57
IETF	Internet Engineering Task Force
IRC Council	Independent System Operator/Regional Transmission Operator Council
ISIN	International Security Identifier Number
ISO	International Organization for Standardization
ISOs/RTOs	Independent System Operators/Regional Transmission Operators
kW	Kilowatt
kWh	Kilowatt Hour
LA	Local Authority
LSE	Load Serving Entity
MA	Meter Authority
MBL	Maximum Base Load
MB/MA	Meter Before/Meter After
MGO	Metering Generator Output
MP	Market Participant
MWh	Megawatt Hour
NIST	National Institute of Standards and Technology
PAP	Priority Action Plan
RM	Response Method
RMA	Response Method Aggregation
OpenSG	Open Smart Grid

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Abbreviation / Acronym	Meaning
PUC	Public Utility Commission
SE	Scheduling Entity
SGTF	Smart Grid Task Force
SO	System Operator
SP	Service Provider
SR	State Regulator
TDSP	Transmission/Distribution Service Provider
UC	Utility Customer
UCAIug	UCA International Users Group
UDO	Utility Distribution Operator
UML	Unified Modeling Language
XML	Extensible Markup Language

Term	Definition
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 Reduction Value. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact.
Business Entity	The wholesale or retail entity that interacts with other entities in its market.
Communication Method	The method by which an object communicates with another object to instruct, measure, report or control.
Control	The role associated with the control of an End Device.
Designated Dispatch Entity (DDE)	A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.

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Term	Definition
Distributed Energy Resources (DER)	DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf
End Device (ED)	A physical end-use device that consumes or supplies electricity.
Environmental Authority (EA)	A regulatory authority responsible for the development, reporting and enforcement of environmental activities.
Federal Regulator (FR)	A federal regulatory authority.
Load Serving Entity (LSE)	A role which carries the responsibility of serving end-users and selling electric energy to end-users.
Local Authority (LA)	A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.
Market Enrollment	The collection of enrollment or tariff data for a Resource Object to provide a specific market product or service.
Market Participant (MP)	An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the SO's market rules.
Maximum Base Load (MBL)	A performance evaluation methodology based solely on a Demand Resource's ability to reduce to a specified level of electricity Demand, regardless of its electricity consumption or Demand at Deployment.
Measurement	The role associated with the device or algorithm that measures the consumption or supply of an End Device.
Meter Authority (MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.

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Term	Definition
Meter Before /Meter After (MB/MA)	A role which carries the responsibility of providing data necessary to determine the performance of a Resource.
Metering Generator Output (MGO)	A performance evaluation methodology, used when a generation asset is located behind the Demand Resource's revenue meter, in which the Demand Reduction Value is based on the output of the generation asset.
P-Node	The price location of the Premise in the transmission and/or distribution network.
Participant	The entity that represents resources to a market or distribution operator.
Premise	The location at which connection to the transmission or distribution system is made.
Regulator	A rule-making and enforcement entity.
Response Method	A measurable action taken in response to an instruction to change consumption.
Response Method Aggregation (RMA)	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.
Resource	A market-dependent group of Response Method Aggregations that represents a dispatchable entity.
Resource Object	Physical and logical types of demand response resource objects.
Scheduling Entity (SE)	A role which carries the responsibility of submitting bids/offers and receives schedules and awards.
Service Provider (SP)	A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.
State Regulator (SR)	A regulatory authority responsible for the oversight and administration of electric utilities.
Supporting Objects	Objects that support the interaction of Business Entities and Resource Objects.

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Term	Definition
System Operator (SO)	A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment, and Release/Recall instructions.
Transmission/Distribution Service Provider (TDSP)	A role which carries the responsibility of operating a local electricity transmission and/or distribution system.
Utility Customer (UC)	An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource.
Utility Distribution Operator (UDO)	An entity which carries the responsibility of operating an electricity distribution system.
Zone	A physical or electrical region.

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f. Use Case Data Requirements

Administrate DR Resource

Administrate Distribution DR Resource

Update DR Resource

Data Requirements

Attribute Name	Description
Asset-ID	This uniquely identifies a DR Asset
DR Resource Operational Constraints	These are constraints that define the amount load that can be made available during a DR event, including the following: • Minimum load • Maximum load.
DR Resource Bid	This is a bid from the DR Resource. See the DR Bidding use case for a description of the information requirements.
DR Resource Schedule Constraints	These are a set of constraints that specify when the DR Resource will be available. It may contain such information as: • Time of day schedule constraints • Black out dates • Maximum consecutive days of participation • Maximum duration of DR event participation • Minimum duration of DR event participation • Maximum number of times per day (or month or year) the DR resource may be called upon. • Minimum advanced notification necessary. Provide details if DR asset or DR resource is in any other DR programs (wholesale and retail)
DR Resource Identifier	This identifies the DR Resource.
DR Resource Qualification	This shows the qualification of a DR resource for certain type(s) of DR programs

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Attribute Name	Description
Effective-Start-Date	The date and time when the declared capabilities will be in effect.
Hourly-Capacity-Availability	The amount of capacity available for modification by hour for the period defined by the effective start/end date, expressed in kW or MW with appropriate precision.
Message-Exchange-Pattern	The means by which price information is communicated to any party that is interested in this information. The following are valid options: • In-Only • Robust In-Only • In-Out. Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions.
Monthly-Capacity-Availability	The average capacity available for modification by month for the period defined by the effective start/end date, expressed in Megawatts with appropriate precision.
Source-Authentication	The recipient must have some assurance that the message was produced by a reliable, authoritative party. This requires some ability to validate the authenticity of the source and integrity of the data (e.g., digital signature applied to a price message).
Temporary Opt-Out	This is 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 • 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)

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Register DR Resource

Data Requirements

Attribute Name	Description
Asset-ID	This uniquely identifies a DR Asset.
Available-Capacity	The total amount of power (megawatts) available from the asset/resource, expressed in integer format representing the amount of kilowatts available.
Customer Identifier	This is a customer identifier (e.g., account number) that signifies the owner of the DR Resource to the Utility.
DR Program Identifier	This identifies the DR program in which a DR Resource is participating.
DR Resource Identifier	This identifies the DR Resource that is being registered.
DR Resource Qualification	This shows the qualification of a DR resource for certain type(s) of DR programs
DR Resource Operational Constraints	These are constraints that define the amount of load that can be made available during a DR event and includes the following: • Minimum load • Maximum load.
DR Resource Schedule Constraints	These are a set of constraints that specify when the DR Resource will be available. It may contain such information as: • Time of day schedule constraints • Black out dates • Maximum consecutive days of participation • Maximum duration of DR event participation • Minimum duration of DR event participation • Max number of times per day the DR Resource may be called • Minimum advanced notification necessary. • Provide details if DR asset or DR resource is in any other DR programs (wholesale and retail)

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Attribute Name	Description
Effective-Start-Date-Time	The start date and time which an asset/resource is available.
Location	An identifier to indicate the location of the asset/resource.
Location-type	A value used to interpret the value contained in the Location element. Examples of Location-type include: • Zone • Node • Zip-code.
Maximum-Duration	The maximum amount of time the asset/resource is capable of delivering power (megawatts) modifying its electricity usage
Message-Exchange-Pattern	The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options: • In-Only • Robust In-Only • In-Out. Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions.
Minimum-Duration	The minimum amount of time that an Asset/Resource Owner is willing to allow the resource/asset to be utilized during a DR event. It may be expressed in decimal format representing hours. For example, a value of 1.5 indicates that an asset/resource must be utilized for no less than one hour and 30 minutes during any DR event.
Parent-Resource ID	This is used by an Asset to indicate that it "belongs to" a particular Resource. Assets may be aggregated into a Resource, but are not required to be so aggregated. Resources are autonomous and may not be aggregated.

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Attribute Name	Description
Report-type	This indicates the type of report being issued by the Asset or Resource Owner. This is an enumerated value containing one of the following: • REGISTRATION (to register a new asset/resource) • CHANGE (refers to permanent changes) • RETIREMENT.
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, expressed as minutes in decimal format.
Source-Authentication	The recipient must have some assurance that the message was produced by a reliable, authoritative party. This will require some ability to validate the authenticity of the source and integrity of the data (e.g., digital signature applied to a price message).

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Remove DR Resource

Data Requirements

Attribute Name	Description
DR Resource Identifier	This identifies the DR Resource that is being removed.
Removal Effective Date/time	Date/time when the DR resource is no longer available.

Administrate DR Asset (Direct)

Register DR Asset

Data Requirements

Attribute Name	Description
Asset Operator	The business entity that operates the DR assets
Asset Owner	The business entity that owns the DR assets
Asset Physical Location	The location of where the DR assets reside
Authorized Asset Servicers	The authorized service providers of the operation and maintenance of DR assets
Date of Registration and Last Update	Date of which the DR Assets registered for DR purpose.
DR Asset Administrator	• System and Operator • Distribution Utility • Load Serving Entity • Service Providers
DR Asset Availability and Status	Run Status, Set point, Override status, etc.
DR Asset Identifier	The unique identifier and name of the DR Assets.
DR Asset Physical Capabilities	Ramp Up/Down Rate, Maximum Capacity
DR Asset Product	Manufacturer, Model, Version, Date of Manufacturer
DR Asset Type	(DG, renewable, storage, curtailable or interruptible load)
DR Resources	The identifier of DR resources that the DR Assets belong to

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Attribute Name	Description
State of Registration Process	The state/status of the registration process of the DR assets.

Update DR Asset

Data Requirements

Attribute Name	Description
Asset Operator	The business entity that operates the DR assets
Asset Owner	The business entity that owns the DR assets
Asset Physical Location	The location of where the DR assets reside
Authorized Asset Servicers	The authorized service providers of the operation and maintenance of DR assets
Date of Registration and Last Update	Date of which the DR Assets registered for DR purpose.
DR Asset Administrator	• System and Operator • Distribution Utility • Load Serving Entity • Service Providers
DR Asset Availability and Status	Run Status, Set point, Override status, etc.
DR Asset Identifier	The unique identifier and name of the DR Assets.
DR Asset Physical Capabilities	Ramp Up/Down Rate, Maximum Capacity
DR Asset Product	Manufacturer, Model, Version, Date of Manufacturer
DR Asset Type	(DG, renewable, storage, curtailable or interruptible load)
DR Resources	The identifier of DR resources that the DR Assets belong to
State of Registration Process	The state/status of the registration process of the DR assets.

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Remove DR Asset

Data Requirements

Attribute Name	Description
Contractual Agreements	Contractual agreement under which the DR assets could be removed.
DR Asset Administrator	• System and Operator • Distribution Utility • Load Serving Entity • Service Providers
DR Resources	The identifier of DR resources that the DR Assets belong to
Third Party Participation	The identification of third parties involved in the removal of DR assets.

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DR Bidding

DR Bid to Supply (Retail Offers)

Data Requirements (Generalized)

Attribute Name	Description
Bidder Identity	Identification of entity submitting a bid
Identity of Resource(s)	Identification of resources that physically support a bid
Bid structure	Prices and/or quantities in an offer to supply a service, or a supply schedule
Product/Service type	The Product/Service type offered to supply.
Quantity of offer	Instantaneous amount of demand response available for dispatch
Resource Capacity (Rated)	Rated or maximum capacity of a resource to supply a service
Resource Capability	Ramp up/down rate and other resource-specific operating characteristics and constraints
Resource Type	Type of distributed resource
Resource Type	Timing associated with a bid
Timestamp of Bid	The effective date(s) of an offer.

Data Requirements (Simplified Example of Retail DR Bidding)

Attribute Name	Description
DR Resource Identifier	This identifies the DR Resource for which the bid is being submitted.
Load Amount	This is the amount of load that the DR Resource can make available during the scheduled period.
Load Profile Schedule	This is the schedule during which the DR Resource's load profile will be available.
Offer Price	This is the price at which the DR Resource is offering to shed their resource.

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DR Bid to Buy

Data Requirements

Attribute Name	Description
Bidder Identity	Identification of entity submitting a bid
Identity of Resource(s)	Identification of resources that physically support a bid
Bid structure	Prices and/or quantities in a bid to buy a service, or a demand schedule
Product/Service type	The Product/Service type being bid for purchase
Resource Availability	Instantaneous amount of demand response available for dispatch
Resource Capacity (Rated)	Rated or maximum demand of a resource
Resource Physical Operating Capability	Ramp up/down rate and other resource-specific operating characteristics and constraints
Resource Type	Type of distributed resource
Timestamp of Bid	Timing associated with a bid
Trade Date or Period	The effective date(s) of a bid.

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Execute DR Event

Notify DR Event (Retail)

Advanced Notification for DR (Retail)

Data Requirements

Attribute Name	Description
Service Provider ID	An identifier for the Service Provider issuing the DR event.
DR Program ID	An identifier of the program for which a DR event was issued.
DR Resource Group ID	A group to which a DR Resource belongs. This can be used for multi-cast notifications.
DR Resource ID	An identifier of the DR Resource for which an Event is intended.
DR Resource Operation Mode (Schedule)	Operation modes are representations of how the DR Resource should respond to the Event Data that is part of an event. Operation modes allow DR logic to be implemented within the DR Service Provider and allow the DR Resource to respond to a much simpler representation of the DR Event data. Operation modes are simple enumerations of the values that may be scheduled during the DR Event active period. The possible values are the following: NORMAL - This value is used to signify that no response to the DR Event is necessary by the DR Resource. MODERATE - This value is typically used to signify a moderate level of response by the DR Resource. HIGH- This value is typically used to signify a high level of response by the DR Resource. SPECIAL- This value is typically used to signify a circumstance special to the DR Resource.

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Attribute Name	Description
DR Resource Specifications	This specifies which DR Assets within a DR Resource should be used, and can be specified in the following fashion: • Geographic location • Grid location • DR Asset group ID.
DR Resource Type ID	A program specific field that can be used to identify a type of DR Resource within a DR program.

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Attribute Name	Description
Event Data	A collection of information that is associated with a DR event. An instance of such information represents a specific type of information that was defined to exist for DR events when the program was first developed and implemented. For example, a DR program may have been developed and implemented to use real-time pricing as the values that are sent when DR events are issued. In that case, the information would be prices. Furthermore, each type of information may have a schedule of values that are valid across the entire period for which the DR event is active. Therefore, a single type of information may have multiple values, each of which are valid during a different time period during the event. Each type of information has the following attributes when it is defined: • name • data type. The following data types should be supported: • PRICE_ABSOLUTE - Price number • PRICE_RELATIVE - Change in price • PRICE_MULTIPLE - Multiple of current price • LOAD_LEVEL - Amount of load based on an enumeration, i.e. moderate, high, etc • LOAD_AMOUNT - Fixed amount of load to modify in kW • LOAD_PERCENTAGE - Percentage of load to modify, i.e. 10% •
Event ID	An identifier for the DR Event that was created when the DR event was first issued. This should be a globally unique identifier for each Service Provider.
Event Schedule	A Schedule for the DR Event periods that includes the following: • Notification date/time

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Attribute Name	Description
	• Event start date/time • Ramp time (potentially randomized) • Event end date/time (possibly specified as the duration).
Test Event Flag	This attribute signifies whether this is a test event or not. Test events may be issued by the Utility/ISO like other DR audit events.

Update a DR Event (Retail)

Data Requirements

Attribute Name	Description
Event	See the "Advanced Notification for DR" use case.
Event Modification Number	This is Modification number of the DR event. It is used to indicate that the DR Event has been modified by the Utility. Each time a DR Event is modified, this number is incremented.
Modification reason code	The reason the event was modified.

Cancel a DR Event (Retail)

Data Requirements

Attribute Name	Description
Cancellation reason code	The reason the event is being cancelled.
DR Event Identifier	An identifier for the event that is being cancelled.
Effective date/time	The date and time a cancellation takes effect.

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DR Resource Confirmation (Retail)

Data Requirements

Attribute Name	Description
DR Assets Characteristics	The expected response characteristics of each DR Asset that is part of the DR Resource. These may be needed for aggregated DR Assets and may be as simple as whether a DR Asset is participating or its actual load profile. For each DR Asset, the following should be given: • Location of Asset, either geographic or grid location • Asset schedule of participating • Asset load profile (schedule).
DR Resource ID	The identifier of the DR Resource.
DR Resource Load Profile Response	The load profile response characterization of the DR Resource in response to getting the DR signal.
Notification Received Acknowledgement	This is an acknowledgement of the receipt of a DR notification or dispatch. It should include any necessary provisions for non-repudiation.
Opt in/out	This is used to temporarily opt in/out of DR Events and to override the normal operational constraints. The opt-in/out can be specified using the following criteria: • All events in a program indefinitely • Specific DR Event • All events in a specific time period. In addition, there may be a schedule associated with the opt in/out state.

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Broadcast DR Message (Price Plus Information)

Data Requirements

Attribute Name	Description
Currency	Identifier used to interpret the price element. MUST follow **ISO 4217** standard.
Duration	The amount of time for which this price is valid, commencing at the Effective-Date-Time specified. A value of zero means price is valid until next price broadcast override. Specified in decimal notation where integers represent minutes and decimals represent fractions of minutes. For example: • 5 indicates that prices will be published every 5 minutes • .5 indicates that prices will be published every 30 seconds
Effective-Date-Time	The date and time which the price is in effect. In ISO 8601 standard format.
Location	An identifier used to indicate an area which this price is in effect. A value of "null" indicates that the price is in effect for all areas.
Location-type	A value used to interpret the value contained in the Location element. Examples of Location-type include: • Zone • Node • Zip-code • USNG
Message-Exchange-Pattern	The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options: • In-Only • Robust In-Only • In-Out Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions.

