North American Energy Standards Board
801 Travis, Suite 1675, Houston, Texas 77002
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Home Page: www.naesb.org

NORTH AMERICAN ENERGY STANDARDS BOARD
RETAIL GAS & ELECTRIC QUADRANTS EXECUTIVE COMMITTEE MEETING MATERIALS

Wednesday, August 17, 2011 -- 10:00 am to 4:00 pm MT

El Paso Western Pipeline Offices, Colorado Springs, CO

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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING
RETAIL QUADRANTS DRAFT AGENDA
Wednesday, August 17, 2011 – 10:00 am to 4:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

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Attire – Business Casual

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NAESB ANTITRUST GUIDELINES STATEMENT

ANTITRUST GUIDELINES

- The following guidelines will be reviewed by counsel at the meeting. The meeting will be monitored, transcribed, and minutes will 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
2011 EXECUTIVE COMMITTEE TERMS – Wholesale Gas Quadrant

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

EXECUTIVE COMMITTEE OFFICERS: Jim Buccigross is WGQ chairman of the Executive Committee, Dale Davis is WGQ vice chairman; Mike Novak is the RGQ chairman, Phil Precht is the REQ chairman, Jim Minneman is REQ vice chairman, Kathy York is the WEQ chairman and Jim Castle is the WEQ vice chairman.

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

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

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

TRANSMISSION SEGMENT		**TERM END:**	**SUBSEGMENT:**
Patrick McGovern	Manager - System Services, Georgia Transmission Corporation	12-31-2011	Muni/Coop
Charles (Chuck) B. Feagans III	Manager – Operations Performance and Standards, Tennessee Valley Authority	12-31-2012	at large
Corey Sellers	Transmission Service Manager, Southern Company	12-31-2012	IOU
Edward Davis	Policy Consultant, Entergy Services, Inc.	12-31-2011	IOU
Robert Bean	Transmission Services Trading Section Leader, Arizona Public Service Company	12-31-2012	at large
Bob Harshbarger	OASIS Trading Manager, Puget Sound Energy	12-31-2011	at large
Michelle Mizumori	Director of Market – Operations Interface, Western Electricity Coordinating Council (WECC)	12-31-2011	At-Large
GENERATION SEGMENT			
William J. Gallagher	Special Contracts Chief, Vermont Public Power Supply Authority	12-31-2011	Muni/Coop
Kathy York	Senior Program Manager – Energy Markets, Policy, and Compliance Reporting, Tennessee Valley Authority	12-31-2012	Fed/State/Prov.
Sherri Monteith	Regulatory Issues Manager, American Electric Power Service Corp.	12-31-2012	at large
John Ciza	Project Manager Energy Policy and Regulatory Affairs, Southern Company Services	12-31-2011	IOU
Alan Johnson	Director Regulatory Compliance – Commercial Operations & Commodities, NRG Energy, Inc.	12-31-2012	Merchant
V A C A N C Y		12-31-2011	at large
Shah Hossain	Senior Regulatory Specialist, Westar Energy, Inc.	12-31-2011	at large
MARKETERS/BROKERS SEGMENT			
Chris Norton	Director of Market Regulatory Affairs, American Municipal Power, Inc.	12-31-2012	Muni/Coop
Belinda Thornton	General Manager - Energy Origination, Tennessee Valley Authority	12-31-2011	Fed/State/Prov.
David Lemmons	Senior Manager – Market Operations, Xcel Energy, Inc.	12-31-2012	at large
Richard Lehman	Supply and Trading, Salt River Project	12-31-2011	at large
John Apperson	Director – Commercial and Trading, PacifiCorp Energy	12-31-2012	IOU
Roy True	Manager of Regulatory and Market Affairs, ACES Power Marketing	12-31-2011	at large
Shannon Jones	Market Affairs Specialist, Manitoba Hydro	12-31-2011	at large

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

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

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

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

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

PRODUCER SEGMENT		**DESIGNATION DATE**

PIPELINE SEGMENT		**DESIGNATION DATE**
Bill Grygar	Vice President, Panhandle Eastern Pipe Line	01/01/2002
Scott Hansen	Questar Pipeline Company	01/01/2002
Ronald G. Tomlinson	Manager – Business Technology, Dominion Transmission, Inc.	04/13/2010
Paul Love	Director, Electronic Customer Services, Natural Gas Pipe Line Company of America	01/01/2002
Mark Gracey	Consultant, Tennessee Gas Pipeline Company	02/28/2006
Christopher Burden	Consultant e-Commerce & Service Delivery, Williams Gas Pipeline	03/01/2007
Tom Gwilliam	Iroquois Gas Transmission System	02/28/2006
LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT		**DESIGNATION DATE**
Rick Ishikawa	Interconnect Account Manager in Capacity Products Group, Southern California Gas Company (Sempra Energy)	01/01/2002
Jim Blasiak	Specialist Federal Regulatory Affairs, Washington Gas Light Company	12/17/2007
George Simmons	FERC Specialist, NiSource Inc.	05/09/2005
Shannon Pierce	Senior Counsel – Interstate Transactions and Gas Operations, AGL Resources	12/16/2010
Scott Butler	Project Manager, Energy Markets Policy Group, Consolidated Edison Company of New York, Inc.	05/31/2005
END USER SEGMENT		**DESIGNATION DATE**
Paul A. Jones	Senior Marketing Representative, Salt River Project	06/09/2008
Art Morris	Gas Originator, Florida Power & Light Company	05/07/2008
Kathy York	Senior Program Manager – Energy Markets, Policy, and Compliance Reporting, Tennessee Valley Authority	01/13/2011
Marisol Santillan	Contract Administrator II, Arizona Public Service Company	02/11/2011
SERVICES SEGMENT		**DESIGNATION DATE**
Keith Sappenfield	Director, US Regulatory Affairs, Midstream and Marketing, EnCana Oil and Gas (USA), Inc.	06/09/2008
Sylvia Munson	Director – Product Management and Regulatory Compliance, SunGard Energy and Commodities	01/24/2011

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2011 EXECUTIVE COMMITTEE ALTERNATES – Retail Electric Quadrant

SERVICE PROVIDERS/SUPPLIERS SEGMENT		DESIGNATION DATE
Brandon S. Siegel	Manager – Market Management, E:SO (ista)	11/19/2009
H. Neal Allen	Profitability & Economic Analysis Manager, Southern Company Services	10/15/2009
UTILITIES SEGMENT		**DESIGNATION DATE**
Keith P. Hock	Director ARES Business Center, Ameren Services Company	01/01/2002
Debbie McKeever	Market Advocate, Oncor	02/03/2010
William J. Welzant	Principal Supplier Services Analyst, Supplier Account Management, Baltimore Gas and Electric Co.	11/25/2007
END USERS/PUBLIC AGENCIES SEGMENT		**DESIGNATION DATE**
Robin J. Lunt	Assistant General Counsel, National Association of Regulatory Utility Commissioners (NARUC)	02/03/2011

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2011 EXECUTIVE COMMITTEE ALTERNATES – Wholesale Electric Quadrant

TRANSMISSION SEGMENT		SUB-SEGMENT	DESIGNATION DATE
Craig L. Williams	Market Interface Manager, Western Electricity Coordinating council (WECC)	At Large	06/27/2011
Abbey J. Nulph	Senior Public Utilities Specialist, Bonneville Power Administration	Fed/State/Prov.	12/15/2010
Sarah E. Edmonds	Director of Transmission Regulation, Strategy and Policy, PacifiCorp	IOU	09/03/2010
Jane Daly	Rate & Regulatory Advisor, Arizona Public Service Company	IOU	03/09/2007
Lori Molotch	Transmission Services Trader Senior, Arizona Public Service Company	IOU	12/21/2010
Narinder Saini	Policy Consultant, Entergy Services, Inc.	IOU	03/23/2007
J.T. Wood	Southern Company Services	IOU	02/02/2007
Joshua Jenkins	Sr. Engineer – Transmission Policy and Services, Southern Company Services	IOU	01/19/2011
Ross Kovacs	Transmission Strategic Coordinator, Georgia Transmission Corporation	Muni/Coop	06/18/2009
GENERATION SEGMENT		**SUB-SEGMENT**	**DESIGNATION DATE**
Lou Oberski	Director – Electric Market Policy, Dominion Resources Services, Inc (Dominion Energy Marketing, Inc.)	IOU	04/28/2008
Francis Halpin	Bonneville Power Administration	Fed/State/Prov.	01/01/2002
MARKETER/BROKER SEGMENT		**SUB-SEGMENT**	
Jeff Ackerman	Manager, CRSP-Energy Mgmt., Western Area Power Administration	Fed/State/Prov	01/01/2002
Brenda Anderson	Bonneville Power Administration	Fed/State/Prov	01/01/2002
Valerie Crockett	Senior Program Manager, Energy Markets & Policy, Tennessee Valley Authority	Fed/State/Prov	01/27/2005
Joel Dison	Project Manager, Southern Company Generation and Energy Marketing (Southern Company Services, Inc.)	IOU	01/16/2008
Kevin M. Pera	Transmission Analyst, Xcel Energy, Inc.	IOU (at large)	08/12/2011

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DISTRIBUTION/LSE SEGMENT		SUB-SEGMENT	DESIGNATION DATE
Gerry Adamski	Vice President of Standards, NERC	At-Large	08/29/2007
Andy Rodriquez	Director of Standards Development, North American Electric Reliability Corporation (NERC)	At-Large	02/03/2011
Lee Hall	Coordination Manager – Power Services, Bonneville Power Administration	Other	10/24/2008
James R. Manning	Senior Engineer – Transmission Resources, North Carolina Electric Membership Corporation	Muni/Coop	01/03/2011
Ronald C. Snead	General Manager, System Planning and Business Services, Duke Energy Corp.	IOU	06/18/2010
END USER SEGMENT		**SUB-SEGMENT**	**DESIGNATION DATE**
Mark W. Hackney	Regional Director – Transmission, Open Access Technology International, Inc.	At-Large	06/29/2010
INDEPENDENT GRID OPERATORS/PLANNERS SEGMENT		**SUB-SEGMENT**	**DESIGNATION DATE**
Paul Wattles	Supervisor Demand Side Programs, Electric Reliability Council of Texas (ERCOT)		06/15/2007
Bill Blevins	Sr. Market Support Analyst, Electric Reliability Council of Texas (ERCOT)		06/15/2007
Heather Sanders	Renewable Integration Support Manager, California ISO		02/16/2010
Robert Coughlin	Principal Scientist Reliability & Operations Compliance, ISO New England, Inc.		06/15/2007
Eric Winkler	Project Manager – FCM and Tariff Administration, ISO New England, Inc.		06/12/2009
Cheryl Mendrala	Principal Engineer, ISO New England, Inc.		03/31/2008
Marie Knox	Sr. Standards Compliance Analyst, Midwest ISO		08/31/2009
Dean Hartung	Manager Real Time Market Operations, PJM Interconnection, LLC		06/15/2007
Cathy Wesley	Sr. Analyst, PJM Interconnection, LLC		09/05/2008
Carl Monroe	Sr. Vice President Operations & Chief Operating Officer, Southwest Power Pool		06/15/2007
Greg Campoli	Supervisor – Reliability Compliance and Assessment, New York ISO		08/30/2007
Diana Pommen	Director Interjurisdictional Affairs, Alberta Electric System Operator		02/12/2008
Jimmy Womack	Manager-Tariff Administration, Southwest Power Pool		04/03/2008
Terry Bilke	Director Standards Compliance and Strategy, Midwest ISO		03/06/2009
TECHNOLOGY AND SERVICES		**SUB-SEGMENT**	**DESIGNATION DATE**

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

SERVICE PROVIDERS/SUPPLIERS SEGMENT		DESIGNATION DATE
Paul Cherevka	Project Manager Data Warehouse, Dominion Retail	06/28/2005

DISTRIBUTORS SEGMENT		DESIGNATION DATE
Joe Stengel	Manager, Federal Regulatory Affairs, Philadelphia Gas Works (American Public Gas Association (APGA))	01/01/2002

END USERS/PUBLIC AGENCIES SEGMENT	DESIGNATION DATE

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July 29, 2011

TO: NAESB Wholesale Electric, Wholesale Gas and Retail Gas and Electric Quadrant Executive Committee Members, Alternates and Interested Industry Participants

FROM: Rae McQuade, NAESB President

RE: Quadrant Executive Committee Meeting Announcements and Draft Agendas with links to Meeting Materials – Highlighted with Additional Materials

NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETINGS
Hosted by El Paso Western Pipeline, Colorado Springs, CO

First, let me thank El Paso Western Pipeline and Bill Griffith for the generosity and commitment to the NAESB organization through hosting this series of meetings. Without such support, it would be very difficult to maintain the NAESB budget and provide various locations around the country to encourage attendance at the NAESB in-person meetings. Below are the meeting arrangements:

Where:	El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO
Contact:	Veronica Thomason, 713-356-0060
When:	Tuesday, August 16 -- 10:00 a.m. to 4:00 p.m. MT – Wholesale Electric Quadrant
	Wednesday, August 17 -- 10:00 a.m. to 4:00 p.m. MT – Retail Gas Quadrant and Retail Electric Quadrant
	Thursday, August 18 -- 9:00 a.m. to 3:00 p.m. MT – Wholesale Gas Quadrant

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

If you plan to attend any of the above EC meetings and have not already RSVPed to our office through the other announcements, please do so at your earliest convenience to the NAESB office (naesb@naesb.org) so that proper meeting arrangements can be made by NAESB and our host. If you are an EC member and are not attending but have a specific designated alternate that you wish to represent you and vote for you at the Executive Committee meeting, please so notify the office when you RSVP that you are unable to attend.