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Attribute Name	Description
Price	Expressed in decimal notation with a precision up to 6 decimal places. Prices MAY be either positive or negative
Product-Identifier	Identifies the type of product (e.g. energy, regulation, etc.) which this price pertains. Contains an enumeration of various products that may be offered. Extensibility MUST be supported in order to accommodate multiple jurisdictions and markets.
Publishing-Interval	Indicates the frequency with which price information is expected to be published. Specified in decimal notation where integers represent minutes and decimals represent fractions of minutes. For example: • 5 indicates that prices will be published every 5 minutes • .5 indicates that prices will be published every 30 seconds
Source-Authentication	The recipient of a "Price Message" must have some assurance that the message was produced by a reliable, authoritative party. This will require some ability to validate the authenticity of the source and integrity of the data (e.g. digital signature applied to a price message).
TimeStamp	Indicates the Date and Time when this information was published. MUST follow ISO 8601 standard representation.
Unique-Identifier	An identifier used to identify the message. Should be expressed as a URI in accordance with http://www.w3.org/TR/uri-clarification/#uri-schemes
Unit-of-Measure	Indicates the unit of measure for which the price pertains. MUST be complaint with the International System of Units as defined by NIST SP 330, ref: http://physics.nist.gov/Pubs/SP330/sp330.pdf Examples of NIST compliant units of measure include: • kWh • MWh

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Retail Electric Quadrant (REQ)
Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 Retail Annual Plan Item 9(c)
Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

Dispatch DR Instructions (Retail)

Data Requirements

Attribute Name	Description
Dispatch Instructions	A collection of dispatch instructions that is associated with a DR event. An instance of such instructions represents a specific type of instruction that was defined specifically for the DR program. Each type of instruction may have a schedule of values that are valid across the entire period for which the DR event is active. Therefore, a single type of instruction may have multiple values, each of which are valid during a different time period during the event. Each type of instruction has the following attributes when it is defined: • name • Instruction type. The following instruction types should be supported: • LOAD_LEVEL - Amount of load based on an enumeration, i.e., moderate, high, etc • LOAD_AMOUNT - Fixed amount of load to shed in kW • LOAD_PERCENTAGE - Percentage of load to shed, i.e., 10%.
DR Program Name	An identifier of the program for which a DR event was issued.
DR Resource ID	An identifier of the DR Resource for which a dispatch is intended.
Event ID	An identifier for the DR event that was created when the DR event was first issued.
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.
Event Schedule	Schedule for the DR Event periods, which includes the following: • Notification date/time • Event start date/time • Event end date/time.
Test Event Flag	This attribute signifies whether this is a test event or not. Test events may be issued by the Utility/ISO like other DR Events.

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

For Quadrant: Retail Electric Quadrant (REQ)
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Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

DR Direct Load Control (Retail)

Monitor DR Event (DR Resource)

Data Requirements

Attribute Name	Description
Operational Constraints	This is used to supply information about when and how a DR Resource may participate in a DR Event. The following items may be supplied: • Limits on load profile performance • Schedule of participation. Note that this information may also be supplied as part of the administration of the DR Resource, and thus, it may not be necessary that it be part of this interaction.
Opt in/out state	This is used to temporarily opt in/out of DR Events and to override the normal operational constraints. The opt-in/out can be specified using the following criteria: • All events in a program indefinitely • Specific DR Event • All events in a specific time period. In addition, there may be a schedule associated the opt in/out state.
Usage Information	Information about the near real time electricity usage of the DR Resource.
Latency	Allowable time between dispatch launch and load modification. Examples: 4 Seconds Response for Regulation Dispatch, 1 Minute Response for Reserve Dispatch, Sub-second Response to Frequency Deviation, 10 Minute Response to Energy Market
Dispatch Trigger	Examples: Market Bid (Energy Price > Offer Price), Reliability Event Based Dispatch from System Operator, Frequency Deviation, Peak Period Time

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010
For Quadrant: Retail Electric Quadrant (REQ)
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Request No.: 2010 Retail Annual Plan Item 9(c)
Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

Attribute Name	Description
Response Duration – Time Out or Held Until Released	Examples: Variable with Signal Up or Down (Regulation), 20 Minutes with Dispatched Release (Responsive Reserve), 1 or 2 Hour Time Out (Emergency Interruption), Multiple Hours (Peak Shifting)

Monitor DR Event (DR Asset)

Data Requirements

Attribute Name	Description
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.
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.
Operational Constraints	Constraints on how the load may be controlled. This may include limits on the state of the load controller as well as schedules upon those constraints.

DR Event Execution

DR Execution – Retail Time Pricing (RTP)

Data Requirements

RTP Price Data

Attribute Name	Description
Effective-Date-Time Interval	The date and time interval which the price is in effect.
Price	Single of multiple valued price (e.g., for energy, demand, etc.) Expressed in decimal notation with a precision up to 6 decimal places. Prices MAY be either positive or negative
Currency	Identifier used to interpret the price element.
Unit-of-Measure	Indicates the unit of measure for which the

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Requesters: NAESB Smart Grid Task Force (SGTF)
Request No.: 2010 Retail Annual Plan Item 9(c)
Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

Attribute Name	Description
	price pertains (e.g., kW).
Product-Identifier	Identifies the type of product (e.g. energy, spinning reserve, etc.) which this price pertains.
Location	Location Identifier for the applicable price.
Location-type	A value used to interpret the value contained in the Location element. Examples of Location-type include: • Zone (Load Aggregation Point) • Zip-code • USNG
Time Stamp	Indicates the Date and Time when this information was published.
Duration	The amount of time for which this price is valid, commencing at the Effective-Date-Time specified.
Source-Authentication	The recipient of a "Price Message" must have some assurance that the message was produced by a reliable, authoritative party.
Message-Exchange-Pattern	The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options: • In-Only • Robust In-Only • In-Out Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions.
Unique-Identifier	An identifier used to identify the message. Should be expressed as a URI in accordance with http://www.w3.org/TR/uri-clarification/#uri-schemes

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010
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DR Execution – Notification Based

Data Requirements

The notification data elements are described in more detail in REQ.17.3.1.4.9.

Attribute Name	Description
Dispatch Instructions	A collection of dispatch instructions that is associated with a DR event. This will include the amount of load to be reduced (or increased – in the cases of very low load levels and excess generation, e.g., wind)
DR Program Name	An identifier of the program for which a DR event was issued.
DR Resource ID	An identifier of the DR Resource for which a dispatch is intended.
Event ID	An identifier for the DR event that was created when the DR event was first issued.
Event Modification Number	A modification number for the DR event.
Event Schedule	Schedule for the DR Event periods, which includes the following: • Notification date/time • Event start date/time • Event end date/time.
Test Event Flag	This attribute signifies whether this is a test event or not.
Source-Authentication	This is for authentication of the notification signal.

DR Execution – Direct Load Control (DLC)

Data Requirements

Attribute Name	Description
DR Resource ID	An identifier of the DR Resource for which the control is intended.
Status Check	A signal to inquire the DR resource status to be sent back
Pending DLC Notification	A signal indicating a pending DLC operation – A multi-value signal indicating the start time, duration, and the magnitude (kW, or

RECOMMENDATION AS APPROVED BY THE NAESB REQ EXECUTIVE COMMITTEE on June 16, 2010

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Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

Attribute Name	Description
	resource specific options) of the control.
DR Control Command	This may include multiple parameters Schedule for the DR initiation, or termination, and type/level of control. Please note that the control signal may be sent to an EMS or a smart device with a multi-function control capability.
Source-Authentication	This is for authentication of the control signal.
Unique-Identifier	An identifier used to identify the message.

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June 9, 2010

TO: NAESB Smart Grid Distribution Lists, NAESB REQ and WEQ Membership, NAESB DSM-EE Distribution Lists, Interested Parties

FROM: Rae McQuade, NAESB President

RE: Announcement and Schedule of NAESB REQ/WEQ Smart Grid Meetings for Priority Action Plan 10, Leadership, Background Documents and Notes

The NAESB Smart Grid Task Force for PAP 10 work – phase 1, will have the following leadership team, all of whom are considered co-chairs:

OpenADE	Brent	Hodges: Bhodges@reliant.com; (713) 497-5696
ASHRAE	Sha	ron Dinges: sdinges@trane.com; (651) 407-4244
EIS Alliance	Dav	id Kaufman: david.r.kaufman@honeywell.com; (602) 293-1271
NARUC	Brad	Ramsay, jramsay@naruc.org, (202) 898-2207
ZigBee	To	bin Richardson: trichardson@zigbee.org; (916) 801-5810
OASIS		Ed Koch: ed@akuacom.com; (415) 256-2583
NAESB Retail Electric Quadrant		Phil Precht, phillip.r.precht@constellation.com, 410-470-5240
NAESB Wholesale Electric Quadrant		WEQ EC Member or Alternate to be named

Please note that Phil Precht and Brad Ramsey are NAESB members. We have asked for Wholesale Electric Quadrant (WEQ) EC or EC alternate volunteers for the WEQ leader, who will also be a NAESB member. An agenda for the first meeting should be coming out shortly. If you are interested in monitoring or participating, and would like to join the distribution list, please email your contact information to Denise Rager (drager@naesb.org). Once the meetings begin, we will start an exploder list for participants who are willing to take assignments.

Notes, Background Documents & Administrative Items:

- LEADERSHIP: Should the organization noted determine that another leader is needed or if the leader is unable to continue, that organization should provide contact information for the new leader.
- QUADRANT APPLICABILITY: While the effort currently is shown as a joint effort between the wholesale electric and retail electric quadrants, which means that the standards resulting from the effort will be standards applicable to the wholesale and retail electric quadrant, if it is determined during the sessions that the effort is solely to be applied to the retail electric market, then the joint meetings will be reestablished as retail electric only meetings.
- NAESB PROCESS: Balanced voting will be used in the task force meetings. If you are not a NAESB member, you will be asked to determine which quadrant and segment best represents your interests. A company can have only one vote per segment per representative. Balanced voting will be used to resolve differences of opinion as the standards are drafted. Voting at the task force level is permitted regardless of membership status within NAESB.
- COUNSEL: Jonathan Booe will serve as counsel for the meetings (jbooe@naesb.org, 713-356-0060).
- SCOPE: The phase 1 scope addresses the preparation of the information model as outlined in the white paper provided by the Tiger Team (http://www.naesb.org/pdf4/smart_grid_pap10_062210w1.doc). Other items may be considered as time permits, **but the information model and business practices to support it are required to be completed before yearend 2010 and are the focal point of phase 1.**

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- MEETINGS: All meetings will be conference calls/web casts, and will be held from 1 pm to 4 pm Central and will use the following information: Conference Number: 866-740-1260, Access Code: 7133562, Security Code: 1221. Any interested party is welcome to join.
- NAESB WEB SITE: All meeting information and documents will be posted on the NAESB web site at http://www.naesb.org/smart_grid_PAP10.asp.
- BACKGROUND DOCUMENTS:

  PAP 10: http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP10EnergyUsagetoEMS

  PAP 10 Data Sources: http://www.naesb.org/misc/pap10_data_sources.doc

  Tiger Team White Paper: http://www.naesb.org/pdf4/smart_grid_pap10_062210w1.doc

  Other Source Documents:

  105651r00ZB_ZSE-SE2_App_Spec_Draft, http://zigbee.org/Markets/ZigBeeSmartEnergy/ZigBeeSmartEnergy20PublicApplicationProfile.aspx

  OpenADE Model - http://osgug.ucaiug.org/sgsystems/OpenADE

  EIS Alliance Interface Requirements V1.11, http://www.eisalliance.org/forums/attachment.php?attachmentid=56&d=1272559943

  Other Source Documents for which links are not available:

  IEC 61970 CIM 14V11-IEC61968 CIM10V25Combined

  SEP 2 Model – 105551

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The schedule is as follows:

Date Event		Additional Information
June 22, 2010	Kick-off Task Force Meeting	1-4 pm C, see notes for how to join the meeting
June 29, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting
July 13, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting
July 20, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting
July 27, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting
Aug 3, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting
Aug 10, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting Straw Vote on draft recommendation to send out for informal comment
Aug 10, 2010	Informal Comment Start	The draft recommendation will be posted and send to a broad distribution list for any interested party to prepare comments
Aug 16, 2010	Informal Comment End	All comments will be posted and publicly available
Aug 20, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting Task Force to address informal comments and make changes to the draft recommendation
Aug 24, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting Task Force to address informal comments and make changes to the draft recommendation
Aug 31, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting Task Force to address informal comments and make changes to the draft recommendation, and task force to vote to send out revised recommendation for industry consideration
Sept 1, 2010	Formal Comment Period Start	The draft recommendation will be posted and send to a broad distribution list for any interested party to prepare comments
Sept 30, 2010	Formal Comment Period End	All comments will be posted and publicly available
Oct 4, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting Task Force to address formal comments and prepare late comments as suggested changes to the recommendation
Oct 5, 2010	Task Force Meeting	1-4 pm C, see notes for how to join the meeting Task Force to address formal comments and prepare late comments as suggested changes to the recommendation
Oct 8, 2010	Task Force Late Comments Issued	The task force will issue late comments in the form of a revised recommendation and will provide the matrix of comments received and actions taken as part of the late comments.

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Date Event		Additional Information
Oct 15, 2010	Joint EC Single Topic Review Session	1-4 pm C, see notes for how to join the meeting Drafters of the recommendation will discuss the recommendation and the late comments and answer EC member questions
Oct 22, 2010	Joint EC Meeting	1-4 pm C, see notes for how to join the meeting WEQ and REQ EC members will vote on the recommendation
Oct 29, 2010	Ratification Period Begins	WEQ and REQ members will be issued a ratification ballot.
Nov 29, 2010	Ratification Period Ends	Ballot to be returned to NAESB no later than 11-29-10.
Dec 1, 2010	Standards Ratified	

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INSTRUCTIONS FOR JOINING THE CONFERENCE CALL/WEB CAST

The meetings are open to any interested party. To join the conference call:

Dial the 11-digit toll free phone number (866-740-1260)

An automated attendant will ask you to enter a seven-digit access code (7133562)

The automated attendant will ask you to record your name.

Please note that if the conference leader has not yet initiated the conference call, you will be placed on music hold until the conference leader starts the conference.

The automated attendant will then ask you for a four-digit security code (1221)

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 on-hold line to have it 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. As noted above, the conference call will be web cast as well. As with all NAESB meetings, these are open to any interested party. As always, please feel free to call the NAESB office should you have any questions or comments.

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Via email and posting
May 24, 2010

TO: National Institute of Standards and Technology Technical Champion for PAP10, William Cox – Cox Software Architects LLC

cc: NIST Leads for PAP10 - David Wollman and Tom Nelson, NIST

FROM: Rae McQuade, Jonathan Booe, North American Energy Standards Board

RE: PAP10 Development

Attached please find a proposal as requested by NIST regarding the work for Priority Action Plan 10. The plan itself and recent communications from George Arnold to the Smart Grid Interoperability Panel Governing Board are also provided for context. The proposal highlights how NAESB develops standards and the NAESB involvement to date with PAP10. Should you have any questions do not hesitate to call.

With Best Regards,

Rae McQuade

Rae McQuade, President
North American Energy Standards Board

Jonathan Booe

Jonathan Booe, NAESB Counsel
North American Energy Standards Board

North American Energy Standards Board

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May 24, 2010

NAESB Proposal For Priority Action Plan 10 Work

Origination of Proposal:

NIST has requested that NAESB prepare a proposal for consideration by the PAP10 participants. We understand that similar requests for proposals have been made to American Society of Heating, Refrigerating and Air-Conditioning Engineers Inc. and to Organization for the Advancement of Structured Information Systems LLC. We further understand that the proposal is to focus on the production of a "standard for consumer energy usage information."

Issues and Assumptions:

We understand that it is the intent of the PAP10 leadership that on May 26, the PAP10 participants will begin the process to identify an SDO responsible for the production and maintenance of a "standard for consumer energy usage information." How the PAP10 participants will reach consensus and have such efforts to reach consensus documented is unclear.

Scope and Description of Work:

Directly taken from the PAP10 , the deliverables are:
D1 -- Use cases and requirements for standard energy usage information exchange
D2 -- Short term plans for near-term customer access to usage data based upon today's installed meters
D3 -- Information model to satisfy present and future needs for exchange of energy usage information
D4 -- Implement a plan to expedite harmonized standards development and adoption

From the PAP10, the above four deliverables describe the work at hand, and tasks are underway or complete for D1 and D2. For D3 and D4, the deliverables are at risk or are late. However, we note from the April 29 PAP10 webinar, that D3 deliverables and specifically task 8 was to be considered for an amendment to the due date as task 8 is dependent on tasks 5 and 6, so the deliverable dates did not recognize the task interdependencies.

Understanding the correspondence from Dr. Arnold, this proposal is to address the development of standardized energy usage information available to consumers, which appears to be captured in deliverables D3 and D4.. To address the development of standardized energy usage information available to consumers would necessarily entail the identification of the data to be provided as an information model, and could include other tasks. We understand that several groups have already developed seminal work products that could be used as a basis for developing the information model – including EIS Alliance Customer Domain Use Case, ZigBee Alliance Smart Energy Profile 2.0, and OpenADE 2.0.

Process and Timeline for Standards Development:

NAESB, an American National Standards Institute accredited Standards Development Organization, follows the same ANSI accredited process for all NAESB standards development. NAESB standards support the wholesale and retail natural gas and electric markets. Any interested party regardless of membership status within NAESB is welcome to participate in standards development and indeed vote as the standards are being drafted. To develop on an expedited timeline for standards development will require clarity in the policy goals as stated by the requesting agency, industry executive support and championship, and availability of industry subject matter experts.

In developing NAESB standards, the standards are developed for either the wholesale market or retail market use. In some cases (such as PAP09) there are retail PAP09 standards and wholesale PAP09 standards. For the business practices supportive of PAP03 and PAP04, the NAESB standards are identical for both wholesale and retail markets applications.

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May 24, 2010

NAESB Proposal For Priority Action Plan 10 Work

To date our involvement in PAP10, which began in December 2009, has resulted in the creation of a survey and its distribution and collection. We are now in the process of preparing the results of that survey (related to D1, tasks 5 and 6). To guarantee strong focus on PAP10, NAESB is in the process of creating a subcommittee with leadership from related groups to ensure that any work assigned to NAESB is appropriately coordinated and at a minimum consistent with the related efforts of other standards development groups. The coordination would ensure that the interfaces among related standards developers would meet each group's requirements.

Examples of Similar Efforts:

As examples of analogous standards development, there is a similarity between this development and the development of wholesale electric market standards for the electronic scheduling of electricity across the bulk power system. The NAESB WEQ-001, WEQ-002, WEQ-003 and WEQ-013 sets of standards were developed to support the electronic scheduling of electricity across the bulk power system and include business practices (WEQ-001), data dictionaries to support the electronic transactions (WEQ-002), standards and communication protocols (WEQ-003) and implementation guides (WEQ-013). The FERC has incorporated these standards into their body of regulations. Version 2.1 of these standards was adopted by the Commission in FERC Order No. 676-E on November 24, 2009.

Similarly for the retail energy market, NAESB developed the customer information business practices (RXQ.8) which includes principles, definitions, model business practices, models and process flows, data dictionaries and code values for each of the electronic transactions, and X.12 EDI implementation guides. These standards provided the baseline for several states operating under customer choice programs. The customer information standards focus on the process for exchanging customer information between market participants in competitive electric and natural gas markets where suppliers sell electricity and natural gas to customers. To effect the transfer of the energy from the supplier through the distribution company to the customer in competitive electric and natural gas markets, the accurate and timely dissemination of customer information is a requirement.

Coordination of Work with Other Standards Organizations:

NAESB works closely with several standards groups. With the North American Electric Reliability Corporation (NERC), we have forged a partnership by which NERC develops the reliability standards for the wholesale electric market and we develop the complementary business practices. The standards development activities are identified either as reliability or market based. For those parts that are reliability – NERC develops them; and for those parts that are market oriented, NAESB develops them.

As another example, with the development of the eTariff standards, which govern how federally jurisdictional entities file with the Federal Energy Regulatory Commission, we developed the business practices, information models, information requirements, electronic delivery mechanisms and supporting eXtensible Mark-up Language for electronic filing of tariffs, rates or contracts. This effort included not only the electric utilities, power authorities, federal power marketing administrations, independent system operators, regional transmission organizations and natural gas pipelines – but also the oil pipelines, that are not represented in the NAESB organization. The oil pipelines worked hand-in-hand with NAESB to develop the standards through the NAESB process, which NAESB then filed and were adopted by the Commission.

Coordination and Public-Private Partnerships with Federal and State Agencies

The vast majority of wholesale NAESB standards that are considered federally jurisdictional have been incorporated by reference as part of the Code of Federal Regulations. In the incorporation by reference of our standards, the Commission has noted that our process does meet the requirements set forth in NTTAA and OMB Circular A-119. Our retail standards have been used as models for many states to implement their policies, and indeed have been driven by state interests. As such, NAESB has over the years developed strong public-private partnerships with federal and state regulators and agencies.

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May 24, 2010

NAESB Proposal For Priority Action Plan 10 Work

Conclusion

Any PAP10 standards development work assigned to NAESB by NIST will be given the highest priority and NAESB will work with other SDO leaders to ensure that its work is appropriately coordinated and at a minimum consistent with the related efforts of other standards development groups. The coordination would ensure that the interfaces among related standards developers would meet each group's requirements. For standards development assigned by NIST to other SDOs, NAESB will urge its membership to participate in those SDOs' processes for development.

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Attachment – PAP10 as Updated on May 10, 2010
Dated May 24, 2010

Date: May 21, 2010

To: SGIP Governing Board

From: George Arnold, National Coordinator for Smart Grid Interoperability, NIST

Our May 24 agenda includes an item concerning PAP10. I am writing to give you some background information to make our discussion at the meeting more efficient.

PAP 10 (Standard for Energy Usage Information) was created last summer as the request of the White House Office of Science and Technology Policy (OSTP) to coordinate development of a standard defining standardized data to be made available to consumers on their energy usage. OSTP originally requested that the standard encompass two cases: data to be made available to all consumers from monthly usage data (for example, for those customers who still have electromechanical meters), as well as near-real-time usage data directly from the meter for those customers with smart meters. It was expected that such a standard, consisting of an extensible data model and its instantiation in a UML/XML schema, could be developed rapidly.

Because of its public policy importance, NIST anticipates that a standard for consumer energy usage information is likely to be considered for adoption by federal or state regulatory agencies. This requires that the standard be published by an SDO that federal and/or state regulatory agencies consider acceptable to reference. Because of EISA's requirement that standards adopted by FERC after it determines "sufficient consensus" has been reached, this has been taken to mean an SDO that meets the definition of a "voluntary consensus standards body" provided by NTTAA and OMB Circular A-119. Some stakeholders, including DoE, are asserting that the standard should be produced by an ANSI-accredited SDO so that there is a stronger assurance of openness and consensus.

The PAP 10 charter states that "This action plan will lead to data standards to exchange fine grained and timely information about energy usage" which is responsive to this request. However, there has been a problem in execution of the PAP10 charter. After 9 months of PAP10 meetings and teleconferences, while much valuable work has been accomplished by organizations such as OpenSG, Zigbee, NAESB, and others that provide the technical foundation for such a standard, an identifiable "standard for consumer energy usage information" meeting the above criteria still does not exist nor is there a timetable or agreement among the PAP10 participants as to which organization(s) should produce the standard.

During the last several months, many stakeholders have become concerned about lack of progress in making standardized energy usage information available to consumers. Several letters have been written to the President of the United States expressing concern, including one letter signed by 46 companies. OSTP is concerned about the apparent lack of progress and discord in PAP10. In addition, some companies have met with the Secretary of Energy and expressed specific concerns about the slow progress in the work on standards for energy usage information and concerns about balance in the process.

I am requesting the SGIP Governing Board, at the May 24 meeting, direct PAP10 to provide to the Governing Board, by its June 10 teleconference, a plan and expedited schedule (measured in months, not years) for production of a "standard for consumer energy usage information" responsive to the OSTP request. NIST is expecting that the standard will be produced and maintained by a recognized SDO, compliant with the definition of a "voluntary consensus standards body" per NTTAA and OMB Circular A-119, and acceptable for reference by federal and state regulators. It should utilize existing technical work on which there is consensus to the maximum extent possible to avoid rework and to accelerate progress.

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Attachment – PAP10 as Updated on May 10, 2010
Dated May 24, 2010

PAP10: Standard Energy Usage Information

Abstract:

Customers will benefit from standardized energy usage information that enables them to make better decisions and take other actions consistent with the goals of Sections 1301 and 1305 of EISA. An understanding of energy usage informs better decisions about energy use and conservation, and is the basis for performance feedback on the operation of customer owned energy management systems and understanding device energy usage and management.

Some states have already mandated customer access to meter-based usage information. As part of this action plan a limited set of requirements are driving a specification which is expected in February 2010.

Subsequent work in the first half of 2010 will drive a standardized information model for broader exchange of usage information. This model for cross-domain interaction needs the characteristics of integration models as described elsewhere in this document.

Requirements for Energy Usage Information and standards harmonization:

- Energy Usage Information Requirements

Status of PAP10: Standard Energy Usage Information:

Updated May 10, 2010.

A#	Current Activities and Accomplishments
A3	Surveying current practices
A4	Consolidating use cases and requirements
A5	Producing information model for today's meters
A7	Produced use cases and requirements for facility interactions
A9	

S	D#	Deliverable
	D1	Use cases and requirements for standard energy usage information exchange
	D2	Short term plans for near-term customer access to usage data based upon today's installed meters
	D3	An Information model to satisfy present and future needs for exchange of energy usage information
	D4	Implement a plan to expedite harmonized standards development and adoption

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I#	Issues, Concerns & Help Needed
I1	Consider energy export as well as import
I2	Require clarity from UCAIug IPR and contribution processes
I3	OpenADE proceeding without coordination with or use of PAPs 3, 4, 9
I4	NAESB requests help with Task T8; task not fully defined yet
I5	OpenADE 1.0 and 2.0 development is in advance of requirements
I6	OpenADE 1.0 and plans for 2.0 are much more than usage; PAP10 is on "fine graned and timely" access to usage information
I7	Need an identifiable consensus standard in process
I8	SDO discussions are continuing; need decisions quickly

S	T#	Task	Plan	Actual	Resp	D#
☑	T4	Gather requirements and use cases for intra-premise scenarios that require inter-domain data exchange	2010-01	2010-01	EIS Alliance	D1
	T5	Survey current practice. Gather existing usage communications between energy suppliers and consumers, including providers of intermediary services	2010-05		NAESB	D1
	T6	Consolidate use cases and requirements for existing and planned energy communications	2010-06		NAESB	D1
	T7	Produce first delivery information model for today's meters and infrastructure (from utility information systems) Draft delivered April 2010	2010-02	2010-04	UCAIug	D2
	T8	Develop a plan to expedite harmonized standards development	2010-04		NAESB	D4

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		and adoption within the associated standards bodies					
	T9	Produce draft Energy Usage information model specification	2010-06		SDOs	ASHRAE, LonWorks, NAESB, ISA, OASIS, ODVA, others	D3

Status	Schedule	Deliverables	Resources
January 2010			
February 2010			
March 2010			
April 2010			

Key: STATUS -- complete=, on target=, caution=, late=

Task Details:

Detailed full task table and status is on Pap10TaskTable.

Description:

This action plan will lead to data standards to exchange fine grained and timely information about energy usage. The first goal is agreement on a core information set to enable integration of usage information throughout facility decision processes. Customers and customer-authorized third-party service providers will use these standards to access energy usage information from the Smart Grid and meter, enabling them to make better decisions about energy use and conservation. Consumers and premises-based systems will use these standards to provide real-time feedback on present and projected performance. Using the Smart Grid infrastructure, this information will be shared with the facility: a home, building, or industrial installation. Two-way flows of usage information will improve collaboration and thereby energy efficiency.

The data standards will enable immediate and widespread benefit. They will support access to monthly usage information, which may already be available, as well as near-real-time information as smart meters and other devices are deployed. The standards will enable innovation by third-party service and software providers in providing novel ways to help consumers and operations manage their energy usage. In the absence of these standards, software developers and utilities would have to negotiate pair-wise interfaces,

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an impractical situation. The standards will also promote more responsive facilities: devices that deliver and understand common usage information can be deployed more quickly.

These standards must be developed on an aggressive timetable. States such as California and Texas have mandated that consumers have electronic access to such data in 2010. This action plan will result in both an initial specification of narrower information to satisfy regulatory mandates by February 2010 and a requirements-based definition for standard energy usage within the facility as well as to and from the Smart Grid by mid 2010.

Attempts to encourage consumers of electricity to conserve energy are enhanced when consumers have the means to track their actual energy use. Real-time, or near real-time, information supports energy management decisions and action far more effectively than after-the-fact billing. Today, limited access to information already collected hinders customer-focused energy management. Making understandable, actionable energy-usage information readily available to consumers requires widely adopted data standards. Such standards will support innovation in automated energy management services and products, help to build national and global markets for these technologies, and help to conserve energy.

The on-premises meter can provide information about energy consumption. This information can also be made available through energy delivery systems (such as those operated by utilities or aggregating service providers) and through consumer devices. In larger facilities, customer owned sub-meters are common, but accurate meter information at the boundary of the facility is still critical information. Anticipated initial users of this information model will be utilities and other service providers, which will provide energy usage information to customers via the World Wide Web, or public Internet. The model also will support development of on-premises devices that can access meters and provide usage information directly to the occupant.

Device and facility usage is the other target—sharing of usage and load and demand historical and projected information inside a facility makes that facility more valuable to the Smart Grid, as aggregated projections can be passed on to the Smart Grid operations domain, making forecasting and management better. Inside the facility, the energy efficiency goals of EISA 2007 and Department of Energy initiatives are better served by consistent usage information exchange.

This effort will support information standards for load curtailment, load shaping, and energy market operations. The initial focus, however, is on immediate steps to define and standardize energy usage information up through the existing Smart Grid infrastructure and to make it more readily available. The energy transaction is the informational hand-off within and between adjacent domains in the Smart Grid, just as the meter is the hand-off within and between domains. Shared energy-transaction information is essential to interactions between:

- Distribution and the industrial, commercial, and home premise;
- The service provider and industrial, commercial, and home premises;
- Distributed energy resources and all other domains; and
- Plug-in electric vehicles.

PAP10 Email List

The email list for this Priority Action Plan is *SGIP-PAP10WG*. To sign up go to http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PriorityActionPlans#Individual_PAP_Lists and click the PAP10 list. Register at the server and sign up for SGIP-PAP10WG. Other SGIP lists are managed by the same service.

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Dated May 24, 2010

Notes and references

A cached copy of this page as of January 4, 2010 is at CachedPap10.

Meeting notes (where available) and slides from the PAP 10 webinars are on Pap10MeetingNotes .

- Sharepoint Site for UCAIug OpenADE
- Sharepoint Site for UCAIug OpenHAN
- UCAIug Smartgridipedia
- 2009-10-30 OpenADE Team has a public draft of their Business and User requirements at http://www.smartgridipedia.org/index.php/OpenADE.
- PAP_10_UCAIug_OpenSG_-_Customer_Domain_Involvement.ppt: Description of OpenSG activities related to PAP 10
- InHome_Displays_Slides_Aug08.pdf: Energy Insights presentation
- NARUC-Webinar2-Dec16-FinalDraft-121609.ppt: NARUC "Engaging the Customer" Webinar

Smart Grid Interoperability Panel
Priority Action Plan 10 (PAP10)

Report to the SGIP Governing Board: PAP10 Plan

Tuesday, June 15, 2010

Governing Board Request and Background Information

At the May 24, 2010 Governing Board meeting, in response to George Arnold's May 21, 2010 memo on the status of customer energy usage information standardization, the Governing Board requested that the PAP10 leadership team provide a consensus plan and expedited schedule (measured in months, not years) for production of a standard for consumer energy usage information by a recognized Standards Developing Organization (SDO), compliant with the definition of a "voluntary consensus standards body" per the National Technology Transfer and Advancement Act (NTTAA) and OMB Circular A-119, and acceptable for reference by federal and state regulators.

PAP10 "Standard Energy Usage Information," which had been initiated last summer, had completed a series of tasks leading towards its goals:

- Work in the UCA International Users Group (UCAIug) completed a draft specification of Open Automatic Data Exchange (OpenADE) (version 1.0) for immediate satisfaction of regulatory requirements in California.
- A new organization, EIS Alliance, formed from stakeholders with a facility-side perspective, developed some key Use Cases and preliminary information models concentrating on PAP10 requirements.
- ZigBee Smart Energy Version 2.0 (SEP2.0), work of the ZigBee Alliance, has become generally available for input and comment.

In addition, work had begun to formalize the requirements for a PAP10 deliverable, traceable to and based on the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0, with consensus review by the PAP10 community.

However, convergence of these efforts to produce a final deliverable for PAP10 was still needed, based on the PAP10 task on construction of a plan to implement a plan for standardization in multiple SDOs. (This previous PAP10 Task 8 is now repurposed on the PAP10 TWiki electronic collaboration site).

George Arnold's and the Governing Board's request to produce a standard for consumer energy usage information by a recognized Standards Developing Organization (SDO) has helped to provide impetus and closure criteria to drive the PAP10 effort to the desired solution.

Progress during and after ConnectivityWeek

During ConnectivityWeek, the PAP10 leadership convened a series of previously planned meetings of representatives from SDOs capable of fulfilling the PAP10 charter to create a referenceable standard in a short timeframe. Based on these discussions and with the consensus of the PAP10 community as expressed during public PAP10 meetings at ConnectivityWeek, a plan was developed and approved with the following elements and agreements:

- **Constrain Scope of PAP10:** PAP10 Basic Energy Usage Information shall be a single limited-scope information model. That is, PAP10 will not cover all interactions associated with energy in the home or commercial space. Additional standard information models will be necessary to support load management, for example. Additionally, the proposed standard will be limited to defining an information model only. The implementation of messaging using the model and the syntax by which messaging is encoded is left to SDOs and Standards Setting Organizations that will use the "seed" standard.
- **Referenceable Standard Creation:** The North American Energy Standards Board (NAESB) is called upon and agrees to lead an effort to complete a PAP10 Standard in ~6 months by December 2010.
- **Facility Side Modeling Effort Started:** The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) will lead a facility energy information models effort in parallel with the PAP10 effort of NAESB. These models will complement the PAP10 model.
- **Ensuring that Supplier- and Consumer-side Requirements are Met:** Cross pollination of NAESB and ASHRAE leadership for both efforts will facilitate addressing of stakeholder requirements, and will help to ensure that the broad range of interested parties are well represented in both NAESB and ASHRAE standardization efforts.
- **Tiger Team to Assemble Straw Model:** A Tiger Team will be rapidly convened to assemble a unified "data table" list with maximized reuse and minimized impact upon existing work – UML Model in Enterprise Architect (EA) + IEC Common Information Model (CIM)[1]:
    - SEP2.0
    - EIS Alliance
    - ASHRAE
    - NAESB
- **Key Sources of Model Components:** Core document contributions to be free and clear of constraints; data models only.
    - SEP2.0, OpenADE, and EIS Alliance

[1] IEC 61970, 61968

- **Coordination With and Use of Content from PAPs 3, 4, and 9:** It is recognized that pricing and demand response efforts and the PAP10 model will need to be coordinated, with the goal that relevant content is used appropriately and consistently.

Since ConnectivityWeek

The planned Tiger Team was assembled and conducted a modeling unification exercise at NIST in Gaithersburg, Maryland on June 2-4, 2010. This effort was successful at reaching a consensus concrete Straw Model in UML based on CIM, SEP 2, and EIS Alliance models.