Travel information is posted on the NAESB web site on the EC pages and can be directly accessed from the following link: http://www.naesb.org/pdf4/ec081611ma.doc. If you plan to participate by conference call, the information to do so is provided in this document. The EC meetings will be web cast as well. The meetings, conference calling and web casting is open to any interested party.

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

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There are other NAESB subcommittee meetings being held in conjunction with the EC meetings. They are held in various locations, and available via conference call and web cast, and upon advance request[1] for WGQ Joint IR/Technical subcommittee meetings. The details are provided in the following table.

Date	Time	Meeting/Location
Monday, August 15	10 am to 11 am MT Room 602	Retail Glossary Meeting Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 1301 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/retail_bps.asp
Monday, August 15	11 am to 3 pm MT Room 602	Retail BPS Meeting – Day 1 of 2 Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 1301 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/retail_bps.asp
Tuesday August 16	10 am to 4 pm MT Room 670	WEQ EC Meeting Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133562 Security Code: 2843 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/weq/weq_ec.asp
Tuesday August 16	9 am to 3 pm MT Room 602	Retail BPS Meeting – Day 2 of 2 Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 1301 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/retail_bps.asp
Tuesday August 16	9 am to 4 pm MT Room 604	WGQ IR/Technical Subcommittees Meeting – Day 1 of 2 Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference calling and web casting not available unless requested in advance with subcommittee chair approval NAESB web page: http://www.naesb.org/WGQ/ir.asp

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

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Date	Time	Meeting/Location
Wednesday, August 17	10 am to 4 pm MT Room 670	Retail EC Meeting by phone/web cast/ for in person attendance, please join NAESB staff Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133562 Security Code: 6862 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/REQ/req_ec.asp
Wednesday, August 17	8 am to 3 pm MT Room 602	WEQ OASIS Subcommittee – Day 1 of 2 Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 2695 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/WEQ/weq_oasis.asp
Wednesday, August 17	9 am to 4 pm MT Room 604	WGQ IR/Technical Subcommittees Meeting – Day 2 of 2 Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference calling and web casting not available unless requested in advance with subcommittee chair approval NAESB web page: http://www.naesb.org/WGQ/ir.asp
Thursday, August 18	9 am to 3 pm MT Room 670	WGQ EC Meeting Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133562 Security Code: 8724 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/WGQ/ec.asp
Thursday, August 18	8 am to 12 pm MT Room 602	WEQ OASIS Subcommittee – Day 2 of 2 Location: El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO Conference Call Number: 866-740-1260 Access Code: 7133560 Security Code: 2695 Web Cast: http://www.readytalk.com (please use same codes) NAESB web page: http://www.naesb.org/WEQ/weq_oasis.asp

Please feel free to call the NAESB office should you have any questions or comments. Instructions for dialing in or participating on the web casts follow.

Best Regards, *Rae*

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CONFERENCE CALLING AND WEB CONFERENCING INSTRUCTIONS

FOR THE EXECUTIVE COMMITTEE AND RELATED SUBCOMMITTEE MEETINGS

AUGUST 16-18, 2011

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

To join the conference call:

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

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

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

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

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

Tuesday, August 16, 2011 – 10:00 am to 4:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item
1.	Welcome
	• Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc
	• Welcome to members and attendees
	• Quorum Establishment: Roll Call of WEQ EC Members and Alternates: http://www.naesb.org/pdf4/ec_terms.pdf (EC) and http://www.naesb.org/pdf4/alt_ec_members.pdf (EC Alt)
2.	Consent Agenda (simple majority to approve)
	• Adoption of Agenda http://www.naesb.org/pdf4/ec081611a.docx
	• Adoption of the EC Meeting Minutes:
	• February 1, 2011: http://www.naesb.org/pdf4/weq_ec020111dm.doc
	• March 21, 2011: http://www.naesb.org/pdf4/weq_ec032111dm.doc
	• June 30, 2011: http://www.naesb.org/pdf4/weq_ec063011dm.doc, proposed redlines submitted by E. Skiba, Midwest ISO: http://www.naesb.org/pdf4/weq_ec081611w1.doc
	• Adoption of changes to the 2011 WEQ Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/misc/weq_2011_annual_plan_062311.docx
3.	Overview of Standards Development – Parallel Flow Visualization
	• Discussion on Progress and Possible EC Vote on Direction (simple majority)
	• Two-Tier Firm Curtailment Cover Letter: http://www.naesb.org/pdf4/weq_ec081611w4.pdf
	• Attachment 1: Two-Tier Firm Curtailment Overview: http://www.naesb.org/pdf4/weq_ec081611w5.doc
	• Attachment 2: Procedural History of Two-Tier Firm Curtailment: http://www.naesb.org/pdf4/weq_ec081611w6.doc
	• Attachment 3: Policy Concern Position Paper: http://www.naesb.org/pdf4/weq_ec081611w7.doc
	• Attachment 4: No Policy Concern Position Paper: http://www.naesb.org/pdf4/weq_ec081611w8.doc
4.	Overview of Standards Development – OASIS Network Integration Transmission Services
5.	Progress Report on Demand Side Management/Energy Efficiency
	• FERC Activities and DR Implementation Plan
	• SEE Action
	• Retail EE Efforts and retail DR Phase 2 efforts
6.	e-Tag and Dodd-Frank Act Discussion
7.	Standards Review Subcommittee Updates and Coordination of Glossary Terms
8.	Procedures Review – Roles and Responsibilities

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#	Agenda Item

9. Subcommittee Updates

- Triage Subcommittee: http://www.naesb.org/pdf4/tr072511agenda.doc (new requests) , http://www.naesb.org/pdf4/tr072511disposition.docx (disposition)
- Business Practices Subcommittee (BPS): http://www.naesb.org/pdf4/weq_ec081611w3.ppt may be addressed in agenda item 3
- DSM-EE Subcommittee – addressed in agenda item 5
- OASIS Subcommittee: Report – a portion may be addressed in agenda item 4, SAMTS update, next steps
  - Request for formal comments on WEQ recommendations due September 8, 2011: http://www.naesb.org/pdf4/weq_080911_reqcom.doc
- Joint Electric Scheduling Subcommittee (JESS)
- Standards Review Subcommittee (SRS): http://www.naesb.org/pdf4/weq_ec081611w2.ppt may be addressed in agenda item 7
- Glossary Efforts

10. Publication Schedule Review

- Publications: WGQ Publication Schedule (Version 2.1): http://www.naesb.org/misc/wgq_publication_schedule_ver2_1.doc, scheduled for July 2012
- WEQ Publication Schedule (Version 2.2): http://www.naesb.org/misc/weq_publication_schedule_ver2_2.doc, scheduled for September 2011
- Retail Publication Schedule (Version 1.4): http://www.naesb.org/misc/retail_publication_schedule_ver1_4.doc, scheduled for April 2012
- Individual Books Availability in New Publications

11.. Board of Directors, Board Committee and Regulatory Updates:

- Board Updates – Board Meeting June 23, 2011: http://www.naesb.org/pdf4/bd062311dm.doc
- Board Critical Infrastructure Efforts: http://www.naesb.org/pdf4/bd_cic_072811notes.doc
- Board Certification Efforts – PKI WEQ-012 Standards
- Electric Industry Registry – WebRegistry Status: http://www.naesb.org/pdf4/registry_transfer_update_080911.pdf
- Regulatory Efforts: *(summaries only are included in the assembled book for the following efforts)*
  - August 5, 2011 – First meeting of the CFTC Data Standardization Subcommittee: http://www.cftc.gov/PressRoom/PressReleases/pr6080-11.html, http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/agenda080511.pdf
  - July 21, 2011 - FERC Order No. 1000, "Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities: http://www.ferc.gov/whats-new/comm-meet/2011/072111/E-6.pdf
  - July 7, 2011 – Smart Grid Filing: http://www.naesb.org/pdf4/ferc_070711_smartgrid_standards.pdf
  - June 20, 2011 – WEQ Minor Corrections Filing: http://www.naesb.org/pdf4/ferc_062011_weq_minor_corrections_v002.1.pdf
  - April 30, 2011 - Demand Response Filing:

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

Tuesday, August 16, 2011 – 10:00 am to 4:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item

http://www.naesb.org/pdf4/ferc_043011_weq_demand_response_standards.pdf

- March 9, 2011 – Progress Report on Coordination of Requests Across Multiple Transmission Systems : http://www.naesb.org/pdf4/naesb_samts_status_report_ferc_030911.pdf
- March 2, 2011: NAESB Comments on Integration of Variable Energy Resources: http://www.naesb.org/pdf4/naesb_comments_ver_integration_nopr_030211.pdf
- March 2, 2011: NAESB Comments on Smart Grid Interoperability Standards: http://www.naesb.org/pdf4/naesb_comments_smartgrid_interop_030211.pdf
- February 7, 2011: NAESB Comments on Federal Agency Participation in Standardization: http://www.naesb.org/pdf4/naesb_comments_nist_effectiveness_020711.doc

12. Other Business
    - Meeting Schedule 2011**:** http://www.naesb.org/misc/2011_schedule.doc
    - Preparation for 2012 Annual Plan

    Adjourn

Attire – Business Casual

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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING
RETAIL QUADRANTS DRAFT AGENDA
Wednesday, August 17, 2011 – 10:00 am to 4:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item

1. Welcome
   - Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance)
   - Welcome to members and attendees
   - Quorum Establishment: Roll Call of Retail EC Members and Alternates: http://www.naesb.org/pdf4/ec_terms.pdf (EC) and http://www.naesb.org/pdf4/alt_ec_members.pdf (EC Alt)
2. Consent Agenda (simple majority to approve)
   - Adoption of Agenda: http://www.naesb.org/pdf4/ec081611a.docx
   - Adoption of the Meeting Minutes:
     - May 4, 2011: http://www.naesb.org/pdf4/retail_ec050411dm.doc
     - July 7, 2011 (REQ Members Only): http://www.naesb.org/misc/req_ec070711dm_rev_pp.docx
   - Adoption of changes to the 2011 Retail Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/misc/retail_2011_annual_plan_072911.docx
3. Review and Consider for Vote Recommendation for Supplier Marketing Practices (Annual Plan Item No. 7) – super majority vote
   - Recommendation: http://www.naesb.org/pdf4/retail_2011_ap_7_rec.doc
   - Request for Comments due August 12: http://www.naesb.org/pdf4/retail_071311_reqcom.doc
   - Comments:
     - B. Barkas, Dominion Retail, Inc.: http://www.naesb.org/pdf4/retail_071311_dominion_retail.pdf
4. Review and Consider for Vote Recommendation R10008 Smart Grid OpenADE Standards for Energy Usage Information (Annual Plan Item No. 8(c)) – super majority vote for REQ members only
   - Recommendation: http://www.naesb.org/pdf4/r10008_rec_070711.docx
   - Request for Comments due August 8: http://www.naesb.org/pdf4/req_070711_reqcom.doc
   - Comments:
     - M. Dienhart, Xcel Energy: http://www.naesb.org/pdf4/req_070711_xcel_energy.xls
     - I. O'Neill, Southern California Edison: http://www.naesb.org/pdf4/req_070711_sce.xls
     - R. Vader, DTE Energy: http://www.naesb.org/pdf4/req_070711_dte.docx
     - A. Fishman, Edison Electric Institute: http://www.naesb.org/pdf4/req_070711_eei.doc
     - C. King, eMeter: http://www.naesb.org/pdf4/req_070711_emeter.doc
     - L. Tillman, on behalf of Southern Company Services: http://www.naesb.org/pdf4/req_070711_coverletter_scs.pdf (cover letter), http://www.naesb.org/pdf4/req_070711_scs.pdf (comments)

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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING
RETAIL QUADRANTS DRAFT AGENDA
Wednesday, August 17, 2011 – 10:00 am to 4:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item
5.	Progress Report on Demand Side Management/Energy Efficiency
	• FERC Activities and DR Implementation Plan
	• SEE Action
	• Retail EE Efforts and retail DR Phase 2 efforts
6.	Retail Quadrants Membership and Status of Retail Restructuring:
	• Membership Report: http://www.naesb.org/misc/2011_membership_report_071211.doc
7.	Subcommittee Updates (meeting materials for updates will be provided by leadership as they are available):
	• Triage Subcommittee: http://www.naesb.org/pdf4/tr072511agenda.doc (new requests), http://www.naesb.org/pdf4/tr072511disposition.docx (disposition)
	• Business Practices Subcommittee (BPS) and Texas Task Force
	• Technical Electronic Implementation Subcommittee (TEIS)
	• Glossary Efforts
	• Demand Side Management/Energy Efficiency (covered in agenda item 5)
	• Smart Grid
8.	Publication Schedule Review
	• Publications: WGQ Publication Schedule (Version 2.1): http://www.naesb.org/misc/wgq_publication_schedule_ver2_1.doc, scheduled for July 2012
	• WEQ Publication Schedule (Version 2.2): http://www.naesb.org/misc/weq_publication_schedule_ver2_2.doc, scheduled for September 2011
	• Retail Publication Schedule (Version 1.4): http://www.naesb.org/misc/retail_publication_schedule_ver1_4.doc, scheduled for April 2012
	• Individual Books Availability in New Publications
9.	Board of Directors, Board Committee and Regulatory Updates
	• Board and Board Committee Updates – Board Meeting June 23, 2011: http://www.naesb.org/pdf4/bd062311dm.doc
	• Board Critical Infrastructure Efforts: http://www.naesb.org/pdf4/bd_cic_072811notes.doc
	• Regulatory Updates:
	◦ NARUC Annual Meeting Update
	◦ July 7, 2011 – NAESB Smart Grid Filing: http://www.naesb.org/pdf4/ferc_070711_smartgrid_standards.pdf *(summary only included in assembled book)*
	◦ July 19, 2011 – FERC Ruling on Smart Grid Interoperability Standards, Docket No. RM11-2-000: http://www.ferc.gov/EventCalendar/Files/20110719143912-RM11-2-000.pdf
10.	Other Business
	• Meeting Schedule 2011**:** http://www.naesb.org/misc/2011_schedule.doc
	• Preparation for 2012 Annual Plan

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RETAIL QUADRANTS DRAFT AGENDA
Wednesday, August 17, 2011 – 10:00 am to 4:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item
11.	Adjourn

Attire – Business Casual

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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING
WHOLESALE GAS QUADRANT DRAFT AGENDA
Thursday, August 18, 2011 – 9:00 am to 3:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item

1. Welcome

   - Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance)
   - Welcome to members and attendees
   - Quorum Establishment: Roll Call of WGQ EC Members and Alternates: http://www.naesb.org/pdf4/ec_terms.pdf (EC) and http://www.naesb.org/pdf4/alt_ec_members.pdf (EC Alt)

2. Consent Agenda (simple majority to approve)

   - Adoption of Agenda: http://www.naesb.org/pdf4/ec081611a.docx
   - Adoption of the Meeting Minutes:
     - May 5, 2011: http://www.naesb.org/pdf4/wgq_ec050511dm.doc, proposed redlines submitted by D. Davis, Williams Gas Pipeline: http://www.naesb.org/pdf4/wgq_ec081811w1.doc
   - Adoption of changes to the 2011 WGQ Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/misc/wgq_leadership062211a1_redline.docx

3. Consideration and Possible Vote on Minor Corrections (simple majority to approve) – please note that if the linked document is a request, it is under consideration by the Information Requirements/Technical Subcommittees and is not yet prepared for an EC vote, but it may be presented for vote should the IR/Tech Subcommittees prepare the recommendations prior to August 18.

   The minor corrections available for vote now are indicated by an asterisk (*), and the minor corrections are separated into those to be applied to Version 2.0 and those to be applied to the final actions that will compose Version 2.1.

   Version 2.0 applications:

   - MC11017 – For NAESB WGQ Version 2.0, minor correction to correct the code values for the data element in 'Allowable Re-Release Indicator' in data set, Officer (NAESB WGQ Standard No. 5.4.24).
     * Minor Correction Code Value Recommendation: http://www.naesb.org/pdf4/wgq_mc11017_rec_060711.doc
   - MC11020 – For NAESB WGQ Version 2.0, minor correction of inadvertent typographical error in published NAESB Standard 6.3.1 - NAESB Base Contract for Sale and Purchase of Natural Gas dated September 5, 2006.
     * Minor Correction Recommendation: http://www.naesb.org/pdf4/wgq_mc11020.doc
   - MC11022 – For NAESB WGQ Version 2.0, minor correction to the conditions associated with the download of the Bid (NAESB WGQ Standard No. 5.4.25) for the following data elements: Bid Minimum Quantity - Contract and Bid Minimum Quantity – Location. Such review should consider the Bidder's selection in the Bidder Lesser Quantity Indicator data element. Minor correction to the conditions associated with the download of the Offer (NAESB WGQ Standard No. 5.4.24) for the following data elements: Minimum Offer Quantity – Contract, Minimum Offer Quantity – Location, Minimum Term, Minimum Acceptable Percentage of Maximum Tariff Rate, and Minimum Acceptable Rate. Such review should consider the Releaser's selection in the Disclose Indicator, Releasing Shipper Lesser Quantity Indicator, Shorter Term Indicator, and Minimum Rate Disclosure Indicator. This minor correction is linked to C11002 and C11003.
     Minor Correction Code Value Request: http://www.naesb.org/pdf4/wgq_mc11022.doc

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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING
WHOLESALE GAS QUADRANT DRAFT AGENDA
Thursday, August 18, 2011 – 9:00 am to 3:00 pm MT
El Paso Western Pipeline Offices, 2 North Nevada Avenue, Colorado Springs, CO

#	Agenda Item

- MC11023 – Errata for NAESB WGQ Version 2.0 - Correct the Data Element Cross Reference to ASCX12 for the N1 sub-detail usages for the data elements Upstream Identifier Code/Upstream Identifier Proprietary Code and Downstream Identifier Code/Downstream Identifier Proprietary Code in the column 'Usage with Nominator's Tracking ID P N T U' from 'nu nu nu nu' to 'M C nu C'
  * Minor Correction Recommendation: http://www.naesb.org/pdf4/wgq_mc11023_rec_072811.doc
- MC11024 – For NAESB WGQ Version 2.0, minor correction to add the code value "Kansas Ad Valorum Tax Refund" for data element "Charge Type" in data set, Transportation/Sales Invoice (NAESB WGQ Standard No. 3.4.1).
  Minor Correction Code Value Request: http://www.naesb.org/pdf4/wgq_mc11024.docx

Version 2.1 applications:

- MC11006 – For NAESB WGQ Version 2.1, Add a new Nomination Quick Response Validation Codes - To the Nomination Quick Response document (1.4.2), add new Nominations Quick Response Validation Codes (Sub-detail).
- Minor Correction Code Value Request: http://www.naesb.org/pdf4/wgq_mc11006.doc
- MC11007 – For NAESB WGQ Version 2.1, for NAESB WGQ Standard No. 5.4.21: Transactional Reporting - Firm, add a code value to the Sender's Option data element "Capacity Type Indicator" for capacity that is "Primary thru Storage".
- Minor Correction Code Value Request: http://www.naesb.org/pdf4/wgq_mc11007.doc
- MC11018 – For NAESB WGQ Version 2.1, minor correction to add one code value for the data element Reduction Reason the data sets, Confirmation Response (NAESB WGQ Standard No. 1.4.4), Scheduled Quantity (NAESB WGQ Standard No. 1.4.5) and Scheduled Quantity for Operator (NAESB WGQ Standard No. 1.4.6).
  * Minor Correction Code Value Recommendation: http://www.naesb.org/pdf4/wgq_mc11018_rec_060711.doc
- MC11019 – For WGQ Version 2.1, Add the code values 'Swing Service Overtake' and 'Unauthorized Take' for the data element "Transaction Type" in the following data sets: NAESB WGQ Standard No. 2.4.3 – Allocation, NAESB WGQ Standard No. 2.4.4 – Shipper Imbalance and NAESB WGQ Standard No. 3.4.1 – Transportation/Sales Invoice.
  Minor Correction Code Value Request: http://www.naesb.org/pdf4/wgq_mc11019.doc
- MC11021 – For NAESB WGQ Version 2.1, add the code value 'Reservation/Enhanced Nomination Service' for data element 'Transaction Type" in data set, Transportation/Sales Invoice (NAESB WGQ Standard No. 3.4.1).
  Minor Correction Code Value Request: http://www.naesb.org/pdf4/wgq_mc11021.doc

4. Review and consider for vote R10005 - Modify 5.3.26 to eliminate possible disputes over consequences associated with Bid Basis' not selected by Releasing Shipper (super majority vote)
   - Recommendation: http://www.naesb.org/pdf4/r10005_rec.doc
   - Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc
   - Comments due August 11, 2011 – none received
5. Review and consider for vote R09008 - Add two business conditional data elements to the Offer Upload, NAESB WGQ Standard 5.4.7 for (1) Responsibility for Out of Path Overrun and (2) Out of Path Location Changes. These data elements should be conditional in standards 5.4.1 and 5.4.3 (super majority vote)
   - Recommendation: http://www.naesb.org/pdf4/r09008_rec.doc
   - Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc (*see agenda item 4 in assembled book*)
   - Comments due August 11, 2011 – none received

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#	Agenda Item
6.	Review and consider for vote R09009- Add four business conditional data elements to the imbalance trading NAESB WGQ data sets 2.4.11—2.4.16 (super majority vote) • Recommendation: http://www.naesb.org/pdf4/r09009_rec.doc • Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc (*see agenda item 4 in assembled book*) • Comments due August 11, 2011 – none received
7.	Review and consider for vote 2011 WGQ Annual Plan Item 6 – Decline to implement any revisions or modification to 2006 NAESB Base Contract after industry input and discussion under Annual Plan Item 6 (Review typical industry Special Provisions to the NAESB Base Contract for consideration to be integrated into the NAESB Base Contract. Review is to include corresponding updates to other related documents (e.g. Canadian Addendum, ISDA Amendment and Model Credit Support Addendum and Frequently Asked Questions))" (simple majority vote) • Recommendation: http://www.naesb.org/pdf4/wgq_2011_ap_6_rec_070611.doc • Request for Comments: http://www.naesb.org/pdf4/wgq_070611reqcom.doc • Comments due August 8, 2011 – none received
8.	Review and consider for vote R11004 (MC11001-04) - For NAESB WGQ Version 2.1, add the code values 'Non-Renewal Charge' and 'AOS' for the data element "Rate Identification Code" in data sets: Transactional Reporting – Capacity Release (NAESB WGQ Standard No. 5.4.20), Transactional Reporting – Firm Transportation (NAESB WGQ Standard No. 5.4.21), Offer (NAESB WGQ Standard No. 5.4.24), Bid (NAESB WGQ Standard No. 5.4.25) and Award Download (NAESB WGQ Standard No. 5.4.26). (super majority vote) • Recommendation: http://www.naesb.org/pdf4/wgq_mc11001-04_r11004_rec.doc • Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc (*see agenda item 4 in assembled book*) • Comments due August 11, 2011 – none received
9.	Review and Consider C11002: Clarification or interpretation request: Clarify the effects of Bidder Lesser Quantity Indicator on the disclosure of minimum condition elements for EBB / EDI Download portion of NAESB Standard Number 5.4.25. Does the Offer's Disclose Indicator or Releasing Shipper Lesser Quantity Indicator have any effect on the disclosure of the minimum condition elements for Bids. As the EC meeting is taking place during the comment period, only a discussion and review is allowed. Depending on the comments received, the vote may occur notationally after the comment period concludes. The required vote is a super majority. The portion of clarification request C11002 determined to be a request for minor correction and transferred to the Information Requirements Subcommittee has been assigned minor correction number MC11022, see agenda item 3. • Interpretation: http://www.naesb.org/pdf4/c11002_rec.docx • Request for Comments: http://www.naesb.org/pdf4/wgq_072611_reqcom.doc • Comments due August 26, 2011 – none received