A white paper was written and the model and white paper were posted on the TWiki on Monday, June 7, 2010. (see TWiki PAP10 Tiger Team Results)

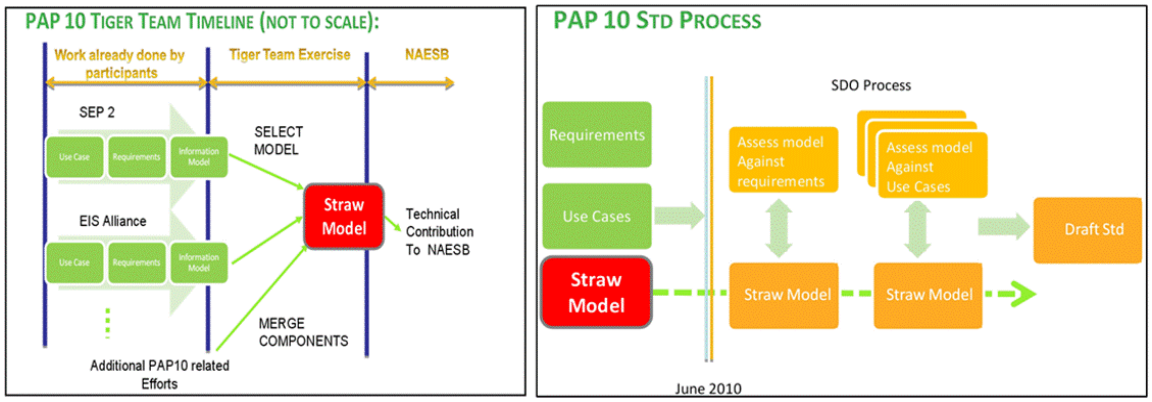
NAESB rapidly initiated the formation of a standards committee co-chaired by the collaborators that inspired the consensus plan now underway. A meeting schedule was established allowing for completion of the standard before the end of the year (December 2010). (see TWiki description NAESB PAP10 Task Force)

The ASHRAE Standards Committee approved the title, purpose, and scope (TPS) for an effort to standardize additional and complementary facility-side models and also to reuse the results of PAP10.

PAP10 has completed its requirements document that can be utilized to assess the NAESB result, as well as to guide their progress.

The Plan Going Forward

PAP10 plans to support the NAESB effort, focusing our work in that forum. The following figure illustrates how the tiger team Straw Model can be used as a technical contribution and matured into a consensus standard:



The graphic on the left shows how the Straw Model was assembled from the prior work and then enters the NAESB process as a technical contribution. The rightmost graphic shows how that Straw Model evolves through the NAESB process:

1) with requirements review against the Straw Model, followed by,
2) assessment of PAP10 Use Cases against the Straw Model

At each step the model can be matured as needed with the input of the broad range of interested stakeholders under the formal procedures of NAESB, an ANSI-accredited SDO.

It is anticipated that a new PAP may be desirable to support and facilitate the SGIP stakeholder involvement in the ASHRAE-led standards development effort. This new PAP could be expected to involve the same participants as does PAP10 and may be implemented in tandem with PAP10, albeit under a new PAP charter appropriate to its content. Once developed, this potential PAP would be brought to the Governing Board in the usual process.

Finally, we anticipate that the NAESB production of a standard by December 2010 will meet the core goals of PAP10, which can be deemed successfully completed at that time.

Report submitted on behalf of the PAP10 leadership team by David Wollman, NIST lead for PAP10.

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NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ)
JUNE 11, 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:

None to date

Recommendations:

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.

Recommendation – Part A with Revised Attachments - http://www.naesb.org/pdf4/retail_2009_api1_r05016_rev_rec.doc

Revised Attachment 1 – Data Dictionaries - http://www.naesb.org/pdf4/retail_2009_api1_r05016_rev_rec_attach1.doc

Revised Attachment 2 – X12 Technical Implementation Guidelines - http://www.naesb.org/pdf4/retail_2009_api1_r05016_rev_rec_attach2.doc

WEQ 2010 Annual Plan Item 6a / Retail 2010 Annual Plan Item 9a - Requirements Specifications for Common Electricity Product and Pricing Definition - for NIST PAP03 – formal comment period ended April 9, 2010.

Recommendation - http://naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc

WEQ 2010 Annual Plan Item 6b / Retail 2010 Annual Plan Item 9b - Requirements Specifications for Common Scheduling Mechanism for Energy Transactions - for NIST PAP04 – formal comment period ended April 9, 2010.

Recommendation - http://naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc

Retail 2010 Annual Plan Item 9c - Requirements Specifications for Retail Standard DR Signals - for NIST PAP09 – formal comment period ended April 9, 2010.

Recommendation - http://naesb.org/pdf4/retail_2010_ap_9c_rec.doc

Retail 2009 Annual Plan Item 10a and 10c - Service Request, Disconnection and Reconnection in the Registration Agent Model – revised by the Retail Executive Committees on 05/05/2010.

Recommendation - http://naesb.org/pdf4/retail_2009_ap_10a_10c_rec.doc

Minor Corrections:

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)*

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NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ)
JUNE 11, 2010

TIMELINE:

- Version 1.3 is scheduled for publication in 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)
JUNE 11, 2010

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

Recommendations:

2009 WEQ Annual Plan Items 3(a)(ii)(1)/R07013 - Develop a Confidentiality Agreement - Action pending – http://www.naesb.org/pdf4/weq_2009_api_3aii1_r07013_rec.doc

2009 WEQ Annual Plan Items 5(a)(2), 5(i)/R08004/R09011 – Multiple Annual Plan Items affecting WEQ-011 Gas/Electric Coordination – Formal comment period ended November 2, 2009 - Approved by the WEQ EC on June 11, 2010 via Notational Ballot:http://naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec.doc

Attachments:

WEQ-001 (Redlined): http://naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec_attach1.doc

WEQ-001 (Clean): http://naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec_attach2.doc

WEQ 2010 Annual Plan Item 6a / Retail 2010 Annual Plan Item 9a - Requirements Specifications for Common Electricity Product and Pricing Definition - for NIST PAP03 – Formal comment period ended April 9, 2010. Recommendation: http://naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc

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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
JUNE 11, 2010

WEQ 2010 Annual Plan Item 6b / Retail 2010 Annual Plan Item 9b - Requirements Specifications for Common Scheduling Mechanism for Energy Transactions - for NIST PAP04 – Formal comment period ended April 9, 2010.
Recommendation: http://naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc

WEQ 2010 Annual Plan Item 6c - Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09 – Formal comment period ended April 9, 2010.
Recommendation: http://naesb.org/pdf4/weq_2010_ap_6c_rec.doc

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

Minor Corrections:

Minor Correction for WEQ-001 to be applied to versions 002.1 and 002.2 submitted by JT Wood, Southern Company and approved by the WEQ Executive Committee on October 27, 2009. - http://naesb.org/pdf4/weq_mc111209_reqcom.doc Comment period ends November 30, 2009 *(Effective date December 14, 2009)*

TIMELINE:

- Version 002.2 is scheduled for publication end of third quarter 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)
JUNE 11, 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)*

Recommendations:

R09025 – Create a new WGQ EDM standard – Formal comment period ends June 24, 2010.
Recommendation: http://naesb.org/pdf4/r09025_rec_052510.doc

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. – Formal comment period ends June 24, 2010.
Recommendation: http://naesb.org/pdf4/wgq_2010_api_5_rec_052510.doc

R09014 / 2010 WGQ Annual Plan Item 6 – add NAESB WGQ Standard to the NAESB WGQ QEDM as requested by Tennessee Valley Authority and modify NAESB WGQ Standard No. 4.3.23 per R09014 and WGQ Annual Plan Item #6 – Formal comment period ends June 24, 2010.
Recommendation: http://naesb.org/pdf4/r09014_wgq_2010_api_6_rec_052510.doc

R09021/R09022 – Change Charge Type conditionality in NAESSB WGQ Standard No. 3.1.14.1 Transportation/Sales Invoice – Formal Comments Due June 17, 2010.
Recommendation: http://naesb.org/pdf4/r09021_r09022_rec_051710.doc

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 – Formal Comment period ended February 26, 2010.
Recommendation: http://naesb.org/pdf4/r09006_rec.doc

R09011 - Change the term Power Plant Operator to Power Plant Gas Coordinator in WEQ-011 – Formal comment period ends April 29, 2010.
Recommendation: http://naesb.org/pdf4/r09011_rec.doc

R08020 – Provide for enhanced granularity for public utilities in identifying critical operational flow orders, - Approved by the WGQ EC on February 4, 2010. *(Member Ratification ends June 23, 2010)*
Recommendation: http://naesb.org/pdf4/r08020_rec.doc

R09001 – Add two data elements to the Transactional Reporting – Interruptible Transportation Document (5.4.22) – Approved by the WGQ EC on February 4, 2010. *(Member Ratification ends June 23, 2010)*
Recommendation: http://naesb.org/pdf4/r09001_rec.doc

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NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)
JUNE 11, 2010

Minor Corrections:

MC10020 – Version 1.9 (Errata) for NAESB WGQ Capacity Release, Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee –
Recommendation: http://naesb.org/pdf4/wgq_mc10020_rec_051710.doc for WGQ EC consideration

MC10009 - 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 - http://naesb.org/pdf4/wgq_mc10009.doc,
Recommendation: http://naesb.org/pdf4/wgq_mc10009_rec_040910.doc for WGQ EC consideration.

MC10010 - Errata for NAESB WGQ Standard No.5.4.20 (Transactional Reporting – Capacity Release), Submitted by D. Davis, Williams Gas Pipeline - http://naesb.org/pdf4/wgq_mc10010.doc,
Recommendation: http://naesb.org/pdf4/wgq_mc10010_rec_040910.doc for WGQ EC consideration.

MC10011 - Errata for NAESB WGQ Standard Nos.3.4.1 (Transportation/Sales Invoice), Submitted by D. Davis, Williams Gas Pipeline - http://naesb.org/pdf4/wgq_mc10011.doc ,
Recommendation: http://naesb.org/pdf4/wgq_mc10011_rec_040910.doc for WGQ EC consideration.

MC10014 - Errata for NAESB WGQ Standard No.5.4.18 (Bid Upload), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee - http://www.naesb.org/pdf4/wgq_mc10014.doc
Recommendation: http://naesb.org/pdf4/wgq_mc10014_rec_032910.doc - for WGQ EC consideration.

MC10015 - Errata to NAESB WGQ Version 1.9 - 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 - http://naesb.org/pdf4/wgq_mc10015.doc - proposed recommendation to be reviewed by WGQ IR/Technical on April 13-15, 2010.

MC10016 - 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 - http://naesb.org/pdf4/wgq_mc10016.doc - proposed recommendation to be reviewed by WGQ IR/Technical on April 13-15, 2010.

MC10017 - Version 1.9 NAESB WGQ Standard No. 2.4.6 – Measurement Volume Audit Statement, Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee - http://naesb.org/pdf4/wgq_mc10017.doc - proposed recommendation to be reviewed by WGQ IR/Technical on April 13-15, 2010.

MC10018 - Minor Correction 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://naesb.org/pdf4/wgq_mc10018.doc

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 Fiing): http://naesb.org/pdf4/wgq_weq_mc10019.doc

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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)*

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_revised011210.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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://naesb.org/pdf4/wgq_mc10008.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 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 March 31, 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

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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 March 31, 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://naesb.org/pdf4/wgq_mc111209reqcom.doc - approved by the WGQ EC on October 29, 2009 *(Effective date December 14, 2009)*

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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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

WEQ OASIS Progress Report

Based on WEQ 2010 Annual Plan As of January 21, 2010

2009 Annual Plan Item	2010 Annual Plan Item	Annual Plan Item	Scheduled	Underway	Concept Discussion	Draft Recommendation	Subcommittee Review	Post Informal Comments	Review Comments	Subcommittee Final Review	Subcommittee Approval	NAESB Clean-up	Post for Formal Comments	EC Passed	Ratified
2.a.i.1	2.a.i.1	Use of OASIS to Make Electronic Requests to Designate and Terminate Network Resource													
2.a.i.2	2.a.i.2	Ability to Query Requests to Designate and Terminate Network Resources and Allow for Queries of All Information Provided with Designation Requests													
2.a.i.3	2.a.i.3	Masking of Designated Network Resource Operating Restrictions and Generating Cost Information													
2.a.i.4	2.a.i.4	Procedural Requirements for Submitting Designations over new OASIS Functionality													
2.a.i.5	2.a.i.5	Specify How Designated Network Service Informational Postings are Posted on OASIS													
2.a.i.6	2.a.i.6	Set Forth the Treatment of OASIS Requests when the Customer Fails to Provide the Necessary Attestation													
2.a.i.7	2.a.i.7	Procedural Requirements for Submitting Both Temporary and Indefinite Terminations of Network Resources													
2.a.i.8	2.a.i.8	Procedures for Submitting and Processing Requests for Concomitant Evaluations of Transmission Requests and Temporary Terminations													
2.a.ii.1	2.a.ii.1	Pre-Emption													
2.a.ii.2	2.a.ii.2	Document procedures used to implement the displacement/interruption terms of the Pro Forma tariff (R05019)													
2.a.iii.1	2.a.iii.1	Paragraph 1377 The coordination of requests across multiple transmission systems													
2.a.iii.2	2.a.iii.2	Re-Bid Of Partial Service across Multiple Transmission Providers' Systems													
2.a.iii.3	2.a.iii.3	Group DNR requests from a system with point-to-point requests on other systems for synchronization													

WEQ OASIS Progress Report

Based on WEQ 2010 Annual Plan As of January 21, 2010

2009 Annual Plan Item	2010 Annual Plan Item	Annual Plan Item	Scheduled	Underway	Concept Discussion	Draft Recommendation	Subcommittee Review	Post Informal Comments	Review Comments	Subcommittee Final Review	Subcommittee Approval	NAESB Clean-up	Post for Formal Comments	EC Passed	Ratified
2.a.iv.1	2.a.iv.1	Paragraph 1390 of Order 890 Review existing business functions to determine if there is any impact on these business functions related to TC modifying its application for service to the point that the request is meaningfully different than initial request													
2.a.iv.2	2.a.iv.2	Paragraphs 1627 of Order 890 The posting of additional curtailment information on OASIS													
2.a.iv.3	2.a.iv.3	Redispatch Cost Posting to allow for posting of third party offers of planning redispatch services.													
2.b.i.1	2.b.i.1	The processing of transmission service requests, which use TTC/ATC/AFC, in coordination with NERC changes to MOD 001 (R05004)													
3.a.i	3.a.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													
3.a.iii	3.a.iii	Document procedures used to implement the displacement/interruption terms of the Pro Forma tariff. (R05019)													
3.a.iv.1	3.a.iv.1	Eliminate Masking of TSR tag source and sink when requested status is denied, withdrawn refused, displaced, invalid, declined, annulled or retracted (R05026)													
3.a.iv.2	3.a.iv.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. (R05026)													
3.a.iv.3	3.a.iv.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. (R05026)													
3.b.ii	3.b.ii	Develop PKI standards for OASIS.													
5.a.1	5.a	OASIS Consistency Changes (R08001, R08002, R08003, R08005)													

WEQ OASIS Progress Report

Based on WEQ 2010 Annual Plan As of January 21, 2010

2009 Annual Plan Item	2010 Annual Plan Item	Annual Plan Item	Scheduled	Underway	Concept Discussion	Draft Recommendation	Subcommittee Review	Post Informal Comments	Review Comments	Subcommittee Final Review	Subcommittee Approval	NAESB Clean-up	Post for Formal Comments	EC Passed	Ratified
5.d	5.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.													
5.g	5.c	Correct WEQ 013-2.6.7.2 - Resale off OASIS (R08027)													
5.h	5.d	Add language to WEQ-001-4 Online Negotiation and Confirmation process to clarify Table 4-3 (R09003)													
	5.e	Create a new OASIS mechanism that allows for the merger of like reservations without the use of the resale mechanism (R09015)													
	7.a	Review standards 001-14.1.3 and 001-15.1.2 based on FERC Order No. 676-E (¶39)													
	7.b	Develop standards to support the Transmission Provider right to reassess the availability of conditional firm (See ¶72)													
provisional 2	provisional 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)													

LEGEND:

Progress legend

- Completed prior to February 2010 EC Meeting
- Completed since February 2010 EC Meeting

AP item legend

- 890 Work Plan
- Normal Annual Plan Items
- New Items Added

2009/2010 AP item legend

- AP items linked to nits
- AP items linked to R05019
- AP items linked to services across multiple TP
- AP items linked to R05026
- AP items that stand alone

2010 North American Demand Response Characteristics Available for Download

May 17, 2010 - The IRC has released the 2010 update of the North American Wholesale Electricity Demand Response 2010 Comparison. This updated document contains summary information for wholesale electricity demand response programs, products, and services administered by the ISOs and RTOs in North America.

Last year, information was supplied for 47 products and services associated with 40 different performance evaluation models. This year's updated comparison covers 64 products and services (11 of which have proposed terminations in 2010) associated with 36 performance evaluation models – nearly 4,000 individual compared elements.

Several new data elements were added, primarily related to the emerging Requirement Specifications for Wholesale Standard DR Signals being developed under the guidance of the National Institute of Standards & Technology (NIST). Many of these new fields are found under Market Participant Roles and Communications Technologies & System References.

IRC members have been and continue to be active participants in the development of Business Practice Standards for the Measurement and Verification (M&V) of Wholesale Electricity Demand Response, initially developed using the North American Energy Standards Board (NAESB) subcommittee process and ratified by the NAESB membership on March 16, 2009.

For More Information

North American Wholesale Electricity Demand Response 2009 Comparison

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NAESB Retail DSM-EE Draft Standards
Compilation of Comments/Modifications to be reviewed by the Retail Demand Response Work Group

This document contains a compilation of the comments submitted to the WEQ/REQ DSM-EE Subcommittee in regards to the draft recommendation for proposed measurement and verification business practice standards. The comments submitted were in response to the request for formal comments. The Retail Electric Executive Committee voted to send the comments below back to the subcommittee for review during the Phase II efforts. The comments were individually posted and are available for download from the NAESB website at http://www.naesb.org/retail_request.asp.