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NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING
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#	Agenda Item
10.	Review and Consider C11003: Clarification or interpretation request: Clarify the effects of Disclosure Indicator, Minimum Rate Disclosure Indicator, Releasing Shipper Lesser Quantity Indicator, and Shorter Term Indicator on the disclosure of minimum condition elements for EBB / EDI Download portion of NAESB Standard Number 5.4.24. As the EC meeting is taking place during the comment period, only a discussion and review is allowed. Depending on the comments received, the vote may occur notationally after the comment period concludes. The required vote is a super majority. The portion of clarification request C11003 determined to be a request for minor correction and transferred to the Information Requirements Subcommittee has been assigned minor correction number MC11022, see agenda item 3. • Interpretation: http://www.naesb.org/pdf4/c11003_rec.docx • Request for Comments: http://www.naesb.org/pdf4/wgq_072611_reqcom.doc (*see agenda item 9 in assembled book*) • Comments due August 26, 2011 – none received
11.	Discussion on NAESB WGQ Standard No. 5.3.2 and possible need for a minor correction or request for modification: http://www.naesb.org/misc/wgq_5-3-2_standard_ver2-0.doc
12.	Subcommittee Updates (meeting materials for updates will be provided by leadership as they are available): • Triage Subcommittee: http://www.naesb.org/pdf4/tr072511agenda.doc (new requests), http://www.naesb.org/pdf4/tr072511disposition.docx (disposition) • Business Practices Subcommittee (BPS) • Electronic Delivery Mechanisms Subcommittee (EDM) • Information Requirements Subcommittee (IR)/Technical Subcommittee • Interpretations Subcommittee • Contracts Subcommittee
13.	Publication Schedule Review • Publications: WGQ Publication Schedule (Version 2.1): http://www.naesb.org/misc/wgq_publication_schedule_ver2_1.doc, scheduled for July 2012 • WEQ Publication Schedule (Version 2.2): http://www.naesb.org/misc/weq_publication_schedule_ver2_2.doc, scheduled for September 2011 • Retail Publication Schedule (Version 1.4): http://www.naesb.org/misc/retail_publication_schedule_ver1_4.doc, scheduled for April 2012 • Individual Books Availability in New Publications
14.	Board of Directors, Board Committee and Regulatory Updates (no votes or action to be taken): • Board and Board Committee Updates – Board Meeting June 23, 2011: http://www.naesb.org/pdf4/bd062311dm.doc • Board Critical Infrastructure Efforts: http://www.naesb.org/pdf4/bd_cic_072811notes.doc • Regulatory Updates – • June 28, 2011 Filing of Minor Corrections: http://www.naesb.org/pdf4/ferc_062811_wgq_minor_corrections_v1.9_2.0.pdf (*summary only in assembled book*)

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#	Agenda Item
15.	Other Business • Meeting Schedule 2011**:** http://www.naesb.org/misc/2011_schedule.doc • Preparation for 2012 Annual Plan Adjourn *Attire – Business Casual*

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July 27, 2011

TO: NAESB Quadrant Executive Committee Members, Alternates and Interested Industry Participants

FROM: Cory Galik Cummings, Staff Attorney

RE: Retail Executive Committee Meeting Draft Minutes

NORTH AMERICAN ENERGY STANDARDS BOARD
RETAIL EXECUTIVE COMMITTEE MEETING
MAY 4, 2011
DRAFT MINUTES

1. Welcome

Mr. Novak called the meeting to order and welcomed the Retail Electric Quadrant (REQ) and Retail Gas Quadrant (RGQ) Executive Committee (EC) members and other participants. Ms. Cummings gave the antitrust guidance and REQ and RGQ members and other participants introduced themselves. Quorum was established.

2. Consent Agenda

Mr. Minneman moved to adopt the consent agenda, which included adoption of the February 3, 2011 meeting minutes and changes to the 2011 Annual Plan to be proposed to the Board of Directors. Mr. Miyaji seconded the motion. The motion passed without opposition.

3. Update on Demand Side Management/Energy Efficiency

Energy Efficiency: Ms. Michals provided an update of the Retail Energy Efficiency recommendation. There have been challenges within the work group to confirm the scope of the model business practices, largely related to how they will provide information on general evaluation principles versus measurement and verification. The work group, in general, agreed that evaluation is an important aspect to include in the recommendation. In response to concerns that the scope is too broad, volunteers from the work group will develop a set of high level model business practices. Ms. Michals noted that the purpose of the model business practices is to offer guidance to states that do not currently have evaluation, measurement and verification (EM&V) protocols in place. The Retail ECs offered guidance, including a solution to list the objectives of various jurisdictions, but indicate that the list is not definitive. Mr. Minneman noted that various alternatives can be built into the standards.

Ms. Michals also noted a resource constraint due to a similar action currently underway with the Department of Energy's State Energy Efficiency (SEE) Action Network. That effort is considering a range of policies and how EM&V guidance would assist program administrators in identifying appropriate EM&V methods. Ms. McQuade stated that she did not think NAESB and SEE Action's efforts were duplicative. The SEE Action work was broader than NAESB's efforts. She noted that NAESB would coordinate with both NARUC and the Department of Energy to ensure that the two efforts remained complementary of each other.

Demand Response: Mr. Precht provided the update on the Retail Demand Response efforts. The retail demand response work group continued to focus on the development of new model business practices to create common code interfaces and data structures necessary for enrolling demand response sites in a demand response program. Comverge presented a power point presentation to explain their demand response enrollment process. Mr. Precht is currently using that presentation as a starting point to create process flows to be discussed at the next retail demand response work group meeting.

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4. Update on Minor Correction from the Glossary Committee

Ms. Rager provided an update on the minor corrections that were approved via notational ballot.

5. Update on Smart Grid Activities

Data Privacy Task Force: The data privacy task force continues to meet weekly to draft its recommendation. An informal comment period ended last week and the task force reviewed the comments received at its last meeting. The drafting team created a separate group to incorporate those comments into the recommendation. A meeting has been scheduled for Friday, May 13 to review the recommendation prior to voting it out of the task force on May 19 for a 30 day formal comment period.

Energy Service Providers Interface: The energy services provider interface task force has continued to meet weekly over the last quarter to develop a recommendation in response to REQ AP Item 9.e (the standardization of the Open ADE specification – which is a specification that describes communications between utilities, customers and 3rd party service providers). This standard is considering an extension of the PAP 10 Energy Usage. The work group anticipates a second quarter completion date.

6. Retail Quadrants Membership and Status of Retail Restructuring

Ms. McQuade provided the update of the NAESB Retail quadrants membership. The REQ gained two new members while the RGQ remains consistent in its membership numbers. The increase is due to NAESB's efforts in Smart Grid, Demand Response and Energy Efficiency. While this is a frequent topic at the Board and leadership meetings, it should also be discussed by the Retail ECs. Mr. Novak noted that he has had discussion in New York about providing technical services for EDI. Work has been done on marketing guidelines, and while participation has been good, it has not led to increased membership. Ms. McQuade asked if there was interest in NAESB creating EE model business practices for the gas industry. Mr. Novak said that, with the exception of combination companies, the natural gas industry was not interested at this time for NAESB to pursue EE standards on its behalf. For this effort or possibly for the future structure of the organization, Mr. Novak observed that a merger of the two quadrants, with a segment for gas utilities could be considered. Ms. McQuade noted that it was beneficial to NAESB to keep the two quadrants separate but coordinated on complementary work products, rather than force gas and electric companies to make compromises they would not otherwise have to make – if it were possible to increase the membership number in the retail gas quadrant and identify relevant standards development activities that would attract natural gas companies to participate and join. Ms. McQuade noted that this agenda item would be included in future EC meetings.

7. Subcommittee Updates

Triage Subcommittee: Ms. McQuade provided the review of triaged items. All six new requests were assigned to the Wholesale Gas Quadrant.

Business Practice Subcommittee: Mr. Jones provided the update. For the past five meetings, the BPS has focused on supplier marketing practices, which will be voted out of the subcommittee on June 6. He encouraged any interested participants to review the recommendation and participate in that vote.

Technical Electronic Implementation Subcommittee (TEIS): There have been no meetings since the last EC meeting.

Glossary Subcommittee: Mr. Eynon provided the update. The subcommittee has met several times since the last EC meeting to approve terms for the supplier marketing practices recommendation.

Contracts Subcommittee: Mr. Novak provided the update. The WGQ contract subcommittee has met to discuss whether to update the base contract to incorporate frequently used amendments. There may be an impact on the

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retail side, depending on the changes made by the WGQ. Ms. McQuade asked participants to think about a possible chair for the retail contracts subcommittee.

8. Publication Schedule Review

Ms. Rager provided the review of the publication schedules. She noted that Retail Publication Version 1.4 was scheduled for 2012. The WEQ Version 2.2 is scheduled to publish in the third quarter of 2012 and WGQ Version 2.1 is scheduled to publish in July of 2012. Mr. Jones moved, seconded by Mr. Minneman to accept April 2012 as the publication date for the next retail publication.

9. Board of Directors, Board Committee and Regulatory Updates

Board Updates: Ms. McQuade encouraged participants to review the minutes from the March 24, 2011 Board of Directors meeting. She noted the review of the three prongs of PKI: 1) review the PKI standards to determine if changes are necessary and review them in light of Smart Grid; 2) review the certification for PKI Certificate Authorities (CA) and develop the list of requirements in order to become a CA. This is being addressed by the Board Certification Committee; 3) determine whether or not it makes sense to have only one CA for a period of time. This work is being addressed by the Board Critical Infrastructure Committee.

Wholesale Gas and Wholesale Electric Activities: The WGQ 2011 Annual Plan and the WEQ 2011 Annual Plan were reviewed.

10. Other Business

Ms. McQuade urged participants to review the 2011 schedule.

11. Adjourn

Mr. Minneman moved, seconded by Mr. Jones, to adjourn the meeting. The meeting adjourned at 12:28 pm Eastern.

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12. Attendance and Vote Record

RETAIL GAS QUADRANT EXECUTIVE COMMITTEE		ATTENDANCE
SERVICE PROVIDERS/SUPPLIERS SEGMENT		
Dwight M. Whitley, Jr.	Sierra Southwest Cooperative Services, Inc.	
Richard Zollars	Dominion Retail, Inc.	Phone
DISTRIBUTION SEGMENT		
Dan Jones	Duke Energy	In Person
Michael Novak	National Fuel Gas Distribution Corporation	Phone
Julie Compton Pellizzi	AGL Resources, Inc.	
END USER SEGMENT/PUBLIC AGENCIES SEGMENT		
RETAIL ELECTRIC QUADRANT EXECUTIVE COMMITTEE		**ATTENDANCE**
SERVICE PROVIDERS/SUPPLIERS SEGMENT		
Bill Barkas	Dominion Retail, Inc.	Phone
Jim Minneman	PPL Solutions, LLC	Phone
Wendell Miyaji	Comverge, Inc.	Phone
Susan Munson	Electric Reliability Council of Texas	Phone
UTILITIES SEGMENT		
Phil Precht	Baltimore Gas and Electric Company	Phone
Patrick Eynon	Ameren Services	Phone
Judy Ray	Alabama Power Company	
Michael Jesensky	Dominion Virginia Power	Phone
END USER/PUBLIC AGENCIES SEGMENT		
James Bradford Ramsay	NARUC	
Annunciata Marino	Pennsylvania Public Utility Commission	
Pam Stonier	Vermont Public Service Board	Phone

13. Other Participants

Other Participant Attendance		
Participant	Organization	Attendance
Catherine Abercrombie	ConocoPhillips	Phone
Jonathan Booe	NAESB	In Person
Cory Cummings	NAESB	In Person
Ronda Ferguson	Wisconsin Public Service Corporation	Phone
Ryn Hamilton	SCE	Phone

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Other Participant Attendance

Participant	Organization	Attendance
Rae McQuade	NAESB	In Person
Julie Michals	NEEP	Phone
Denise Rager	NAESB	Phone
Rodney Sobin	Alliance to Save Energy	Phone
Veronica Thomason	NAESB	In Person
Elizabeth Titus	NEEP	Phone
Jill Vaughn	Court Reporter	In Person
Kevin Warren	EVO	Phone
Eric Winkler	ISO New England	Phone

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July 8, 2011

TO: NAESB Retail Electric Quadrant (REQ) Executive Committee and Interested Industry Participants

FROM: Jonathan Booe, NAESB Deputy Director

RE: REQ Executive Committee Single Topic Conference Call – Draft Minutes

NORTH AMERICAN ENERGY STANDARDS BOARD
RETAIL ELECTRIC QUADRANT EXECUTIVE COMMITTEES
SINGLE TOPIC CONFERENCE CALL
Thursday, July 7, 2011 – 10:00 am to 5:00 pm Central
DRAFT MINUTES

1. Welcome

Mr. Precht called the meeting to order and welcomed the Retail Electric Quadrant ("REQ") Executive Committee ("EC") members, alternates and other participants. Mr. Booe provided the anti-trust guidance and called the roll of the REQ EC members and alternates. A quorum was established. Mr. Precht reviewed the agenda and noted that the late comments submitted by the Data Privacy Task Force, the California Public Utility Commission ("CPUC") and Southern Company had not been included on the agenda. Mr. Minneman moved to adopt the agenda with the addition of the comments noted by Mr. Precht. Ms. Ray seconded the motion and the motion passed without opposition.