	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE		WORK GROUP RESPONSE
1	Summit Blue	General Comment		Differentiation between the natural return to normal operations after an event and the required period of return to normal operations.		This will be addressed in a later comment
2	Summit Blue	General Comment		Clarification of spinning reserve resources and applicability to direct load control		This will be addressed in a later comment
3	Summit Blue	General Comment		Clarification of requirement for measurement: does this mean all events, or a sample of events?		This will be addressed in a later comment
4	Summit Blue	General Comment		Addition of the California Load Impact Estimation of Demand Response Protocols to the list of acceptable references for the estimation of sample sizes for DR M&V		This will be addressed in a later comment
5	Summit Blue	General Comment		Clarification that 'Performance Evaluation' refers to contract performance, not system impact estimation		This will be addressed in a later comment
6	Energy Curtailment Specialists	Proposed Addition	REQ.13.3.4	Add "Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact, and are subject to the definitions described under REQ.13.3.4 Performance Evaluation."		Proposed addition is unclear.
7	Energy Curtailment Specialists	Proposed Addition	Definitions: Metering Generator Output	Add, "This should also include the building/facility meter number so that metering output from the generator is seen as a load drop on the building/facility meter. This will ensure generating units, which normally operate, are not compensated for demand reductions during normal operations.		This is addressed in REQ.13.3.4.4.3
8	Summit Blue	Proposed Addition	REQ.13.3.3.1	The California Load Impact Estimation for Demand Response Protocols – Chapter 8 California Public Utilities Commission, Load Impact Estimation for Demand Response: Protocols and Regulatory Guidance, 2008. (http://docs.cpuc.ca.gov/efile/PD/80529.pdf)		The list of examples is not intended to be all-inclusive.
9	Energy Curtailment Specialists	Proposed Deletion	Executive Summary	Delete "In the event of a conflict between these business practices and business practices developed by the Wholesale Electric Quadrant for products that are bid into wholesale markets, the Wholesale Electric Quadrant Standard should have precedence."	While Retail Demand Response might be subject to a set of rules that are similar to wholesale, this is not to say that wholesale demand response standards should govern retail demand response standards.	This sentence was intended to say that wholesale takes precedence in all situations only where retail programs are bid into the wholesale market, if there is a conflict between the wholesale and retail standards, the wholesale standards take precedent.

NAESB Retail DSM-EE Draft Standards
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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE		WORK GROUP RESPONSE
10	Dom inion	Proposed Revision	REQ.13 Overview Tables	(See Tables A & B at the end of this document)	These tables did not match up with the way the information was presented in the standards. This presentaion would be clearer and more straight forward for the readers.	On hold
11	Dom inion	Proposed Revision	REQ.13.3.4.3.13	Add: The Program Administrator may specify the testing protocol if an Operability Factor will be applied to the Demand Resource Availability Measurement.	This is an additional (and potentially significant) adjustment that may be applied to a mass market program.	Accepted with "may" changed to "should"
12	Ener gy Curtailment Specialists	Proposed Revision	REQ.13.3.4.4.3	After-the-fact metering on the generator and the associated Load is used to measure performance.	This ensures that both the generator output and the load drop, associated with the generator output, are both seen. Ensures that generator output is not normal generator operations during demand response events.	Not applicable to this section.
13	Ener gy Curtailment Specialists	Proposed Revision	REQ.13.3.4.4.5	During the Performance Window, the Demand Resource is evaluated using the total measured generation output, and the associated facility/building load meter		Not applicable to this section.
14	So uthern California Edison	Proposed Revision	Principle REQ.13.1.5	These processes do not address contractual obligations between participants and their Customers, but because they are intended to be guidelines, entities may incorporate them into contractual arrangements		Defined as Business Practices, not guidelines.
15	Sum mit Blue	Proposed Revision	Executive Summary	Comprehensive: strives to cover all forms of dispatchable Demand Response		The REQ EC made the decision to not limit the Business Practices to Dispatchable Demand Response. The statement, as written, covers Dispatchable DR but the work group did not want to limit to just Dispatchable DR.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
16	Sum mit Blue	Proposed Revision	Definition of Demand Response	Changes in electric use by demand-side resources from their normal consumption patterns in response to changes in the price of electricity, or to incentives designed to induce lower electricity use at times of potential peak load, high cost periods, or when system reliability is jeopardized. For purposes of these Model Business Practices, this definition does not include non-dispatchable demand resources such as energy efficiency,permanent load reduction, time-of-use rates or real-time pricing.	The REQ EC made the decision to not limit the Business Practices to Dispatchable Demand Response. The statement, as written, covers Dispatchable DR but the work group did not want to limit to just Dispatchable DR.
17	Sum mit Blue	Proposed Revision	Diagram of Maximum Base Load	Since Maximum Base Load focuses on the maintenace of the base load level without any reference to the estimated baseline, this illustration could show the point more clearly by having a fluctuating or dome-shaped baseline during the sustained response period. As is, a reader could mistakenly take away the impression that maximum base load means a sustained level of load drop and that is not the case.	On hold, pending WEQ DR work group action.
18	Sum mit Blue	Proposed Revision	Definition of Non-Dispatchable Programs	How do energy efficiency and permanent load reductions relate to this definition? They are non-dispatchable, but they may not have an associated tariff structure.	They do not relate.
19	Sum mit Blue	Proposed Revision	Definition of Normal Operation	Normal operations is also a useful concept for evaluation, particularly for indicating the end of the natural non-normal consumption period. I think it would be helpful to create two different terms to distinguish between the time where load consumption returns to normal for a particular customer, and the required period where loads should be available again for Deployment. Could the former be called 'Normal Operations' and the latter be called 'Required Normal Operations'?	Change was made to the definition
20	Sum mit Blue	Proposed Revision	Definition of Ramp Rate	Is this in relation to the Ramp Period or the Deployment Period, or is it a generic measurement that can be applied to either period?	See diagram in REQ.0.2.158. The Ramp Period is part of the Deployment Period. The Ramp Rate only applies during the Ramp Period. A new definition for Recovery Rate was created
21	Sum mit Blue	Proposed Revision	Definition of Real Time Pricing	Ameren-Illinois has found in their Power Smart Pricing program that residential customers prefer to be respond to day-ahead prices vs. real-time prices. It seems that this should still be considered a real time pricing program even though the billing is done on day-ahead prices. Could this definition be expanded a bit to say 'in the wholesale day-ahead or real-time price of electricity'?	Not applicable since term will most likely be removed.
22	Sum mit Blue	Proposed Revision	Definition of Recovery Period	Again, I think it would be useful to distinguish between a natural recovery period and a required recovery period.	Need more information on what a natural recovery period means.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
23	Sum mit Blue	Proposed Revision	Spinning Reserve	Would it be accurate to say 'can respond immediately'? Must the resource be synchronized to the grid? It seems that direct load control could respond immediately to instructions from the Program Administrator, but I'm not sure it is 'synchronized to the grid'.	Declined. Typically, response time is 10-30 minutes.
24	Sum mit Blue	Proposed Revision	REQ.13.3.2.2	Does this mean that After-the-Fact Measurement is required for each DR event that occurs, or can a sample of DR events be measured? I am thinking of direct load control programs or critical peak pricing programs where measurements are often taken only on a sample of event days. This may be once a year or during one summer out of several summers.	After-the-fact measurement is intended to address performance measurement per event, therefore sampling over the course of a number of events was not intended. What is proposed in this question appears to be more intended for a stipulated, or fixed rate, compensation model.
25	Sum mit Blue	Proposed Revision	REQ.13.3.4	I think it is important to make a distinction between Contract Performance Evaluation and System Impact Evaluation. All of these methods are valid options for measuring Contract Performance. However, Maximum Base Load and Meter Before/Meter After do not give good estimates for System Impact evaluation. Customers may perform admirably and meet their maximum base load requirements and have perfect contract performance, but this is not useful information for estimating system impacts from the Demand Response program. Calling this 'Performance Evaluation' can give the inaccurate impression that system impacts are being estimated.	Need more clarification as to what contract performance evaluation and system impact evaluation mean.
26	Ener gy Curtailment Specialists	Proposed Addition	Introduction	Add ", and is not intended to address demand response program design."	Accepted
27	Ener gy Curtailment Specialists	Proposed Addition	Definitions: Program Administrator	Add, ", or Aggregator of Retail Customers (ARC)"	Declined. ARC has no requirement to report to a regulatory authority.
28	Sum mit Blue	Proposed Addition	REQ.13.3.3.2	Contacting and enroll the Customers to be in the sample, and install the metering devices if needed, or secure the interval meter data for the selected Customers	Accepted in the form of a new bullet.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE		WORK GROUP RESPONSE
29	Dom inion	Proposed Revision	REQ.13 Overview First sentence in 2nd paragraph	For Demand Response products, a performance evaluation methodology is used to determine the Demand Reduction Value provided by a Demand Resource. The Model Business Practices include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each type of Demand Response products.	Use term "product" here to be consistent with use of term in first paragraph	Accepted
30	Dom inion	Proposed Revision	Definition of Baseline Figure	"Deployment" Add "/Recall" to "Release"	For clarity, the Figure should be modified to be just the "Deployment" and "Release" should be consistant with the definition and list it as "Release/Recall".	The change has not been made, but it will be discussed with the wholesale demand response work group during joint wholesale/retail glossary discussions.
31	Dom inion	Proposed Revision	Definition of Maximum Base Load Figure	Add "Demand Response", "Reduction Deadline" and "Release/Recall"	For clarity: Deployment is listed on the Figure, but shouldn't "Demand Response", "Reduction Deadline" and "Release/Recall" also be listed?	Accepted. Cliff Grimm will modify the diagram.
32	Dom inion	Proposed Revision	Definition of Meter Before/ Meter After Figure	Add "Release/Recall" and "Reduction Deadline"	For clarity: Deployment and "Demand Response" are listed on the Figure, but shouldn't "Release/Recall" and "Reduction Deadline" also be listed?	Accepted. Cliff Grimm will modify the diagram.
33	Dom inion	Proposed Revision	REQ.13.3.3.1 footnotes	Footnote 2 US Department of Energy. M&V Guidelines: Measurement and Verification for Federal Energy Management Projects Version 3.0. 2008. (~~http://www1.eere.energy.gov/femp/financing/superespcs_measguide.html~~ http://www1.eere.energy.gov/femp/pdfs/mv_guidelines.pdf).	Footnote 2 refers to http://www1.eere.energy.gov/femp/financing/superespcs_measguide.html which returns a message: EERE Document Not Found The newer link appears to be: http://www1.eere.energy.gov/femp/pdfs/mv_guidelines.pdf Appendix B – "Sampling Guidelines"	Accepted. Link changed to reference current version.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE		WORK GROUP RESPONSE
34	Dom inion	Proposed Revision	REQ.13.3.3.1 footnotes	Footnote 4 Footnote 5	Footnote 4 refers to California Public Utilities Commission, The California Evaluation Framework, 2006. (http://www.cpuc.ca.gov/PUC/). But a search of the web link did not turn up a 2006 version. However, this document was located, with "June 2004" on the title page. ftp://ftp.cpuc.ca.gov/Egy_Efficiency/CaliforniaEvaluationFrameworkSept200194.doc Footnote 5 refers to ISO-New England, Manual for Measurement and Verification of Demand Resources, (M-MVDR), 2007. (http://www.iso-ne.com). But a search of the site found a document with a slightly different title: ISO New England Manual for, Measurement and Verification of Demand Reduction Value from Demand Resources, Manual M-MVDR ,Revision: 1,Effective Date: October 1, 2007 http://www.iso-ne.com/rules_proceds/isone_mnls/m_mvdr_measurement_and_verification_demand_reduction_revision_1_10_01_07.doc	Accepted. Reference changed to "current version." Footnote 5 – included a more precise link.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE		WORK GROUP RESPONSE
35	Dom inion	Proposed Revision	REQ.13.3.3.3	The sample should be designed to achieve a minimum accuracy of 90% confidence with +/-10% relative precision but ultimately achieve a statistical accuracy of no less than a 90% confidence level with +/-20% relative precision during Demand Response Event hours, or as may be specified by the Program Administrator.	Reversed the order in the statement to describe sample design first, and achieved sample precision second. Replaced the term "error" with "relative precision" to make language more consistent with that found in the reference documents. Give ultimate responsibility to determine requirements to the Program Administrator.	Not applicable. MBP does not identify specific accuracy or confidence levels. Cheryl Hindes will review 13.3.3.2 for consistency.
36	Dom inion	Proposed Revision	REQ.13.3.4.2.2	During the Baseline Window, the Demand Reduction Value of the Demand Resource is evaluated using one of the following measurements as specified by the Program Administrator:	Demand Reduction Value is the measure being evaluated.	Accepted.
37	Dom inion	Proposed Revision	REQ.13.3.4.3.2	The Program Administrator should specify the method of developing the baseline value using, but not limited to, the following calculation types: Maximum Demand Average Demand	"Baseline value" is not defined and should not be capitalized. For consistency, if these are the same as the terms used in **REQ.13.3.4.2.10** then they should be listed the same way.	Baseline is capitalized because it is a defined term. Additional language added to the bullets.
38	Dom inion	Proposed Revision	REQ.13.3.4.3.10Sub-bullets	Maximum Demand Average Demand	For consistency, if these are the same as the terms used in **REQ.13.3.4.2.10** then they should be listed the same way.	Revised the language in REQ.13.3.4.2.10 and REQ.13.3.4.3.10.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE		WORK GROUP RESPONSE
39	Dom inion	Proposed Revision		**Executive Summary** sub-bullets **Overview** sub-bullets **REQ.13.3.4** Baseline Maximum Base Load Meter Before / Meter After Metering Generator Output **REQ.13.3.4.1.4** sub-bullets **REQ.13.3.4.2.2** sub-bullets **REQ.13.3.4.2.10** sub-bullets **REQ.13.3.4.3.2** sub-bullets **REQ.13.3.4.3.4** sub-bullets **REQ.13.3.4.3.5** sub-bullets **REQ.13.3.4.3.10** sub-bullets	Whenever items are listed in the sections or sub-bullets they should be listed in alphabetical order unless there is another logical reason for the order.	Executive Summary listed in order of importance. Overview listed in order of appearance in the Model Business Practices. REQ.13.3.4 listed in order of appearance. REQ.13.3.4.1.4 – Accepted REQ.13.3.4.2.2 – Accepted REQ.13.3.4.2.10 – Bullets eliminated REQ.13.3.4.3.2 – Accepted REQ.13.3.4.3.4 – Arguments could be made for level of importance, so they were left alone. REQ.13.3.4.3.5 – same as above REQ.13.3.4.3.10 – bullets eliminated
40	Dom inion	Proposed Revision		The following measurements are not defined. Should this be something that is stated as it is defined by the Entities supplying the Demand Response Services? Instantaneous Demand Maximum Demand Average Demand Baseline calculation types: Maximum Demand Average Demand Regression Measurements: Maximum Demand Average Demand Regression		Not accepted. Terms are generally understood and specific definitions are unnecessary.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
41	Southern California Edison	Proposed Revision	Executive Summary	Change "M&V requirements" to "M&V protocols" Change "to accurately measure performance" to "to accurately estimate load impacts" Change "Demand Response" to "retail Demand Response programs" Change "access to uniform information that will enable them to report consistent values for Measurement and Verification of the programs." to "access to uniform Measurement and Verification protocols that will enable them to develop consistent values for the load impact estimates of the programs." Change, "These Model Business Practices were designed…" to "These Model Business Practices for retail energy markets were designed…"	1) Accepted. 2) Accepted. 3) Not accepted. The Model Business Practices only apply to Demand Response programs in retail electric markets. 4) Accepted. 5) Not accepted. See the third comment above. Redundant to the first paragraph.
42	Southern California Edison	Proposed Revision	Introduction	The focus of these Model Business Practices is to develop protocols for performing M&V for Demand Response programs. These Model Business Practices are voluntary and do not address policy issues and other protocols and methodologies associated with M&V that are the subject of state legislation or regulatory decisions. These Model Business Practices have been adopted with the realization that as the demand response industry evolves, additional and amended Model Business Practices may be necessary.	More clarification is necessary before a decision can be made on whether or not to make this change.
43	Southern California Edison	Proposed Revision	REQ.13 Overview	Change to read: These M&V Model Business Practices establish guidelines and criteria for the use of equipment, technology, and procedures to quantify the estimates of Demand Reduction Value delivered from retail demand response programs (product types). Model Business Practices developed may include commonalities among product types. The following outline of Model Business Practices is applicable to the Demand Response programs and product categories that may exist in the Retail sector	The addition of "guidelines and" was rejected. The purpose of the MBPs is to create standards and not guidelines. The addition of "estimates of" was rejected. The word "quantify" implies estimate. The addition of "from retail demand response programs (product types). The addition of "that may exist in the Retail sector" was rejected. It is not necessary as these MBPs focus on the Retail sector. The addition of "programs and" was rejected. These MBPs