2. Review of Recommendation and Comments and Vote

Mr. Precht recommended that the EC begin with a motion to accept the recommendation incorporating the late comments of the Data Privacy Task Force before entertaining discussion on the additional late comments. Ms. Lunt moved to adopt the recommendation as amended by the Data Privacy Task Force late comments and Mr. Jesensky seconded the motion. Mr. Precht opened the floor for discussion on the motion. Mr. Booe noted that the task force considered the CPUC comments during the development of the task force late comments. Mr. Precht asked if anyone would like to amend ~~the~~ Ms. Lunt's motion in response to the late comments submitted by the CPUC. No amendments were offered.

Mr. Precht recommended that the EC consider the late comments submitted by Southern Company one at a time and asked Ms. Ray if she would like to review the first comment with the participants. Ms. Ray deferred to Mr. Robinson as a Southern Company representative and an active task force participant to review the comments. Mr. Robinson reviewed the first proposed modification and noted that the comment is intended to make clear that the applicable regulatory authority is allowed to create a screening process or application process for third parties. Ms. Lunt questioned how the proposed revision in the late comments is different from the revision proposed in the original comments and rejected by the task force. Mr. Robinson responded that the comment proposes the positive and more flexible "permitted" terminology rather than the originally submitted "disapproved" terminology and is based upon feedback from the task force. Ms. Ray proposed an amendment to Ms. Lunt's motion to adopt item one of the Southern Company late comments regarding third party screening/eligibility requirements. Mr. Jesensky seconded the motion. Ms. Munson stated that ERCOT wants to ensure that applicable regulatory authorities have the option to institute screening and eligibility processes and noted other places in the standard where that principle is implied. Mr. Tillman noted that the modification proposed by Southern Company will complement the work underway by the Energy Services Provider Interface Task Force and will help the standards better align. The participants took a roll call vote on the proposed amendment and the amendment passed a simple majority vote. [*Vote 1*].

Next, Mr. Robinson reviewed the second modification proposed in the late comments submitted by Southern Company and stated that it is intended to reiterate that cost recovery should be factor considered by applicable regulatory authorities. Ms. Ray proposed an amendment to Ms. Lunt's motion to adopt item two of the Southern

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Company late comments regarding consideration of cost. Mr. Jesensky seconded the motion. Mr. Minneman noted that other subcommittees in the REQ have made concerted efforts to avoid including such language in other REQ standards. Ms. Stonier stated that consideration of cost is clearly an implied obligation of the applicable regulatory authorities. Mr. Precht supported Mr. Minneman and Ms. Stonier's comments and noted similar discussions held during the development of the retail choice standards. The participants took a roll call vote on the proposed amendment and the amendment failed a simple majority vote. [*Vote 2*].

Finally, Mr. Robinson reviewed the third modification proposed in the late comments submitted by Southern Company and stated that the comment is intended to remove the implication that the information cannot be made available unless it is defined and governed in the governing documents. Ms. Ray proposed an amendment to Ms. Lunt's motion to adopt item three of the Southern Company late comments modifying the definition of smart meter-based information. Mr. Jesensky seconded the motion. Mr. Minneman asked if the task force did not accept the modification during its initial review due to concerns over Glossary Subcommittee approval. Mr. Tillman responded affirmatively. Mr. Booe confirmed and noted that there was also concern over modifying the definition given the difficulty in achieving consensus on the original language. Ms. Stonier stated that she understands Southern Company's concern but would be more comfortable if the term "and" is used rather than "or" when describing the relationship of the governing documents and applicable regulatory authority. Ms. Munson supported Ms. Stonier's recommendation. Mr. Pabian proposed the following modification to the end of the definition:

> "….which may be made available pursuant to the Governing Documents consistent with any requirements of the ARA[1]"

The participants supported Mr. Pabian's suggested modification. Ms. Ray and Mr. Jesensky withdrew the previous amendment and Ms. Ray proposed an amendment to adopt item three of the Southern Company late comments as modified by the REQ EC. Mr. Jesensky seconded the amendment and the amendment passed a roll call simple majority vote. [*Vote 3*].

Mr. Precht asked if the participants would like to make any additional amendments to Ms. Lunt's original motion. No additional amendments were offered. Ms. Lunt's motion as amended passed a roll call super majority vote without opposition. [*Vote 4*].

3. Other Business

No other business was discussed.

4. Adjourn

Mr. Minneman moved to adjourn the meeting at 11:13 AM Central and Ms. Ray seconded the motion. The motion passed without opposition.

[1] "ARA" refers to Applicable Regulatory Authority, a defined term in the Retail Electric Quadrant Model Business Practices.

5. Voting Record and Attendance

NORTH AMERICAN ENERGY STANDARDS BOARD
REQ EXECUTIVE COMMITTEE
Voting Record from July 7, 2011

VOTES = V		S – indicates an affirmative vote, O – indicates a vote in opposition, A – indicates an abstention, and a blank cell indicates that the voter did not vote. The motions from which the voting results are detailed below are noted in the minutes.				
ATTENDANCE	V1	V2	V3	V4[2]		
					REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT	
Phone	S	S	S	S	Neal Allen alt. for Bill Barkas	Dominion Retail, Inc.
Phone	S	O	S	S	Jim Minneman	PPL Solutions, LLC
					Wendell Miyaji	Energy Sciences, Comverge, Inc.
Phone	S	O	S	S	Susan Munson	Electric Reliability Council of Texas
					REQ UTILITIES SEGMENT	
Phone	S	O	S	S	Phil Precht	Baltimore Gas and Electric Company
Phone	S		S	S	Patrick Eynon	Ameren Services
Phone	S	S	S	S	Judy Ray	Alabama Power Company
Phone	S	O	S	S	Michael J. Jesensky	Dominion Resources Services, Inc.
					END USER/PUBLIC AGENCIES SEGMENT	
Phone					Robin Lunt alt. for James Bradford Ramsay	National Association of Regulatory Utility Commissioners
					Annunciata E. Marino	Pennsylvania Public Utility Commission
Phone	S	O	S	S	Pam Stonier	Vermont Public Service Board

[2] Roll Call Super Majority Vote

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Voting Results for Supermajority Votes

	Votes Possible	Votes Cast	Percentage Affirmative Votes Cast	Reaching the 40% Segment Affirmative Vote Threshold?	Motion Passing
V4 – SUPERMAJORITY	REQ – 11	8 affirmative 0 abstention 0 opposed	72%	Yes	Passes Super Majority Vote

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6. Other Participants

Participant	Organization
Jonathan Booe	NAESB
Tanya Brewer	NIST
Daniel Francis	AEP
Rae McQuade	NAESB
Michael Pabian	Exelon
Cherron Rinehart	AEP
Brandon Robinson	Balch & Bingham
Veronica Thomason	NAESB
Leonard Tillman	Balch & Bingham
Jill Vaughn	Court Reporter
Tonja Wicks	Florida Power & Light
Christine Wright	Public Utility Commission of Texas

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NORTH AMERICAN ENERGY STANDARDS BOARD
2011 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS
Approved by the Board of Directors on June 23, 2011

	Item Number & Description[1]	Completion[2]	Assignment[34]
1.	Develop Technical Electronic Implementation Standards and Data Dictionaries – Book 10: Customer Enrollment, Drop and Account Information Change		
	a.. For the Distribution Company Registration Model Registration Agent Model Status: Not Started	2011	TEIS
2.	Develop NAESB Certification checklist criteria for Retail Quadrants to be used in the NAESB Certification Program. The certification checklist may address test scripts, a checklist of items to be tested, data connectivity for test scripts and EDM testing. Status: Not Started. Dependent upon publication of Version 2.0 at a minimum, but more dependent upon completion of Customer Choice efforts, expected ~~1st Q 2011~~2012 at the earliest.	~~4th Q, 2011~~2012	Ad Hoc EC Certification Group
3.	Review and develop business practices standards to Demand Response, Demand Side Management and Energy Efficiency Programs Review and develop needed model business practices for a standardized method for quantifying benefits, savings, cost avoidance and/or the reduction in energy demand and usage derived from the implementation of demand side management and energy efficiency programs. This effort will include demand side response, energy efficiency programs and metering, including the 'curtailment service provider' program. The wholesale and retail demand response work groups and the Smart Grid Standards Subcommittees should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other.		
	a. Develop glossary for business practice standards Status: Ongoing	Ongoing	Joint WEQ/REQ DSM Subcommittee
	b. Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets.[5] This includes developing business practice standards to measure and verify energy reductions for energy efficiency or a stand-alone Energy Efficiency Portfolio Standard. Status: Underway	3rd Q, 2011	Joint WEQ/REQ DSM-EE Subcommittee
	c. Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets.[6] This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard. Status: Not Started	4th Q, 2011	REQ DSM-EE Subcommittee
	d. Harmonize DSM-EE glossary with Retail Glossary Status: Ongoing	Ongoing	REQ/RGQ Glossary Subcommittee
4.	Overview of Retail Gas and Retail Electric Quadrant Procedures		
	a. Develop process flows and online navigational aids to support the procedures and to be provided as Retail orientation materials. Status: Not Started	3rd Q, 2011	BPS

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	Item Number & Description[1]	Completion[2]	Assignment[34]
5.	Additional Registration Agent Processes		
	a. Review all existing Model Business Practices to determine if there are other Registration Agent Model processes not covered, and develop a prioritized list of those processes, if any. Status: Underway	3rd Q, 2011	BPS
	b. Develop Model Business Practices and Process Flows for those Registration Agent Model processes on the prioritized list developed in (a) above, if any. Status: Underway	4th Q, 2011	BPS
	c. Develop Technical Electronic Implementation Standards and Data Dictionaries to support Model Business Practices of Book 14 – Service Requests, Disconnections and Reconnections in the registration Agent Model Status: ~~Underway~~Delayed – subcommittee inactive	~~2011~~2012	IR/TEIS
	d. Develop Technical Electronic Implementation Standards and Data Dictionaries to support any Model Business Practices developed in (b) above Status: Delayed – subcommittee inactive~~Underway~~	~~2011~~2012	IR/TEIS
6.	Supplier Certification Develop practices to register/certify new Suppliers. Status: Underway	3rd Q, 2011	BPS
7.	Supplier Marketing Practices Develop Model Business Practices providing for a "Consumer Disclosure Statement" to be presented to residential and small commercial customers describing the Supplier's service offering and related contract provisions. This statement would also identify how certain Supplier-Customer interactions are conducted. Amongst the topics to be considered for inclusion on the statement would be the following: • the most important terms of the Supplier agreement, such as the contract's term and termination fee provisions; • training and identification of Supplier marketing representatives; • protocols for Supplier in-person and telephone contacts with customers; • added measures for protecting non-English speaking customers; and • Processes for handling customer complaints and resolving disputes arising from Supplier marketing activities. Status: ~~Underway~~Completed	2nd Q, 2011	BPS

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	Item Number & Description[1]	Completion[2]	Assignment[34]
8	Develop Smart Grid Wholesale and Retail Electric Standards		
	a. Harmonize Smart Grid glossary with Retail Glossary Status: Underway	Ongoing	REQ/RGQ Glossary Subcommittee
	b. Develop standards to support PAP 10 – Standards Energy Usage Information		
	i. Develop Information Model and related business practices – Phase 2, Harmonization with CIM and SEP 2.0 Status: Not Started, pending discussions with CIM and SEP 2.0	2011	Joint WEQ/REQ PAP 10 SGS Subcommittee
	c. Develop standards to support inclusion of OpenADE requirements document into the NAESB Smart Grid standards (R10008), specifically to standardize the exchange of Energy Usage Information. Status: ~~Underway~~Completed	2nd Q, 2011	REQ PAP 10 SGS Subcommittee Energy Services Provider Interface Task Force
	d. Develop retail electric model business practices for third party access to consumer smart grid data with considerations for data privacy practices those third parties should employ (R10012) Status: ~~Underway~~Completed	2nd Q, 2011	REQ PAP 10 SGS Subcommittee Data Privacy Task Force
9.	Customer Information - Develop Model Business Practices and Process Flows to enable a Retail Customer, or a third party acting on behalf of the Retail Customer, to obtain the retail Customer's energy usage information on an on-going basis outside of a Smart Grid environment Status: Not Started, this development is tied to the development for item 8(d).	~~3rd~~-4th Q, 2011	BPS
10.	Update Existing Model Business Practices – Review and update all existing Model Business Practices, filling in any gaps that may exist and making the language consistent throughout all Books.		
	a. Book 1 – Market Participant Interactions Status: ~~Not Started~~Underway	~~2nd~~-3rd Q, 2011	BPS
	b. Book 2 – Creditworthiness Status: Not Started	~~3rd~~-4th Q, 2011	BPS
	c. Book 3 – Billing and Payments Status: Not Started	~~3rd Q, 2011~~2012	BPS
	d. Book 4 – Distribution Company – Supplier Disputes Status: Not Started	~~4th Q, 2011~~2012	BPS
	d1. Book 6 – Contracts Status: Not Started	3rd Q, 2011	BPS
	e. Book 8 – Customer Information Status: Not Started	~~4th Q, 2011~~2012	BPS
	f. Book 9 – Customer Billing and Payment Notification via Uniform Electronic Transactions Status: Not Started	2012	BPS
	g. Book 10 – Customer Enrollment, Drop, and Account Information Change	2012	BPS

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	Item Number & Description[1]	Completion[2]	Assignment[34]
	Status: Not Started		
h.	Book 11 - Customer Enrollment, Drop, and Account Information Change Using a Registration Agent	2012	BPS
	Status: Not Started		
i.	Book 12 – Customer Inquiries	2012	BPS
	Status: Not Started		
j.	Book 14 – Service Request, Disconnection and Reconnection in the Registration Agent Model	2012	BPS
	Status: Not Started		
11.	Create common interfaces and data structures necessary for enrolling DR sites into a DR program		
a.	Enrollment process model business practices development (R10002)	4th Q, 2011	REQ DSM-EE Subcommittee
	Status: Underway		

Program of Standards Maintenance & Fully Staffed Standards Work[7]

Business Practice Requests	Ongoing	Assigned by the EC
Information Requirements and Technical Mapping of Business Practices	Ongoing	Assigned by the EC
Ongoing Interpretations for Clarifying Language Ambiguities	Ongoing	Assigned by the EC
Ongoing Maintenance of Code Values and Other Technical Matters	Ongoing	Assigned by the EC
Ongoing Development and Maintenance of Definitions	Ongoing	Glossary
Ongoing Development and Maintenance of Model Business Practices	Ongoing	BPS

Provisional Activities

Joint Effort:

Modify TPA as necessary.