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
					do not address specific programs.
44	Southern California Edison	Proposed Revision	Performance Evaluation Methodology on page 6	Change to read: For the settlement of each Demand Response ~~service~~ product or program, a ~~performance~~ load impact evaluation methodology is often used to determine the Demand Reduction Value provided by a retail Demand Resource. The Model Business Practices include descriptions of acceptable methodologies, that may include specific Baselines and alternative performance measurements that are appropriate for each type of Demand Response service. The following methodology types are applicable to the M&V approaches for retail Demand Response Services	The addition of "the settlement" was rejected as being too restrictive. The addition of "program" was rejected. See Comment 43. The addition of "load impact" was rejected as being too restrictive. The addition of "often" was rejected as unnecessary. The addition of "retail" was rejected. See Comment 43. The addition of "methodologies, that may include specific" was rejected as redundant. It is implied in the alternative performance measurements. The addition of "the M&V approaches for" was deleted as unnecessary because these are M&V standards.
45	Southern California Edison	Proposed Revision	Principle REQ.13.1.1	The processes for M&V of Demand Response programs should be timely and efficient to minimize the time and effort needed to accomplish these operational details.	The addition was rejected as redundant.
46	Southern California Edison	Proposed Revision	Principle REQ.13.1.4	A contract or agreement between participants in retail Demand response programs may establish different processes, timeframes, or operational requirements for M&V. Any conflict between these recommended processes and an applicable contract is resolved according to the provisions of the contract.	These additions were rejected as redundant because these are M&V MBPs for retail DR programs.
47	Southern California Edison	Proposed Revision	Definition of After-the-Fact Metering	Interval meter data collected from metering separate from Telemetry that is collected after a ~~used to measure~~ Demand Response event. May not apply to Demand Resources under Baseline using statisitical sampling.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
48	Southern	Proposed	Definition of	~~A method of estimating~~ The estimate of the electricity that	This comment will be

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
	California Edison	Revision	Baseline	would have been consumed by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering and/or statistical sampling techniques.	addressed at a joint wholesale/retail DR glossary meeting.
49	Southern California Edison	Proposed Revision	Definition of Baseline Adjustment	An adjustment that modifies the Baseline to ~~reflect~~ correct for actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have consumed 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 Program Administrator's requirements.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
50	Southern California Edison	Proposed Revision	Definition of Baseline Window	The window of time preceding and optionally following, a Demand Response Event over which the electricity consumption data (After-The-Fact metering) is collected for the purpose of establishing a Baseline.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
51	Southern California Edison	Proposed Revision	Definition of Capacity Service	A type of Demand Response service in which Demand Resources are contractually obligated over a defined period of time to be available to provide Demand Response upon deployment by the Program Administrator.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
52	Southern California Edison	Proposed Revision	Definition of Critical Peak Pricing	Electricity rates which typically charge a much higher price during a few hours per day on critical peak days but often discount the non-critical peak day prices. The number of critical peak days is usually capped for a calendar year and is linked to conditions such as system reliability concerns or higher ~~very high~~ market supply prices.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
53	Southern California Edison	Proposed Revision	Definition of Demand	The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts (kW) or megawatts (MW), at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
54	Southern California Edison	Proposed Revision	Definition of Demand Reduction Value	Quantity of reduced electrical Demand consumption by a Demand Resource, expressed in MW or MW-hours (MWh), respectively.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
55	Southern California Edison	Proposed Revision	Definition of Demand Response	Changes in electric use by Demand Resources from their normal consumption patterns in response to Advance Notifications, which may include changes in the price of electricity, or to incentives designed to induce lower electricity use at times of potential peak load, high cost periods, or when system reliability is jeopardized. For purposes of these Model Business Practices, this definition does not include energy efficiency, Permanent Load reduction, or Permanent Load Shifting measures, which do not receive Advance Notification.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
56	Southern California	Proposed Revision	Definition of Demand	The time periods, deadlines and transitions during which Demand Resources perform to provide the Demand	This comment will be addressed at a joint

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
	Edison Resp		onse Event	Response Value. The Program Administrator should specify the duration and applicability of a Demand Response Event. All deadlines, time periods and transitions may not be applicable to all Demand Response products or services.	wholesale/retail DR glossary meeting.
57	So uthern California Edison	Proposed Revision	Definition of Demand Response Provider	The Entity that is responsible for delivering Demand Reduction Value from Demand Resources.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
58	So uthern California Edison	Proposed Revision	Definition of Deployment	The time at which a Demand Resource begins reducing Demand ~~on the system~~ in response to ~~an instruction~~ the Advance Notification.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
59	So uthern California Edison	Proposed Revision	Definition of Direct load Control	A Demand Response activity by which the ~~program sponsor~~ Demand Response Provider directly controls (remotely shuts down or cycles) a Customer's electrical equipment (e.g. air conditioner, water heater). Direct Load Control programs have historically been ~~primarily~~ offered to the Loads of residential or small commercial Customers.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
60	So uthern California Edison	Proposed Revision	Definition of Energy Service	A type of Demand Response service in which Demand Resources are compensated solely based on their ~~performance~~ Demand Reduction Value during a Demand Response Event.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
61	So uthern California Edison	Proposed Revision	Definition of Highly-Variable Load	A Load with a fluctuating or unpredictable electricity consumption pattern that cannot be accurately characterized in a Baseline.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
62	So uthern California Edison	Proposed Revision	Definition of Load	An end-use device or customer that receives and consumes power from the electric system.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
63	So uthern California Edison	Proposed Revision	Definition of Meter Data Recording Interval	The time duration of ~~between~~ electricity meter consumption recordings.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
64	So uthern California Edison	Proposed Revision	Definition of Operability Factor	A net-to-gross percentage applied to the Demand Resource Availability Measurement, developed using a defined and documented testing protocol to verify ~~both signal reception and device~~ actual operation of the ~~unit~~ Loads in a retail Demand Response program, specific to a time period.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
65	So uthern California Edison	Proposed Revision	REQ.13.3.2.2 After -the-Fact	~~Measuring~~ Metering is required and may be either by metering each individual site or by statistical sampling.	Rejected. There are other forms of measuring besides metering. The MBP was reviewed and wording changes were made.

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
66	Southern California Edison	Proposed Revision	REQ.13.3.3.1	The method of statistical sampling used should conform to a ~~an accepted~~ referenced methodology and should be specified in the Governing Documents.	Rejected. The referenced list of methodologies is not exhaustive.
67	Southern California Edison	Proposed Revision	REQ.13.3.3.2	The general steps to be taken in statistical sampling are, but are not limited to: Define the population Design the sample to meet program objectives based on the variability of the population. ~~Define the population~~ Specify the listing of units available to be sampled (sampling frame)	"Define the population" was moved to the first bullet. The addition of "based on the variability of the population" was rejected. The bullet as written is all-encompassing and should take the variability of the population into consideration.
68	Southern California Edison	Proposed Revision	REQ.13.3.4	**Performance Evaluation (Demand Reduction Value)** The Demand Reduction Value of the Demand Resource ~~Performance is~~ may be estimated ~~evaluated~~ through the use of one of the following M&V methodologies unless otherwise specified by the Program Administrator:	Rejected. Demand Reduction Value, as defined, is a single quantity, where performance evaluation estimates multiple hours during a Demand Response event.
69	Southern California Edison	Proposed Revision	REQ.13.3.4.1.1	Any requirement for real-time Telemetry data to be used to ~~measure~~ estimate performance should be specified by the Program Administrator.	Rejected. Telemetry measures actual values, not estimates.
70	Southern California Edison	Proposed Revision	REQ.13.3.4.2.2	During the Baseline Window, the Demand Reduction Value of the Demand Resource is ~~evaluated~~ estimated using one of the following measurements as specified by the Program Administrator:	The addition of "Reduction Value" was accepted. The addition of "estimated" was rejected because actual, not estimated, customer usage is what is being used.
71	Southern California Edison	Proposed Revision	REQ.13.3.4.2.3	Statistical sampling is not used for this performance evaluation ~~type~~ approach, unless otherwise specified by the Program Administrator.	The addition of "approach" was rejected and "type" was changed to "method" to maintain consistency with REQ.13.3.4
72	Southern California Edison	Proposed Revision	REQ.13.3.4.2.8	After-The-Fact metering should be used to ~~measure performance~~ estimate Demand Reduction Values, unless otherwise specified by the Program Administrator.	Rejected. The additional clarity is unnecessary.
73	Dominion	Proposed Revision	REQ.13.3.4.3.3	Statistical sampling is generally permitted for this performance evaluation type, unless otherwise specified by	Accepted. The term "type" was changed to

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	COMPANY	CATEGORY	CITE	SUGGESTED CHANGE	WORK GROUP RESPONSE
				the Program Administrator.	"method" for consistency with REQ.13.3.4
74	Sum mit Blue	Proposed Revision	Definition of Critical Peak Pricing	Rates which typically charge a much higher price during a few hours per day on critical peak days. The number of critical peak days and/or critical peak hours is usually capped for a calendar year and is linked to conditions such as system reliability concerns or very high supply prices.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
75	Sum mit Blue	Proposed Revision	Definition of Dispatchable Programs	**Demand Response** Programs that allow a Program Administrator to declare a Demand Response Event that has a specific start time and end time.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
76	Sum mit Blue	Proposed Revision	Definition of 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 Program Administrator for the purpose of regulating voltage on the electric system. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response Event timelines. It would be helpful to have a phrase like this inserted to explain why it is called 'Regulation' service. It is probably obvious to most, but not necessarily all.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.
77	Sum mit Blue	Proposed Revision	Definition of Release/Recall	The time when a Program Administrator notifies a Demand Resource that the Deployment Period has ended or the time that it will end.	This comment will be addressed at a joint wholesale/retail DR glossary meeting.

North American Energy Standards Board
DSM/EE Subcommittee
Energy Efficiency Working Group
Retail Energy Efficiency Task Force

Draft Scoping Paper
Prepared by EVO team: Kevin Warren, Steve Schiller, Steve Kromer
May 13, 2010

This working group has been established in response to the NAESB 2009 Annual Plan, Task 4.G which states:

> Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in the wholesale and retail markets.

The working group is focused on energy efficiency (not demand reduction) in the retail sector.

Objective
The primary objective of the Working Group is the development of a Model Business Practice for estimating the directly achieved electricity savings (peak and average kW and annual kWh) achieved by participants that are utility retail sales customers, in rate-payer funded programs. The intended audience is regulated retail service utilities and their regulators.

Notes:
- M&V of project savings is covered only to extent it supports program evaluation
- Gross (not net savings, i.e. attribution of savings to one cause or another are covered, although reference is made to potential need for net savings analysis for some users)
- Energy savings only, at retail level, electricity only
- Cover 'utility programs', not, for example, State stimulus programs or bi-lateral private sector projects/programs

Audience
The primary audiences for the Model Business Practice (MBP) are (a) professionals that are new to the design, implementation and evaluation of electric utility company, energy-efficiency programs and the (b) utility regulatory commissioners and their staff that oversee such programs. If approved, this NAESB Model Business Practices would be submitted to NARUC and could be adopted by one or more state public utility commissions as a guidance document. It seems likely that the greatest adoption of the MBP will be in states without a long history with energy efficiency programs. Should a national energy efficiency resource standard become law, there will be many states in this situation. Even without an Energy Efficiency Resource Standard (EERS), the recent trend has been for increasing state support for energy efficiency (e.g. MD, PA, DE), although such states have been able to utilize existing guidance documents for development of the evaluation requirements.

Potential Benefits
The MBP could demonstrate to state regulators that energy efficiency programs are capable of being evaluated at a reasonable cost. The savings from these programs can be documented.

Possible Additional Phases
Some members of the working group feel that it may eventually be possible to develop model business practices for some of the issues that we are proposing to exclude from the current work scope. Upon the conclusion of the currently proposed work scope, a second phase may be considered if there is sufficient interest from NAESB members, as well as potential for development of a successful MBP addendum.

Proposed Scope of Work
The practice of determining the gross impacts of energy efficiency projects and programs is quite well developed and mature. It is also a broad field with the primary outstanding issues relating to each jurisdiction deciding how much effort (budget) to put into evaluation efforts and to what degree of certainty savings determination (estimation) is required. These issues are best answered by each jurisdiction based on the scale and objectives of its efficiency efforts.

The working group should define the scope of the effort in order to produce a document that covers general, best practices approaches that each jurisdiction should consider irrespective of the scale or objectives of its efforts. Thus, the MBP will cover evaluation at a relatively high level.

Therefore the following are recommended:

1. **Focus on Programs not Projects.** It is the opinion of the working group that the audience for this Model Business Practice is concerned primarily with the energy savings impacts of energy efficiency *programs* rather than the savings from individual energy efficiency *projects*. The energy savings impact of a utility program is typically the result of many individual projects. The processes for determining savings from individual projects are known as Measurement and Verification (M&V). The determination of program impacts is typically referred to as a Program Impact Evaluation and is considered a subset of a broader set of program evaluation measurement and verification (EM&V) activities. The focus of the Model Business Practice will thus be EM&V rather than M&V.

   From NAPEE Evaluation Guide Glossary:

   - Evaluation: The performance of studies and activities aimed at determining the effects of a program
   - Measurement and verification (M&V): Data collection, monitoring, and analysis associated with the calculation of gross energy and demand savings from individual sites or projects. M&V can be a subset of program impact evaluation

2. **Focus on Gross, not Net Energy Savings.** Program impact evaluations typically begin with a determination of the energy savings that result from the actions taken by participants in the program. This is known as the "gross" savings of the program. In some cases, the gross savings are adjusted to account for factors such as free riders and free drivers in order to estimate the "net" savings from the program. The ratio of the net to the gross savings is commonly known as the net-to-gross (NTG) ratio for the program.

   From NAPEE Evaluation Guide Glossary:

   - Gross savings: The change in energy consumption and/or demand that results directly from program- related actions taken by participants in an efficiency program, regardless of why they participated.
   - Net savings: The total change in load that is attributable to an energy efficiency program. This change in load may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

   NTG considerations are critical to program evaluation, but jurisdictions vary widely in their treatment of NTG[1]. Some states require rigorous NTG estimates while others stipulate deemed NTG values or ignore NTG altogether. In addition, there are concerns among some in the evaluation community as to the effectiveness and reliability of the commonly used methods of estimating NTG. There are strengths and weaknesses to each of the various methods. As a result of the lack of regulatory uniformity and other issues, we feel that it will be difficult to obtain wide agreement on NTG for this Model Business Practice. Thus, while NTG issues may be referenced, this will be a Model Business Practices for determining gross program impacts. NTG might be considered in a future phase of NAESB Model Business Practice development, if appropriate.

3. **Bottom-up approach.** The standard practice for impact evaluations conducted in the United States is to build up estimates from the "bottom up". The impacts of the program are estimated through examination of the population or a representative sample of the participants in the program. An alternative approach is to look for program effects in the energy consumption in a country, region, or utility service territory. Future efforts associated with, for example a national EERS, may involve a top down approach. This "top down" approach holds some promise, but it is so uncommon in the United States that the working group feels that it should not be the basis of a Model Business Practice.

4. **Focus on Current Best Practices.** There are a number of interesting new developments in the field of program impact evaluation. These include the impact of

[1] See Review of Evaluation, Measurement and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs, Messenger M., R. Bharvirkar, B. Golemboski, C. Goldman, S. Schiller. April 2010.

wide scale deployment of "smart meters" and behavior evaluation. The impacts of these factors on the practice of evaluation are still being developed and refined. These factors are not well enough defined to obtain agreement for a Model Business Practice.

5. **Limit Focus to Impact Evaluation.** Program evaluations often include many research objectives other than determining the savings that result from the program. Each of these objectives is a field of study unto itself and could potentially be the subject of their own Model Business Practices. The working group feels that the present effort should specifically NOT address the following program evaluation research objectives because the scale of the document, and the time to produce it, would delay its implementation:

    a. Co-benefits. Co-benefits are benefits of the program such as job creation, environmental benefits, deferred T&D costs, and general economic benefits. As is the case with NTG, jurisdictions vary widely in their treatment of co-benefits and no general consensus is possible.

    b. Market Effects evaluation. An evaluation of the change in the structure or functioning of a market, or the behavior of participants in a market, that results from one or more program efforts. Typically the resultant market or behavior change leads to an increase in the adoption of energy-efficient products, services, or practices. (from NAPEE Guide)

    c. Cost effectiveness evaluation. An indicator of the relative performance or economic attractiveness of any energy efficiency investment or practice. In the energy efficiency field, the present value of the estimated benefits produced by an energy efficiency program is compared to the estimated total costs to determine if the proposed investment or measure is desirable from a variety of perspectives (e.g., whether the estimated benefits exceed the estimated costs from a societal perspective). There are a wide variety of cost benefit tests used (e.g. Total Resource Cost test, Program Administrator Cost test, Participant Cost test) which meet a variety of regulatory and utility objectives.[2]

    d. Process Evaluation. Process evaluations are often conducted in conjunction with impact evaluations. Process evaluations are systematic assessments of an energy efficiency program for the purposes of documenting program operations at the time of the examination, and identifying and recommending improvements to increase the program's efficiency or effectiveness for acquiring energy resources while maintaining high levels of participant satisfaction. (from NAPEE Guide)

[2] National Action Plan for Energy Efficiency (2007). Model Energy Efficiency Program Impact Evaluation Guide. Prepared by Steven R. Schiller, Schiller Consulting, Inc. <www.epa.gov/eeactionplan>

Note that while the MBP will not provide detailed guidance on these issues, it may include a listing of these broader evaluation considerations that may be considered by utilities or regulators.

6. **References to Key Evaluation Documents**. There are a number of well respected references on methods and approaches to estimate gross savings from ratepayer-funded energy efficiency programs. The Model Business Practice is likely to contain primary references to these documents (as well as others).

    a. National Action Plan for Energy Efficiency (NAPEE) Model Energy Efficiency Program Impact Evaluation Guide

    b. International Performance Measurement and Verification Protocol (IPMVP)

    c. California Evaluation Framework (2004)

    d. California Evaluation Protocol (2006)

    e. NEEP Regional EM&V Forum guidelines
    http://www.neep.org/emv-forum

    f. Northwest Regional Technical Forum M&V Protocols
    http://www.nwcouncil.org/rtf/about.htm

7. **Limited Guidance on M&V**. M&V protocols are well established in the IPMVP. The working group expects to refer to the IMPVP as the standard for determining savings at the project level.

8. **Guidance on EM&V methods.** The MBP will include guidance for typical energy efficiency measures on the major EM&V elements that should be addressed when evaluating gross savings. These include establishing baseline conditions and estimating measure life. The NAPEE EM&V Guide and recent NEEP Regional EM&V Methods and Savings Assumptions Guidelines document are expected to be useful references for this task.

9. **No Treatment of regulatory incentive**. The MBP will deal with the methods for determining the results of programs. It will not deal with the ways in which program administrators, including utilities, can be reimbursed, rewarded, or otherwise regulated in response to those results. We feel that it will be difficult to obtain wide agreement on these issues for this Model Business Practice.

10. **Additional topics.** The working group feels that the following topics should be included as recommendations for using best practices; although the depth of coverage will probably be limited:
    a. Methods for minimizing bias
    b. Defining statistical significance
    c. Data management

d. Importance of developing logic models, which although focused often on process evaluations, can be helpful for identifying metrics
e. Provide commentary on appropriate EM&V methods for different program types. This could draw upon the work currently commissioned by NEEP.

11. **Scope Uncertainty.** There is one area in which the working group is still undecided. Whether to maintain a focus on resource acquisition programs in order to enable the MBP to be shorter and more focused. Would doing so inadvertently harm other program types through omission? If they were not covered, would an inexperienced regulator decide that market transformation, education, and technology programs are not worthwhile or capable of producing measurable benefits?

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NORTH AMERICAN ENERGY STANDARDS BOARD

2010 Annual Plan for the Wholesale Gas Quadrant as Approved by the Board of Directors on March 25 ,2010

Item Description	Completion[1]	Assignment[2]
1. Gas-Electric Interdependency		
Respond to directives of FERC Order No. 698 issued 6-25-07, Docket Nos. RM05-5-001 and RM96-1-027 as related to the NAESB reports submitted in Docket No. RM05-28-000:		
a. Provide for Enhanced Granularity for Public Utilities in Identifying Critical Operational Flow Orders. (R08020) Status: Completed	4th Q, 2009	BPS, IR/Tech jointly with WEQ BPS
2. Promotion of a More Efficient Capacity Release Market		
Review FERC Order Nos. 712 and 712A and modify NAESB standards as appropriate (Docket Nos. RM08-1-000, RM08-1-001).		
a. Review recent FERC order on flow-through of Discounted or Negotiated Rates (Docket No. RP09-70 et al, October 15, 2009) and develop business practice standards as appropriate Status: Not Started	2nd Q, 2010	BPS/Interpretations
3. Capacity Release EDI Review		
Review capacity release transactions upload and related responses to determine suitability for EDI		
a. Develop Business Practice Standards as appropriate Status: Underway	2nd Q, 2010	BPS
b. Prepare fully staffed recommendation Status: Underway (Adjustments may be made to Completion Dates based on report from Item 3.a)	3rd Q, 2010	BPS, IR/Technical
4. Customer Security Administration		
Review and develop standards as appropriate to support Customer Security Administration Standards (Comment Submittal, 10-29-07) Status: Not started (Scoping to take place 2nd Q, 2010 after which a Completion Date will be set)	2010 BPS	
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	2nd Q, 2010	EDM
6. FERC Strategic Plan FY2009-2014		
a. For the FERC Strategic Plan, under the section "Promote efficient design and operation of natural gas facilities", review and develop standards as needed to support EBB posting requirements regarding waste heat feasibility (NAESB Standard No. 4.2.23) Status: Underway	2nd Q, 2010	BPS

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	Item Description	Completion[1]	Assignme nt[2]
7.	**Common Codes**		
a.	Review common code specifications for common location codes and determine if changes are necessary to the existing specifications to support both intrastate and interstate pipelines Status: Not Started	4th Q, 2010	BPS
Program of Standards Maintenance & Fully Staffed Standards Work			
	Business Practice Requests	Ongoing	Assigned by the EC[3]
	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]
Mainten	ance of Contracts Standards	As Requested	Contracts Subcommittee
	Maintenance of eTariff Standards	As Requested	Assigned by the EC[3]
Provisional Activities			
1	Review and develop standards as needed, related to Docket No. RM09-2-000, (Contract Reporting Requirements of Intrastate Natural Gas Companies).		
2	Review and develop standards as needed related to the FERC Strategic Plan 2009-2014		

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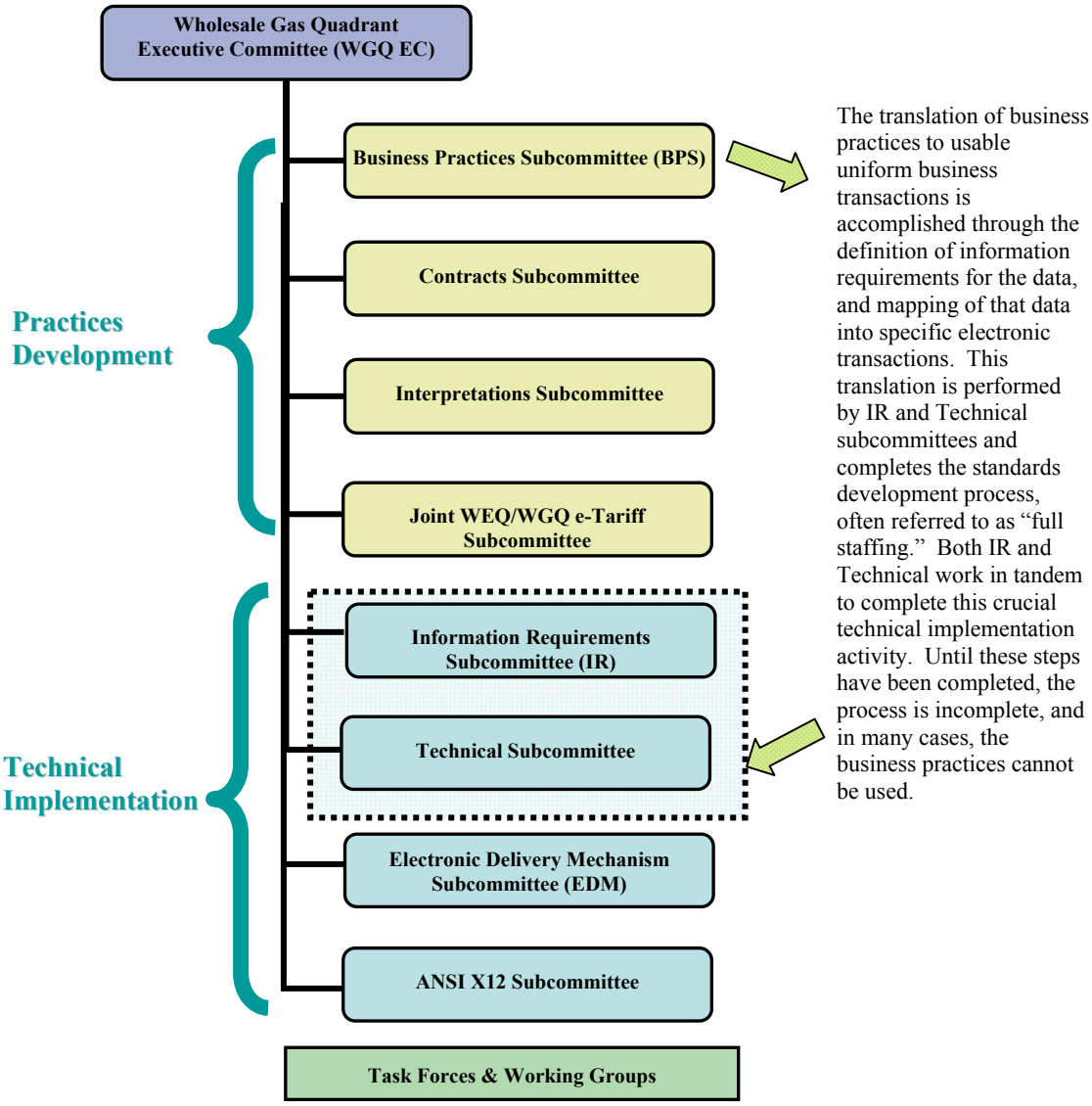

The translation of business practices to usable uniform business transactions is accomplished through the definition of information requirements for the data, and mapping of that data into specific electronic transactions. This translation is performed by IR and Technical subcommittees and completes the standards development process, often referred to as "full staffing." Both IR and Technical work in tandem to complete this crucial technical implementation activity. Until these steps have been completed, the process is incomplete, and in many cases, the business practices cannot be used.

NAESB 2010 WGQ EC and Subcommittee Leadership:

Executive Committee: Jim Buccigross, Chair and Dale Davis, Vice-Chair
Business Practices Subcommittee: Kim Van Pelt, Valerie Crockett, Steve Abbey, 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
Joint WEQ/WGQ e-Tariff Subcommittee: Keith Sappenfield, Jane Daly

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End Notes, WGQ 2010 Annual Plan:

[1] Dates in the completion co lumn are b y end of the qu arter f or com pletion b y the assigned committee. Th e dat es do not necessarily mean that the stand ards are fully staffed to be impl ementable by the industry, and/or ratified by membership. If o ne item is completed earlier than planned, another item can begin earlier and pos sibly complete earlier than planned. Th ere are no begin dates on the plan.

[2] The assignments are abbrev iated. The abbreviations and committee stru cture can be found at the end of th e annual plan document.

[3] The EC assigns maintenance of existing standards on a request-by-request basis.

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2010 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS
As Approved by the NAESB Board of Directors on March 25, 2010 with suggested changes from the Retail ECs on May 6, 2010

Item Number & Description[1]	Completion	Assignment[2][3][4]
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	4th Q, 2010	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 1st Q 2011 at the earliest.	2011	Ad Hoc EC Certification Group
3. 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 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.	Ongoing Joint	WEQ/REQ DSM Subcommittee
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 that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard. Status: Underway	4th Q, 2010	Joint WEQ/REQ DSM-EE Subcommittee
c. Support the second phase of retail development of model business practice standards for demand response programs Status: Underway	3rd Q, 2010	REQ Section of the Joint WEQ/REQ DSM Subcommittee
d. Create common interfaces and data structures necessary for enrolling DR sites into a DR program (Request No. R10002) Status: Not Started	4th Q, 2010	Joint WEQ/REQ DSM Subcommittee with coordination with Smart Grid Standards Task Force and REQ BPS
4. Billing and Payments		
a. Develop Process Flows to be included as models in Book 3 – Billing and Payments Status: Completed	2nd Q, 2010	BPS

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Item Number & Description[1]	Completion	Assignment[2][3][4]
b. If the development of Process Flows indicate a gap in the model business practices, then develop new model business practices to address the gap. Status: Completed	2nd Q, 2010	BPS
5. Model Business Practices User Guide Add a new section to Book 0 to describe what Books have been developed, how the Books are laid out, and revised the title of the Book to reflect the additions Status: Underway	3rd Q, 2010	BPS
6. Additional Registration Agent Processes		
a. Review all existing Model Business Practices to determine if the Customer Information process is already covered, and if necessary develop any new Model Business Practices required Status: Completed	1st Q, 2010	BPS
b. Review all existing Model Business Practices to determine if the disconnection and reconnection process is already covered, and if necessary develop any new Model Business Practices required. Status: Completed		
i. Create MBPs for disconnection/reconnection initiated by the supplier Status: Completed	4th Q, 2009	BPS
ii. Create MBPs for disconnection/reconnection initiated by the distribution company Status: Completed	4th Q, 2009	BPS
c. 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	3rd Q, 2010	BPS
d. Develop Model Business Practices and Process Flows for those Registration Agent Model processes on the prioritized list developed in (c) above, if any. Status: Underway	4th Q, 2010	BPS
e. 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	4th Q, 2010	IR/TEIS
f. Develop Technical Electronic Implementation Standards and Data Dictionaries to support any Model Business Practices developed in (d) above Status: Underway	4th Q, 2010	IR/TEIS
7. Supplier Certification Develop practices for Distribution Companies to register/certify new Suppliers when they seek to begin doing business in the Distribution Company's service area. Status: Not Started	4th Q, 2010	BPS

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	Item Number & Description[1]	Completion	Assignment[2][3][4]
8.	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: Not Started	4th Q, 2010	BPS
9.	Develop Smart Grid Wholesale and Retail Electric Standards		
	a. Develop Requirements and Use Cases for PAP 03 – Pricing Model		
	i. Phase 1 Status: Completed	1st Q, 2010	Joint WEQ/REQ SGS Subcommittee
	ii. Phase 2 Status: Underway	2nd Q, 2010	Joint WEQ/REQ SGS Subcommittee
	b. Develop Requirements and Use Cases for PAP 04 – Scheduling Model		
	i. Phase 1 Status: Completed	1st Q, 2010	Joint WEQ/REQ SGS Subcommittee
	ii. Phase 2 Status: Underway	2nd Q, 2010	Joint WEQ/REQ SGS Subcommittee
	c. Develop Requirements and Use Cases for PAP 09 – Demand Response/Distributed Energy Resources		
	i. Phase 1 Status: Completed	1st Q, 2010	REQ Section of the Joint WEQ/REQ SGS Subcommittee
	ii. Phase 2 Status: Underway	2nd Q, 2010	REQ Section of the Joint WEQ/REQ SGS Subcommittee

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Item Number & Description[1]	Completion	Assignment[2][3][4]
d. Act as a convener (develop and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies) and develop business practice standards as needed and assigned to NAESB for PAP 10 – Standard Energy Usage Information Status: Underway	2nd Q, 2010	Joint WEQ/REQ SGS Subcommittee
10. Reserved (Items added under action item 6)		
11. Master List of Defined Terms: Review the definitions of all Defined Terms in Book 0 – Master List of Defined Terms, including other Ratified Terms not yet published, and revise the definitions of all Defined Terms not specifically related solely to the competitive marketplace to broaden their applicability to conform to NAESB's expanded scope. Status: Underway	3rd Q, 2010	Glossary

Program of Standards Maintenance & Fully Staffed Standards Work[6]

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	Glossar y

Provisional Activities

Joint Effort:

Modify TPA as necessary.

Review security standards as may be deemed necessary, such as Public Key Infrastructure (PKI).

Review existing body of model business practices for consistency and develop or modify model business practices as needed.

Retail Electric Quadrant Effort Only:

Retail Meter Data Validation, Editing & Estimating: Develop procedures for insuring 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 (See action item 6h).

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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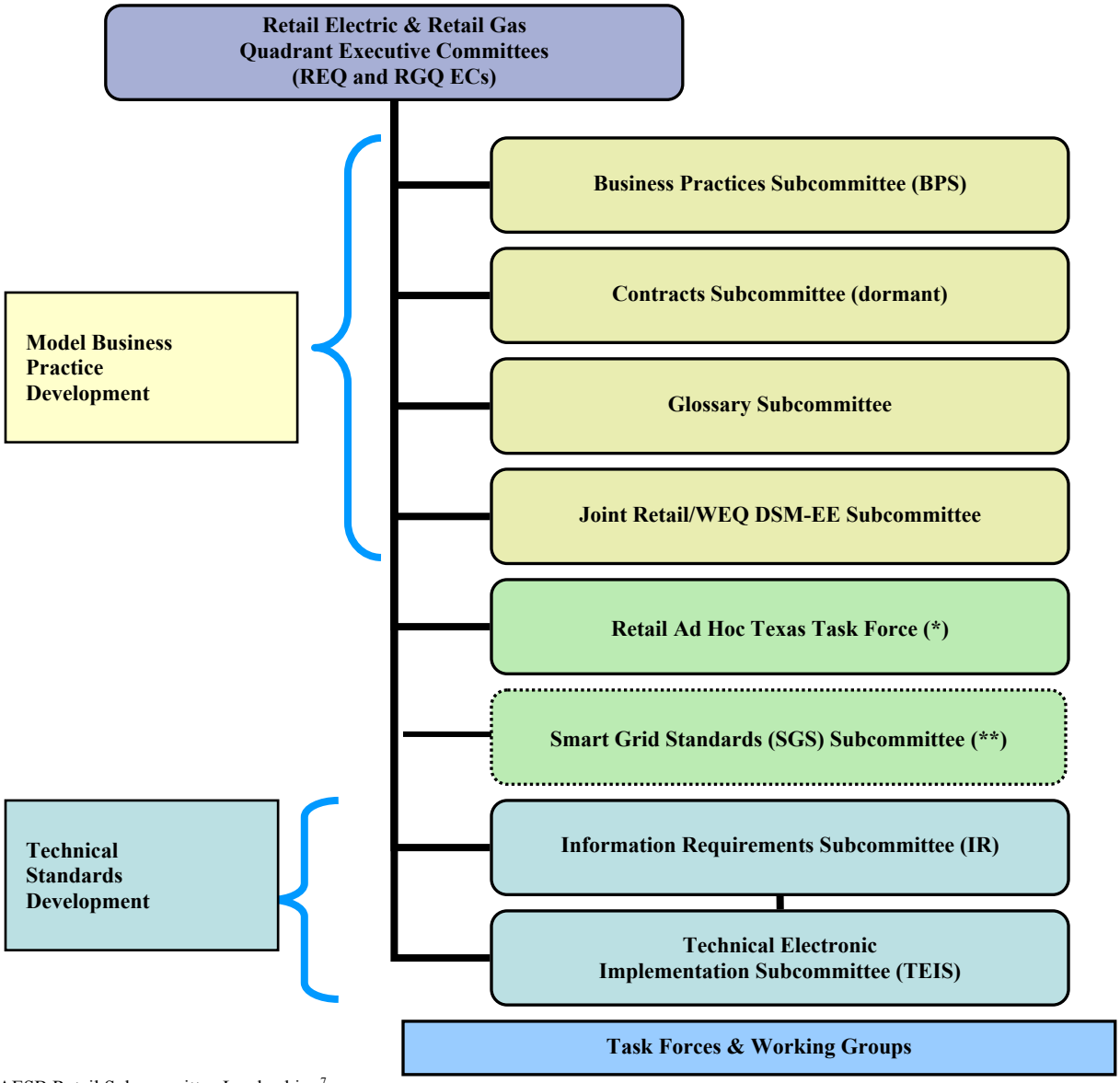

NAESB Retail Subcommittee Leadership: [7]

Executive Committee: Mike Novak, Chair (RGQ), Phil Precht, Chair (REQ)
Business Practices Subcommittee: Phil Precht (RGQ), Dan Jones (REQ)
Information Requirements Subcommittee: Jennifer Teel (REQ)
Technical Electronic Implementation Subcommittee: TBD
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 Brent Hodges, Wayne Longcore, Joe Zhou and Robert Burke.