Review security standards as may be deemed necessary, such as Public Key Infrastructure (PKI).

Review and update the technical implementation of Book 3 – Billing and Payment.

Develop XML transactions to support customer choice programs.

Retail Electric Quadrant Effort Only:

Retail Meter Data Validation, Editing & Estimating: Develop procedures for ensuring the integrity and validity of retail customer metering data that is needed by utilities and suppliers for billing, etc. Issues related to unbundled or competitive metering are not to be considered.

Settlement Process: Reconcile energy schedules and energy delivered by suppliers within a given market. Note: will need to be coordinated with the WEQ for the REQ.

Develop business practice standards for cap and trade programs for green house gas.

Retail Gas Quadrant Effort Only:

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Item Number & Description[1]	Completion[2]	Assignment[34]
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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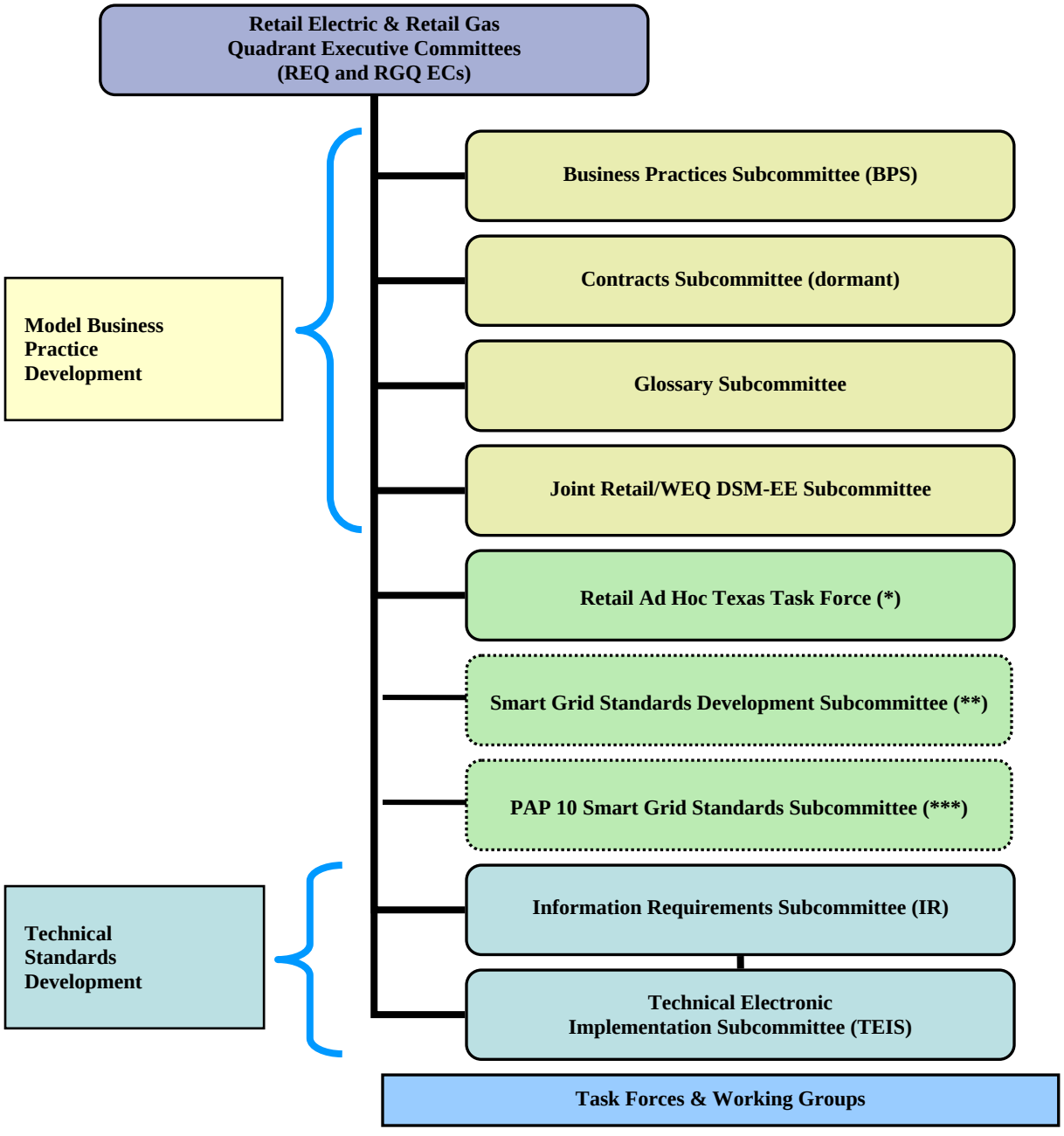

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NAESB Retail Subcommittee Leadership: [8]

Executive Committee: Mike Novak, Chair (RGQ), Phil Precht, Chair (REQ)
Business Practices Subcommittee: Phil Precht (REQ), Dan Jones (RGQ)
Information Requirements Subcommittee: Jennifer Teel (REQ)
Technical Electronic Implementation Subcommittee: Julie Compton-Pellizzi (RGQ)
Glossary Subcommittee: Patrick Eynon (REQ)
DSM-EE Subcommittee: Ruth Kiselewich (Retail), Roy True (WEQ), and Paul Wattles (WEQ)
Retail Ad Hoc Texas Task Force: Debbie McKeever (REQ) and Susan Munson (REQ)

(*) The Retail Ad Hoc Texas Task Force may draft MBPs, process flows, implementation guides and technical standards supportive of the Registration Agent. The group is chaired by Debbie McKeever and Susan Munson.

(**) The Smart Grid Standards Subcommittee is a joint group of the retail electric and wholesale electric quadrants with other standards development groups such as OASIS, CalConnect, FIX and UCAIug, and includes other groups. Direction may be given from NIST, DoE or FERC and the group reports jointly to the NAESB Board Smart Grid Strategic Steering Committee and the REQ EC. The group is chaired by Wayne Longcore, Joe Zhou and Robert Burke.

(***) The PAP 10 Smart Grid Standards Subcommittee is a joint group of the retail electric and wholesale electric quadrants with other standards development groups such as OASIS, UCAIug, OpenADE, ZigBee, ASHRAE, EIS Alliance, NARUC and includes other groups. Direction may be given from NIST, DoE or FERC and the group reports jointly to the NAESB Board Smart Grid Strategic Steering Committee and the REQ EC. The group is chaired by Phil Precht, Cathy Wesley, Sharon Dinges, David Kaufman, Brad Ramsay, Tobin Richardson and Ed Koch.
The PAP 10 Smart Grid Standards Subcommittee has created a Energy Services Providers Interface Task Force led by Dave Mollerstuen of Tendril, Steve Van Ausdall of Xtensible and Chad Maglaque of Xtreme Consulting Group to address the OpenADE request R10008.

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Retail 2011 Annual Plan End Notes:

1 As outlined in the NAESB Bylaws, the REQ and RGQ will also address requests submitted by members and assigned to the REQ and RGQ through the Triage Process.

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

[3] The assignments are abbreviated. The abbreviations and committee structure can be found at the end of the annual plan document.

[4] The DSM-EE subcommittee has split into several separate groups to support concurrent development of separate standards sets.

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

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

[7] This work is considered routine maintenance and thus the items are not separately numbered. The REQ and RGQ ECs will assign maintenance efforts on a request-by-request basis.

[8] The ECs and the subcommittees can create task forces and working groups to support their development activities for development of model business practices and technical standards.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

Requesters: Joint REQ/RGQ Business Practices Subcommittee
Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

1. RECOMMENDED ACTION:

___Accept as requested
_X__Accept as modified below
___Decline

EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

_X__Change to Existing Practice
___Status Quo

2. TYPE OF DEVELOPMENT/MAINTENANCE

Per Request:	**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 Joint Retail Electric (REQ) and Retail Gas (RGQ) Quadrants' Business Practices Subcommittees (BPS) submit this Recommendation in response to 2011 Retail Annual Plan Item No. 7 – Supplier Marketing Practices. These Model Business Practices detail the obligations of Suppliers and their Marketing Agents in conducting Door-to-Door Marketing, Telemarketing, Internet Marketing, and Direct Mail Marketing activities. As explained in the Executive Summary, multi-level marketing is not specifically addressed in these Model Business Practices.

RECOMMENDED STANDARDS:

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

Requesters: Joint REQ/RGQ Business Practices Subcommittee
Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

Supplier Marketing Practices

Executive Summary

This document presents the Model Business Practices for Supplier Marketing Practices. A competitive energy market should provide a positive experience for all Retail Customers. Suppliers are expected to comply with all applicable rules and regulations of the Applicable Regulatory Authority and Distribution Company so that their sales and marketing activities do not call into question the fairness and integrity of the competitive market. Anything that damages the reputation of the competitive market harms not only Retail Customers, but also all Market Participants.

Supplier Marketing Practices encompass a broad variety of interactions among Retail Customers, Distribution Companies and other Market Participants, including, but not limited to, Door-to-Door Marketing, Telemarketing, Internet Marketing and Direct Mail Marketing. In addition to these areas of marketing, these Model Business Practices detail hiring practices and training, practices in the event of disputes, and disclosure statements. In a business environment where best practices are voluntary, Model Business Practices should be applied within the context of regulatory requirements and agreements.

Multi-level marketing is a marketing strategy in which the sales force is compensated not only for the sales they personally generate, but also for the sales of others they recruit, creating a downline of distributors and a hierarchy of multiple levels of compensation. Other terms for multi-level marketing include, but are not limited to, network marketing, pyramid selling, and referral marketing. Most commonly, the salespeople are expected to sell products directly to consumers by means of relationship referrals and word of mouth marketing. Multi-level marketing in competitive energy markets is still in its infancy and a very controversial issue. This marketing technique may employ any of the marketing methods described in these Model Business Practices. Therefore, multi-level marketing is not specifically addressed in these Model Business Practices. Additional Model Business Practices specific to multi-level marketing may need to be developed as this marketing technique becomes more prevalent in competitive energy markets.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

Requesters: Joint REQ/RGQ Business Practices Subcommittee
Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

Introduction

The North American Energy Standards Board (NAESB) is a voluntary non-profit organization comprised of members from all aspects of the natural gas and electric industries. Within NAESB, the Retail Electric Quadrant (REQ) and the Retail Gas Quadrant (RGQ) focus on issues impacting the retail sale of energy to Retail Customers. REQ / RGQ Model Business Practices are intended to provide guidance to Distribution Companies, Suppliers, and other Market Participants involved in providing energy service to Retail Customers. The focus of these Model Business Practices is Supplier Marketing Practices.

These Model Business Practices are voluntary and do not address policy issues that are the subject of state legislation or regulatory decisions. These Model Business Practices have been adopted with the realization that as the industry evolves, additional and amended Model Business Practices may be necessary. Any industry participant seeking additional or amended Model Business Practices (including principles, definitions, data elements, process descriptions, and technical implementation instructions) should submit a request to the NAESB office, detailing the change, so that the appropriate process may take place to amend the Model Business Practice.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

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Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

Business Processes and Practices

RXQ.23 Overview

RXQ.23.1 Principles

RXQ.23.1.1 The processes for Supplier Marketing Practices should be efficient to minimize the time and effort needed to accomplish these operational details.

RXQ.23.1.2 The processes for Supplier Marketing Practices should be consistent with the requirements set forth by the Applicable Regulatory Authority and applicable laws.

RXQ.23.1.3 A contract or agreement between Market Participants may establish different processes, timeframes, or operational requirements. Any conflict between these recommended processes and an applicable contract should be resolved according to the provisions of the contract.

RXQ.23.1.4 The processes for Supplier Marketing Practices should minimize the occurrence of unauthorized activities in the marketplace.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

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Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

RXQ.23.2 Definitions

RXQ.23.2.A Business Definitions

RXQ.0.2.01 **Applicable Regulatory Authority**: The state regulatory agency or other local governing body that provides oversight, policy guidance, and direction to any parties involved in the process of providing energy to Retail Customers through regulations and orders.

RXQ.0.2.XX **Cramming:** The addition of unauthorized charges to a Retail Customer's bill.

RXQ.0.2.XX **Direct Mail Marketing**: The marketing of competitive energy or other specific energy-related products and services to Retail Customers where the Supplier or its Marketing Agent uses postal delivery to solicit the Retail Customer.

RXQ.0.2.17 **Distribution Company**: A regulated Entity which provides distribution services and may provide energy and/or transmission / transportation services in a given area.

RGQ.0.2.xx **Door-to-Door Marketing**: The marketing of competitive energy or other specific energy-related products and services to Retail Customers where the Supplier or its Marketing Agent solicits the Retail Customer in person at the residence or place of business of the Retail Customer without an appointment.

RXQ.0.2.100 **Enrollment**: The process of initiating a Retail Customer's participation in specific energy-related products and services offered by a Market Participant. In competitive energy markets it includes designating a Market Participant that has the responsibility for providing energy to a Retail Customer.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

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Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

RXQ.0.2.22 **Governing Documents**: Documents that determine the interactions among parties, including but not limited to: applicable law, regulatory documents (e.g., tariffs, rules, regulations), contractual agreements, Distribution Company Operational Manuals, and other relevant models and operational procedures.

RXQ.0.2.XX **Internet Marketing**: The marketing of competitive energy or other specific energy-related products and services to Retail Customers where the Supplier or its Marketing Agent uses a website or email to solicit the Retail Customer.

RXQ.0.2.27 **Market Participant**: A Distribution Company, Supplier, Registration Agent, settlement agent, meter reading Entity or other party engaged in the process of providing competitive retail energy or other specific energy-related products and services to Retail Customers.

RXQ.0.2.xx **Marketing Agent:** Any Entity, including its employees, authorized to conduct marketing or sales activity, or both, on behalf of a licensed Supplier or Suppliers. Unless separately licensed by the Applicable Regulatory Authority, an Entity such as a broker or aggregator is considered a Marketing Agent.

RXQ.0.2.208 **Model Business Practices:** Electric and gas industry processes and procedures developed by interested parties representing the NAESB Retail Gas and Electric Quadrants' segments and ratified by the NAESB Retail Gas and Electric Quadrants' members.

RXQ.0.2.112 **Rescission**: The process whereby a Retail Customer causes a Pending Enrollment or Pending Drop to be canceled.

RXQ.0.2.16 **Retail Customer**: Any Entity that takes gas and/or electric service for its own consumption.

RXQ.0.2.212 **Slamming:** Enrollment without authorization of the Retail Customer.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

Requesters: Joint REQ/RGQ Business Practices Subcommittee
Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

RXQ.0.2.39 **Supplier**: An Entity engaged in the competitive sale of energy to Retail Customers. When separately licensed by the Applicable Regulatory Authority, an Entity such as a broker or aggregator is considered a Supplier.

RXQ.0.2.XX **Telemarketing**: The marketing of competitive energy or other specific energy-related products and services to Retail Customers where the Supplier or its Marketing Agent uses a telephone system to solicit the Retail Customer.

RXQ.0.2.42 **Uniform Electronic Transaction**: Standard data arrangements for trading information, making business requests and exchanging other information, encompassing a number of electronic media and utilizing specified transport protocols.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

Requesters: Joint REQ/RGQ Business Practices Subcommittee
Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

RXQ.23.3 Model Business Practices

RXQ.23.3.1 General Practices for Supplier Marketing Practices

RXQ.23.3.1.1 A Supplier should have policies in place to prevent any practices that may appear to be overly intimidating or aggressive when dealing with Retail Customers.

RXQ.23.3.1.2 A Supplier should have policies in place to prevent Slamming and Cramming by its employees or its Marketing Agents. Such policies should be available for auditing by the Applicable Regulatory Authority, if required.

RXQ.23.3.1.3 A Supplier or Marketing Agent should act in good faith to ensure the Retail Customer's comprehension of the material presented. In Door-to-Door Marketing and Telemarketing, the Supplier or Marketing Agent should immediately cease solicitation efforts upon recognizing the Retail Customer's inability to understand the terms and conditions of the proposed agreement.

RXQ.23.3.1.3.1 When the Retail Customer's English language skills are insufficient to allow the Retail Customer to understand and respond to the information conveyed, the Supplier or Marketing Agent should find an individual who is fluent in the Retail Customer's language and can accurately communicate the marketing information before continuing the marketing activity. The marketing activity should be immediately terminated until such an individual can be found.

RXQ.23.3.1.4 A Supplier should be responsible for any fraudulent, deceptive or unlawful acts performed on its behalf by its Marketing Agent(s).

RXQ.23.3.1.5 In Door-to-Door Marketing and Telemarketing where a Supplier develops internal discipline policies for its Marketing Agent(s), it should be aware of the Applicable Regulatory Authority's policies concerning Slamming and related Retail Customer Enrollment issues.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Joint Retail Electric and Retail Gas Quadrants

Requesters: Joint REQ/RGQ Business Practices Subcommittee
Request No.: 2011 Retail Annual Plan Item No. 7
Request Title: Supplier Marketing Practices

RXQ.23.3.1.6 A Supplier or its Marketing Agent should not use bills, mailings, marketing materials or consumer education materials that contain misleading or false statements.

RXQ.23.3.1.7 A Supplier or its Marketing Agent should not use bills, mailings, marketing materials or consumer education materials of another Supplier, Distribution Company, or Applicable Regulatory Authority in any way that infers a relationship that does not exist.

RXQ.23.3.1.8 The Supplier or Marketing Agent should immediately disclose that it is not working for and is, in fact, independent of the Distribution Company.

RXQ.23.3.1.9 When the Supplier's trade name is similar to that of its affiliated Distribution Company, the Supplier or the Marketing Agent should disclose to the Retail Customer that the Supplier is not the same company as the Distribution Company, and that its prices are not regulated by the Applicable Regulatory Authority.

RXQ.23.3.1.10 The disclosure requirements in RXQ.23.3.1.8 and RXQ.23.3.1.9 should be fulfilled by written material provided by the Supplier or Marketing Agent. A detailed listing of Supplier disclosure statement requirements may be found in RXQ.23.3.8.

RXQ.23.3.1.11 When a Supplier affiliated with the Distribution Company, or the Supplier's Marketing Agent, advertises or communicates through radio, television, or other electronic or print medium, and its name or logo is similar to that of the Distribution Company's name or logo, the Supplier or Marketing Agent should include in any communication a disclaimer that the Supplier is not the same company as the Distribution Company.

RXQ.23.3.1.12 When a Supplier or its Marketing Agent advertises or communicates through radio, television, or other electronic

or print medium, the Supplier or its Marketing Agent should provide a toll-free telephone number or address that a Retail Customer may call or write to request detailed information regarding the price, terms, conditions, limitations, restrictions and, if applicable, environmental characteristics of the service offered.

RXQ.23.3.1.13 A Supplier or its Marketing Agent should make Retail Customers aware of all charges and fees that will appear on the Retail Customers bill if an offer is accepted to ensure that the Retail Customer can accurately estimate the savings resulting from the offer.

RXQ.23.3.1.14 A Supplier or Marketing Agent should not discriminate in the provision of energy as to availability and terms of service based on race, color, religion, national origin, sex, marital status, age, or receipt of public assistance income.

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Requesters: Joint REQ/RGQ Business Practices Subcommittee
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RXQ.23.3.2 Hiring and Training Practices for Individuals Engaged in Marketing Activities

RXQ.23.3.2.1 **Background Checks:** The Supplier should ensure that criminal background checks and screenings are conducted to determine that an individual engaged in any marketing activities is unlikely to compromise the identity of a Retail Customer or pose a threat to the health and safety of the public.

RXQ.23.3.2.1.1 Suppliers should exercise good judgment in developing policies and qualifications for their employees engaged in marketing activities.

RXQ.23.3.2.1.2 When the Supplier contracts with a Marketing Agent to perform marketing activities, the Supplier should confirm that the Marketing Agent has performed criminal background checks and appropriate screenings of its employees in accordance with the policies and qualification requirements of the Supplier.

RXQ.23.3.2.1.3 Suppliers should ensure that background checks for both their own employees engaged in marketing activities and any Marketing Agents are repeated periodically.

RXQ.23.3.2.2 **Training:** Suppliers should ensure and maintain appropriate documentation indicating that the training of both their own employees engaged in marketing activities, and any Marketing Agents, includes knowledge of:

- Applicable laws and regulations governing marketing and consumer protection;
- An understanding of responsible and ethical sales practices;
- The Supplier's products and services;
- The Supplier's rates, rate structures, and payment options;
- The Retail Customer's right to rescind and cancel contracts, if applicable;

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- The applicability of an early termination fee for contract cancellation, if applicable;
- An adherence to Supplier-developed scripts;
- The proper completion of contract and Enrollment documents;
- The Supplier's disclosure statement;
- Relevant terms and definitions;
- How Retail Customers may contact the Supplier to obtain information about billing, and;
- How Retail Customers may initiate disputes or submit complaints.

RXQ.23.3.2.2.1 Suppliers should ensure that training for both their own employees engaged in marketing activities and any Marketing Agents are repeated periodically.

RXQ.23.3.2.2.2 Training documents along with records concerning training activities and completion of the training by both their own employees engaged in marketing activities, and any Marketing Agents should be available to the Applicable Regulatory Authority upon request.

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RXQ.23.3.3 Specific Practices for Door-to-Door Marketing

RXQ.23.3.3.1 In the absence of local ordinances or regulation, the Supplier should ensure that Door-to-Door Marketing is limited to discrete periods during reasonable hours, for example, between 9:00 a.m. and 7:00 p.m. local time. Seasonal variations, i.e., extra hours during summer evenings, or fewer hours during winter evenings, should be considered. The discrete hours should be set to begin no earlier than reasonable business hours and to end no later than dusk in order to ensure the safety of the Retail Customer.

RXQ.23.3.3.2 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf should immediately present valid identification issued by the Supplier.

RXQ.23.3.3.2.1 The identification should be visible at all times and should accurately identify the Supplier, including its legitimate name and logo.

RXQ.23.3.3.2.2 The identification should display a photograph of the individual performing Door-to-Door Marketing, the full name of the individual, and the individual's employer in reasonably-sized type.

RXQ.23.3.3.3 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf should immediately offer a business card or other material that contains the Marketing Agent's organizational identity, if applicable, the Supplier's name, and the Supplier's contact information.

RXQ.23.3.3.4 The Supplier should ensure that, if the name of the individual performing Door-to-Door Marketing on the Supplier's behalf is not pre-printed on sales or marketing material, it should be hand-printed and legible.

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RXQ.23.3.3.5 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf should not dress in a uniform or wear any apparel that contains any branding elements, including a logo, that are similar to that of the Distribution Company.

RXQ.23.3.3.6 As a courtesy, the Supplier should ensure that the local municipal officials and the Distribution Company are notified of the locations and schedule of any Door-to-Door Marketing.

RXQ.23.3.3.7 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf comply with all relevant local ordinances, which may require that a permit be obtained.

RXQ.23.3.3.8 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf only discuss their offer with an individual authorized to make decisions regarding the Retail Customer's account.

RXQ.23.3.3.9 All Door-to-Door Marketing that results in a Retail Customer agreeing to take service from a Supplier should be followed by an independent verification process in jurisdictions where required.

The verification should be conducted by date and time-stamped telephone audio recording, but should not be conducted while any door-to-door representative is physically on or in the Retail Customer's premises.

The verification should take place no less than one quarter hour after the door-to-door representative has vacated the Retail Customer's premises and include statements by the person receiving the call that he or she: 1) is aware that the call is being recorded; 2) is authorized to make decisions regarding the Retail Customer's account; 3) understands the material terms and conditions of the contract; and, 4) agrees to be bound by the contract.

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RXQ.23.3.3.10 In the event the Door-to-Door Marketing does not immediately result in a Retail Customer agreeing to take service from a Supplier, the door-to-door representative may leave the terms and conditions of the offer and the customer may enroll using one of the methods enumerated in the materials. Such methods may include, but are not limited to, return mail, toll-free telephone, and internet.