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Retail 2010 Annual Plan End Notes:

1 As outlined in t he NAESB B ylaws, the REQ an d RGQ will also address request s submitted by members and assigned to the REQ and RGQ through the Triage Process.

[2] Dates in the completion co lumn are b y end of the qu arter f or com pletion b y the assigned committee. Th e dat es do not necessarily mean that the stand ards are fully staffed to be impl ementable by the industry, and/or ratified by membership. If o ne item is completed earlier than planned, another item can b egin earlier and pos sibly complete earlier than planned. Th ere are no begin dates on the plan.

[3] The assignments are abbrev iated. The abbreviations and committee stru cture can be found at the end of th e annual plan document.

[4] The DSM-EE s ubcommittee is expected to be split into several separate subcommittees to support con current develop ment of separate standards sets. The split is to take place at the end of May after which the assignments will be modified.

[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] This work is c onsidered rout ine m aintenance a nd thus the items are not sep arately numbere d. The REQ and RGQ ECs will assign maintenance efforts on a request-by-request basis.

[7] The ECs and the subcommittees can cr eate task forces and working groups to support their develop ment activities for development of model business practices and technical standards.

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NORTH AMERICAN ENERGY STANDARDS BOARD

2010 ANNUAL PLAN for the WHOLESALE ELECTRIC QUADRANT

As Approved by NAESB Board of Directors on March 25, 2010 with Suggested Changes from the WEQ EC on May 5, 2010

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. Note: Consideration should be given to provisional item 4. Work is being coordinated with the NERC IDC Working Group. Status: Underway	2010	BPS
	b) Time Error and Inadvertent (BAL-004 and BAL-006) Coordination with NERC Status: Monitor. (Upon initiation of this item by NAESB. a completion date will be determined. Based on discussions with NERC staff regarding the Balancing Authority Controls Standards Drafting Team's timeline the completion date has been changed to tbd.)	TBD	TIMTF
	c) DCS and AGC (BAL-002 and BAL-005) Coordination with NERC Status Monitor. (Upon initiation of this item by NAESB. a completion date will be determined. Based on discussions with NERC staff regarding the Balancing Authority Controls Standards Drafting Team's timeline the completion date has been changed to tbd.)	TBD	TIMTF
	d) Monitor and develop NAESB business practices as needed to complement NERC reliability standards for FAC-012 and FAC-013. Status: Monitor.	TBD	SRS
2	**Develop business practice standards in support of the FERC RM05-25-000 and RM05-17-000 (OATT Reform)[1]**		
	a) Develop version 2 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. Status: Underway 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). i) Group 3: Network Service On OASIS		

[1] 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

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Item	Description	Completion[1]	Assignment[2]
	1) Use of OASIS to Make Electronic Requests to Designate and Terminate Network Resource	3rd Q, 2010	OASIS
	Status: Underway		
	2) Ability to Query Requests to Designate and Terminate Network Resources and Allow for Queries of All Information Provided with Designation Requests	3rd Q, 2010	OASIS
	Status: Underway		
	3) Masking of Designated Network Resource Operating Restrictions and Generating Cost Information	3rd Q, 2010	OASIS
	Status: Underway		
	4) Procedural Requirements for Submitting Designations over new OASIS Functionality	3rd Q, 2010	OASIS
	Status: Underway		
	5) Specify How Designated Network Service Informational Postings are Posted on OASIS	3rd Q, 2010	OASIS
	Status: Underway		
	6) Develop standards for the treatment of OASIS Requests when the Customer Fails to Provide the Necessary Attestation	3rd Q, 2010	OASIS
	Status: Underway		
	7) Procedural Requirements for Submitting Both Temporary and Indefinite Terminations of Network Resources	3rd Q, 2010	OASIS
	Status: Underway		
	8) Procedures for Submitting and Processing Requests for Concomitant Evaluations of Transmission Requests and Temporary Terminations	3rd Q, 2010	OASIS
	Status: Underway		
ii)	Group 4: Pre-Emption; Request No. R05019		
	1) Pre-Emption	2011 OASIS	
	Status: Not Started		
	2) Request No. R05019	2011 OASIS	
	Status: Not Started		

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Item	Description	Completion[1]	Assignment[2]
iii)	Group 5: Paragraph 1377[2] – Group 5 work should precede group 4 work		
1)	Paragraph 1377-Coordination of Requests Across Multiple Transmission Systems Status: Underway, Scoping Group work product underway	4th Q, 2010	OASIS
2)	Re-Bid Of Partial Service across Multiple Transmission Providers' Systems Status: Underway, Scoping Group work product underway	4th Q, 2010	OASIS
3)	Group DNR requests from a system with point-to-point requests on other systems for synchronization Status: Underway, Scoping Group work product underway	4th Q, 2010	OASIS

[2] 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[3] and 1627[4] 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	2011	OASIS
	2) Paragraphs 1627 of Order 890 – Posting of additional information on OASIS regarding firm transmission curtailments Status: Not Started	2011	OASIS
	3) Redispatch Cost Posting to allow for posting of third party offers of planning redispatch services. Status: Not Started	2011	OASIS

[3] 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.

[4] 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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2010 ANNUAL PLAN for the WHOLESALE ELECTRIC QUADRANT
As Approved by NAESB Board of Directors on March 25, 2010 with Suggested Changes from the WEQ EC on May 5, 2010

Item	Description	Completion[1]	Assignment[2]
	b) Develop the needed business practices as companion to the NERC standards for ATC related efforts		
	i) Develop standards to support existing Request No. R05004.		
	1) 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	3rd Q, 2010	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)) Status: Underway	3rd Q, 2010	OASIS
	ii) Registry (TSIN): Determine and develop needed business practice standards to support the registry functions currently supported by NERC (R04037, R06027).		
	1) Transition the TSIN Registry from NERC to NAESB as the enhanced Electric Industry Registry (EIR), (R06027). Status: Underway	2010	NAESB/NERC Administration, JESS
	iii) Document procedures used to implement the displacement/interruption terms of the Pro Forma tariff (R05019). Status: Deleted as a duplicate of 2009 AP item 2.a.ii.2		
iv)	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 and assignments made to BPS and OASIS.		
	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	2011	OASIS

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Item	Description	Completion[1]	Assignment[2]
	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)	2011	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)	2011	OASIS
v)	Develop, coordinate interoperability testing, and implement e-Tag version 1.8.1 Status: Complete	1st Q, 2010	JESS
vi)	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. [note: this is a new item] Status: Underway Completion date dependent upon coordination activities with NERC	2010 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: Not Started (upon initiation of this item by NAESB, a completion date will be determined)	2010 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)	2011 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

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Item	Description	Completion[1]	Assignment[2]
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 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. Status: In Progress	Phase 2	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: In Progress	Phase 2	WEQ Section of the Joint WEQ/REQ DSM-EE Subcommittee
c)	Develop glossary for business practice standards Status: Ongoing	Ongoing Joint	WEQ/REQ DSM Subcommittee
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: Underway (An estimated completion date will be established in 1st Q, 2010 after the new subcommittee has been formalized)	2010 Joint	WEQ/REQ DSM-EE Subcommittee
e)	Create common interfaces and data structures necessary for enrolling DR sites into a DR program (Request No. R10002) Status: Not Started	4th Q, 2010	Joint WEQ/REQ DSM-EE Subcommittee with coordination with Smart Grid Standards Task Force and REQ BPS

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Item	Description	Completion[1]	Assignment[2]
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)	2011	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.	2011	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		
	i). Phase 1 Status: Completed	1st Q, 2010	Joint WEQ/REQ SGS Subcommittee
	ii) Phase 2 Status: Underway	2nd Q, 2010	Joint WEQ/REQ SGS Subcommittee
b)	Develop requirements and use cases for PAP 04 – Scheduling Model		
	i) Phase 1 Status: Completed	1st Q, 2010	Joint WEQ/REQ SGS Subcommittee
	ii) Phase 2 Status: Underway	2nd Q, 2010	Joint WEQ/REQ SGS Subcommittee
c)	Develop requirements and use cases for PAP 09 – Demand Response/Distributed Energy Resources		

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Item	Description	Completion[1]	Assignment[2]
	i) Phase 1 Status: Completed	1st Q, 2010	WEQ Section of the Joint WEQ/REQ SGS Subcommittee
	ii) Phase 2 Status: Underway	2nd Q, 2010	WEQ Section of the Joint WEQ/REQ SGS Subcommittee
d)	Act as a convener (develop and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies) and develop business practice standards as needed and assigned to NAESB for PAP 10 – Standard Energy Usage Information Status: Underway	2nd Q, 2010	Joint WEQ/REQ 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[5]) Status: Not Started	2011 OASIS	
b)	Develop standards to support the Transmission Provider right to reassess the availability of conditional firm (See ¶ 72[6]) Status: Not Started	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[7]). This annual plan item is tied to Annual Plan Item 2(a)(iii) Status: Not Started	Ongoing NAESB	Office

[5] 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.

[6] 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

[7] 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).

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 TLR (equity concerns) in concert with NERC, which may include alternative congestion management procedures[4]. 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).

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 *Provisional Item No. 6 was added to the 2010 Annual Plan as Item No. 1(d).*

7 Determine NAESB action needed to support FERC Action Plan for Smart Grid Technology.

8 Develop business practice standards for cap and trade programs for green house gas

9 Conduct assessment to determine if Electric Industry Requirements documented in WEQ-011 Gas / Electric Coordination should be considered reliability requirements and transition to NERC.

10 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.

11 Support the second phase of retail development of model business practice standards for demand response programs (Shown as Item 3e on the Retail 2010 Annual Plan).

12 Review the need for, and develop standards where appropriate, in response to issues raised by FERC's National Action Plan on Demand Response.

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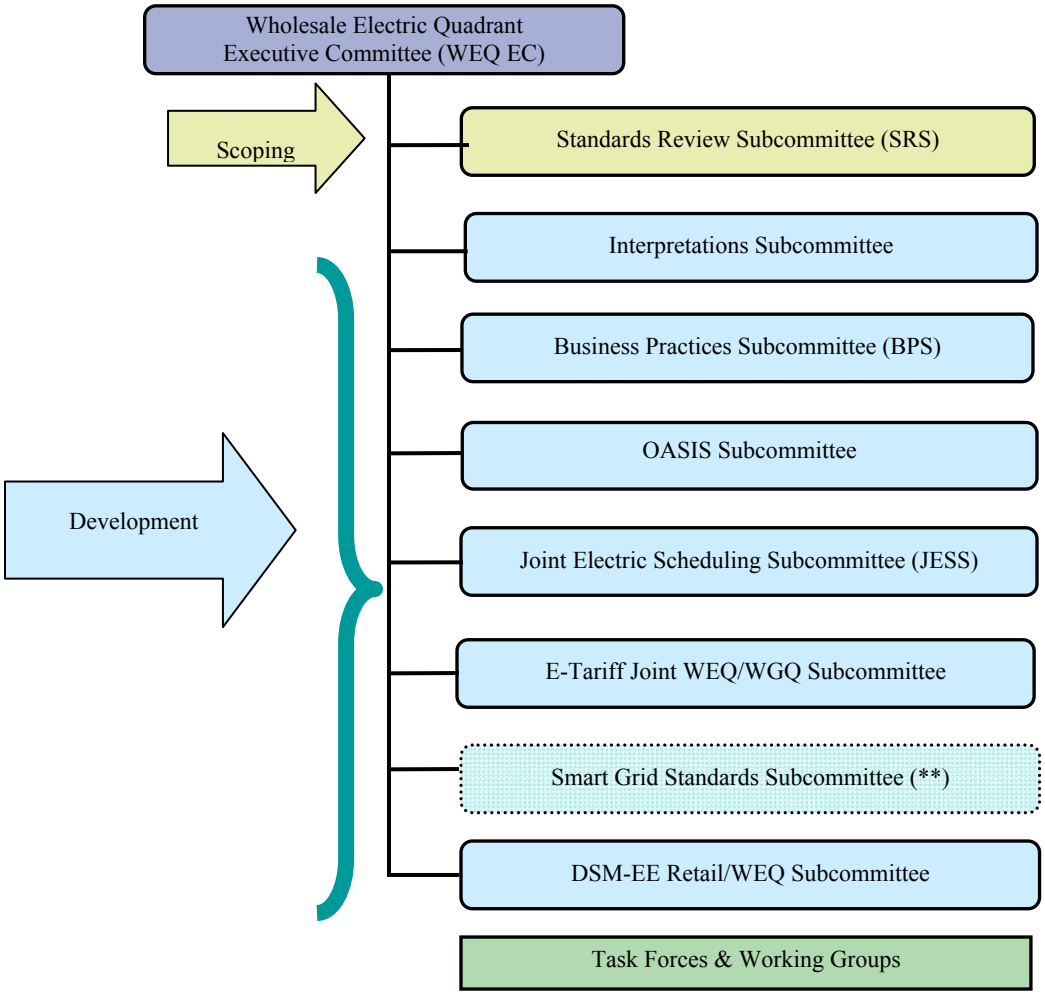
WHOLESALE ELECTRIC QUADRANT EXECUTIVE COMMITTEE AND SUBCOMMITTEE STRUCTURE



NAESB WEQ EC and Subcommittee Leadership:
Executive Committee: Kathy York (WEQ EC Chair) and Alan Johnson (WEQ EC Vice Chair)
Standards Review Subcommittee: Narinder Saini, Ed Skiba
Interpretations Subcommittee: Ed Skiba
Business Practices Subcommittee & Task Forces: Jim Busbin (TLR), Ed Skiba
Open Access Same Time Information System (OASIS): Paul Sorenson, J.T. Wood, Marcie Otondo
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)
DSM-EE REQ/WEQ Subcommittee: Ruth Kiselewich and David Koogler (Retail), 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 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 EC. The group is chaired by Brent Hodges, Joe Zhou, Wayne Longcore and Robert Burke.

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End Notes WEQ 2010 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 MISO for this Annual Plan Item: http://www.naesb.org/pdf3/weq_aplan102907w1.pdf.

Draft

Emerging Smart Grid Impacts to Upstream and Midstream Natural Gas Operations

Primer to September 2010 NAESB Board Meeting

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Background on the Topic

A need has been identified to assess the upstream and midstream operations of natural gas as a result of the smart grid. Present Smart Grid analysis focuses on utility and consumer interaction. This includes smart appliances, home automation systems, rate structures, demand response, etc. The nature of Smart Grid, including the demand response and role of information, may require changes in upstream and midstream natural gas operations to ensure availability and efficiency. Utility reliance on natural gas will continue and likely increase, given the backup requirements for intermittent renewable energy sources. Efficient generation and delivery of electricity on Smart Grid could affect how natural gas is utilized. Two significant areas for analysis include operational demand and energy flow, and contractual and data concerns.

What is the Smart Grid?

Definition from IEEE:

"The Smart Grid has come to describe a next-generation electrical power system that is typified by the increased use of communications and information technology in the generation, delivery and consumption of electrical energy."

What do we already know about Smart Grid?

- The role of information and data integrity is increasingly important.
- Smart Grid includes a fully distributed system with two-way communication.
- Smart Grid, a complex network, may change the way energy is supplied, stored, and in demand.
- Smart Grid has evolved through consumer driven decisions.
- Smart Grid and the US critical infrastructure will include many intermittent renewables.

What must be considered in upstream and midstream gas, and storage?

- Operational effects of Smart Grid on the flow and control of gas, as well as the role of storage

- The integration effects of small and large scale intermittent renewables and the role of fossil fuel.
- Commerce and contractual activities associated with the transport of gas.
- The need to continue the stability and surety of the US energy infrastructure.

The presentation to the NAESB Board in September will include the following topics:

- Operational impacts and the role of fossil fuels provided to utilities for the generation of electricity.
- Influences of consumer driven choices
- Impacts to pipelines
- Decisions in terms of safety and stability
- Considerations made to the contractual movement of gas
- Emerging standards, policies, and best practices
- Resources available for further information

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December 10, 2009

TO: NAESB Executive Committee
FROM: Rae McQuade
RE: Schedule of 2010 Meetings

Below is the schedule of 2010 meetings for the Board of Directors, Advisory Council and Executive Committee.

2010 Calendar of Board and Advisory Council Meetings

Date	Meeting	Location
February 13	Advisory Council Meeting	Washington D.C. – Renaissance Washington Hotel (in conjunction with NARUC Winter Meeting)
March 25	Board of Directors	Houston – Marriott IAH
June 24	Board of Directors	Houston – Marriott IAH
September 23	Board of Directors, Meeting of the Members and Strategic Session	Houston – Marriott IAH
December 9	Board of Directors	Houston – Marriott IAH

2010 Calendar of Executive Committee Meetings

Date	Meeting	Location
February 2-4	Executive Committee (WEQ, Retail, WGQ)	Phoenix, AZ hosted by Salt River Project
May 4-6	Executive Committee (WEQ, Retail, WGQ)	Harrisburg, PA hosted by the Pennsylvania PUC
August 17-19	Executive Committee (WEQ, Retail, WGQ)	Colorado Springs, CO hosted El Paso Western Pipeline
October 26-28	Executive Committee (WEQ, Retail, WGQ)	Glen Allen, VA hosted by Dominion

The Retail Executive Committee meetings will be held by conference call and web cast unless otherwise determined by the retail leadership. The Wholesale Gas Executive committee meetings may be changed to only be held as a conference call/web cast dependent on the agenda items.