RXQ.23.3.3.11 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf should immediately leave the premises of a Retail Customer when requested to do so by the Retail Customer or the owner/occupant of the premises.

RXQ.23.3.3.12 The Supplier should ensure that individuals performing Door-to-Door Marketing on its behalf should immediately comply with the Retail Customers request to be exempted from further door-to-door marketing activities and should annotate their databases to reflect this request. This does not apply to the eligible Retail Customer lists maintained and provided by the Distribution Company.

RXQ.23.3.3.13 The Supplier should periodically evaluate the performance of its internal employees or Marketing Agents conducting Door-to-Door Marketing on its behalf to ensure ongoing compliance with all marketing policies and procedures.

RXQ.23.3.3.14 Where Door-to-Door Marketing results in a Retail Customer agreeing to take service from a Supplier, the Supplier or its Marketing Agent should provide the disclosure statements from RXQ.23.3.8.

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RXQ.23.3.4 Specific Practices for Telemarketing

RXQ.23.3.4.1 In the absence of local ordinances or regulation, the Supplier should ensure that Telemarketing is limited to discrete periods during reasonable hours, for example, between 9:00 a.m. and 9:00 p.m. local time.

RXQ.23.3.4.2 Suppliers should ensure that individuals who contact Retail Customers for the purpose of marketing or selling a product or service offered by the Supplier provide their name, the Marketing Agent's name, if applicable, and the name of the Supplier on whose behalf the call is being made.

RXQ.23.3.4.3 The Supplier should ensure that individuals performing Telemarketing on its behalf provide their identification number upon request.

RXQ.23.3.4.4 The Supplier should ensure that individuals performing Telemarketing on its behalf comply with the federal "Do Not Call" law, Telemarketing and Consumer Fraud and Abuse Prevention Act, 15 U.S.C. § 6101.

RXQ.23.3.4.5 The Supplier should ensure that individuals performing Telemarketing on its behalf comply with any applicable state law regarding telemarketing and consumer protection.

RXQ.23.3.4.6 If Telemarketing results in a Retail Customer agreeing to contract with a Supplier for service, the Supplier should ensure that individuals performing Telemarketing on its behalf make a date- and time-stamped audio recording of the call.

The audio recording should include statements by the person receiving the call that he or she: 1) is aware that the call is being recorded; 2) is authorized to make decisions regarding the Retail Customer's account; 3) understands the material terms and conditions of the contract; and, 4) agrees to be bound by the contract.

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The Supplier should retain such audio recording for a period not less than twenty-four months beyond the term of the contract.

RXQ.23.3.4.7 All Telemarketing that results in a Retail Customer agreeing to contract with a Supplier for service should include an independent verification process. The verification should be conducted by immediately transferring the call to an independent third party who should make a separate date- and time-stamped audio recording of the call.

The audio recording should include statements by the person receiving the call that he or she: 1) is aware that the call is being recorded; 2) is authorized to make decisions regarding the Retail Customer's account; 3) understands the material terms and conditions of the contract; and, 4) agrees to be bound by the contract.

RXQ.23.3.4.8 Where Telemarketing results in a Retail Customer agreeing to take service from a Supplier, the Supplier or its Marketing Agent should provide the disclosure statements from RXQ.23.3.8.

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RXQ.23.3.5 Specific Practices for Internet Marketing

RXQ.23.3.5.1 To ensure that the individual responding to the Internet Marketing is authorized to enroll an account, the Internet Marketing should contain a prompt requiring the individual to input, at a minimum, two of the following pieces of information: the account number, the name of the account holder or service address.

RXQ.23.3.5.2 The Supplier's Internet Marketing should include, along with the full contract for service, the disclosure statements from RXQ.23.3.8.

RXQ.23.3.5.2.1 The Supplier's Internet Marketing should contain a prompt requiring the Retail Customer to acknowledge that they have read and understand the disclosures required in RXQ.23.3.8.

RXQ.23.3.5.3 The Supplier's Internet Marketing should include a conspicuous prompt for the Retail Customer to print or download a copy of the contract at any time during the solicitation process.

RXQ.23.3.5.4 An Internet Marketing contract should be identified by a version number to ensure the ability to verify the particular contract to which the Retail Customer has agreed.

RXQ.23.3.5.5 The Supplier or its Marketing Agent should update the Internet Marketing contract version number any time a change is made to the Internet Marketing contract offered to potential buyers.

RXQ.23.3.5.6 Throughout the duration of the Internet Marketing contract, the Supplier or its Marketing Agent should make available to the Retail Customer an electronic copy, suitable for printing or downloading, of the Internet Marketing contract version agreed to by the Retail Customer.

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RXQ.23.3.5.7 The Supplier's Internet Marketing should contain a prompt requiring the Retail Customer to either agree to execute the Internet Marketing contract or cancel the transaction.

RXQ.23.3.5.8 Upon receiving the Retail Customer's agreement, the Supplier's Internet Marketing should automatically record and display the date and time the Retail Customer gave their agreement and should reply with an affirmative statement that the Retail Customer will be enrolled with the Supplier and provide a unique confirmation number.

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RXQ.23.3.6 Specific Practices for Direct Mail Marketing

RXQ.23.3.6.1 Direct Mail Marketing solicitation should include the disclosure statements contained in RXQ.23.3.8.

RXQ.23.3.6.2 When a Supplier is an affiliate of a Distribution Company, its Direct Mail Marketing solicitation should prominently display the statements contained in RXQ.23.3.1.9.

RXQ.23.3.6.3 Direct Mail Marketing solicitation should provide a toll-free telephone number, internet address and/or postal address that a Retail Customer may call or write to request detailed information regarding the price, terms, conditions, limitations, restrictions and, if applicable, environmental characteristics of the service offered.

RXQ.23.3.6.4 The Supplier or its Marketing Agent should notify the Distribution Company when Direct Mail Marketing solicitation is being distributed in its service territory. As a courtesy, the Supplier or its Marketing Agent may provide copies of the Direct-mail marketing literature to the Distribution Company.

RXQ.23.3.6.5 Direct Mail Marketing solicitation should provide clear instructions on how the Retail Customer should respond when accepting the offer. Acceptable methods should be identified and include, but are not limited to, a signed return stub or tear off by postal service, a toll free telephone number, or internet address.

RXQ.23.3.6.6 If a Retail Customer responds by telephone to a Direct Mail Marketing solicitation the verification process in RXQ.23.3.4.6 should be followed.

RXQ.23.3.6.7 If a Retail Customer responds by internet to a Direct Mail Marketing solicitation the verification process in RXQ.23.3.5.8 should be followed.

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RXQ.23.3.7 Practices to Minimize Retail Customer Inquiries

RXQ.23.3.7.1 All Retail Customer inquiries should be resolved as detailed in RXQ.12. All Retail Customer disputes should be resolved in accordance with the Applicable Regulatory Authority's requirements.

RXQ.23.3.7.2 A Supplier or its Marketing Agent who anticipates that Retail Customer Inquiries may be generated to the Distribution Company and/or Applicable Regulatory Authority by the Supplier's or its Marketing Agent's marketing activity should notify the Distribution Company and, when requested, the Applicable Regulatory Authority no later than the morning of the day the marketing activity occurs.

RXQ.23.3.7.2.1 The notification to the Applicable Regulatory Authority should include general, non-proprietary information regarding the extent of the marketing effort, for what period of time, and a description of the geographical area involved.

RXQ.23.3.7.2.2 The Supplier should notify the Distribution Company when the Applicable Regulatory Authority has been made aware of the marketing activity.

RXQ.23.3.7.23 The Distribution Company should use the information provided by the Supplier solely for the purpose of informing its customer service representatives of marketing activities occurring in its service territory so that they may knowledgably address Retail Customer Inquiries concerning such activity.

RXQ.23.3.7.2.4 Where possible, the Supplier should provide copies of any marketing literature to the Distribution Company and, when requested, the Applicable Regulatory Authority.

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RXQ.23.3.8 Supplier Disclosure Statements

RXQ.23.3.8.1 When the Supplier or its Marketing Agent solicits the Retail Customer, the Supplier should provide the Retail Customer with a disclosure statement. Whenever possible, the disclosure statement should be written. The format of the disclosure statement, whether written or verbal, should be consistent with the Applicable Regulatory Authority's requirements, as appropriate.

RXQ.23.3.8.2 If the disclosure statement is provided verbally during solicitation, the Supplier should, within one business day, send the Retail Customer a written copy of the disclosure statement.

RXQ.23.3.8.3 The Supplier's disclosure statement should include, but is not limited to, the following information:

- The Supplier's name;
- The Supplier's website;
- The Supplier's telephone numbers for inquiries, verification and complaints
- The service(s) that will be provided;
- A statement that the Supplier is an independent seller of gas, electricity and/or energy service, licensed by the Applicable Regulatory Authority;
- A statement that the Supplier and its Marketing Agent is not representing or acting on behalf of the Distribution Company, governmental bodies, or consumer groups;
- The price per unit of energy, consistent with the Distribution Company's billing format, exclusive of any state or local taxes (See RXQ.23.3.8.4 and RXQ.23.3.8.5);
- The length of the contract term;
- An approximate service commencement date;
- Any Rescission period and the process for rescinding;
- The contract termination date;
- Any fees for Retail Customer cancellation prior to such date;

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- Method for Retail Customer cancellation prior to such date;
- Any material limitations, conditions, or exclusions;
- Any other fees or costs to the Retail Customer;
- If applicable, whether the Supplier will perform a credit check and require a deposit, including the amount;
- Who will bill for the Supplier's service(s);
- The Supplier's generation resource mix (environmental disclosure), if appropriate;
- The method whereby the Retail Customer will be notified of changes to the material terms and conditions of the contract, and;
- Other relevant or required disclosures, as required by the Applicable Regulatory Authority

RXQ.23.3.8.4 If, under Dual Billing, the unit of measure is different than the Distribution Company's billing format, the disclosure statement should also include the applicable conversion factor, the method of determining the conversion factor or the process for obtaining the conversion factor.

RXQ.23.3.8.5 If the price per unit of energy is a variable price, the disclosure statement should also include a clear and understandable explanation of the factors that will cause the price to vary (including any related indices) and how often the price can change.

RXQ.23.3.8.6 The disclosure statement should inform the Retail Customer of any laws, regulations, or policies that govern the cancellation or rescission of energy supply contracts.

RXQ.23.4 Models (*Reserved)*

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4. SUPPORTING DOCUMENTATION

a. Description of Request:

2011 Retail Annual Plan Item No. 7 – Supplier Marketing Practices:

Develop Model Business Practices providing for a "Consumer Disclosure Statement" to be presented to residential and small commercial customers describing the Supplier's service offering and related contract provisions. This statement would also identify how certain Supplier-Customer interactions are conducted.

Amongst the topics to be considered for inclusion on the statement would be the following:

- *the most important terms of the Supplier agreement, such as the contract's term and termination fee provisions;*
- *training and identification of Supplier marketing representatives;*
- *protocols for Supplier in-person and telephone contacts with customers;*
- *added measures for protecting non-English speaking customers; and*
- *Processes for handling customer complaints and resolving disputes arising from Supplier marketing activities.*

b. Description of Recommendation:

These Model Business Practices detail the obligations of Suppliers and their Marketing Agents in conducting Door-to-Door Marketing, Telemarketing, Internet Marketing, and Direct Mail Marketing activities. As explained in the Executive Summary, multi-level marketing is not specifically addresseeed in these Model Business Practices.

c. Business Purpose:

See above

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

These Model Business Practices were discussed by the Joint REQ / RGQ BPS during the following meetings and conference calls:

October 25 – 26, 2010	Face-to-Face Meeting
December 3, 2010	Conference Call
January 31 – February 1, 2011	Face-to-Face Meeting
March 22, 2011	Conference Call
May 2 – 3, 2011	Face-to-Face Meeting
June 6, 2011	Conference Call

The minutes of all meetings and conference calls are posted on the NAESB REQ and RGQ BPS web pages.

On its June 6, 2011 Joint REQ / RGQ BPS conference call, these Model Business Practices were voted out of Subcommittee by a vote of 9 In Favor, 0 Opposed, and 0 Absentions.

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

via email and posting

TO: NAESB Retail Electric and Gas (Retail) Quadrant Members and Interested Industry Participants
FROM: James Culliton, Staff Attorney
RE: Request for Formal Comments
DATE: July 13, 2011

An industry comment period begins today, July 13, 2011 and ends at the close of business on August 12, 2011 for the following Retail recommendation that is posted on the NAESB web site:

Recommendation:

2011 Retail Annual Plan Item No. 7 - Supplier Marketing Practices

Develop Model Business Practices providing for a "Consumer Disclosure Statement" to be presented to residential and small commercial customers describing the Supplier's service offering and related contract provisions. This statement would also identify how certain Supplier-Customer interactions are conducted.

Amongst the topics to be considered for inclusion on the statement would be the following:

- the most important terms of the Supplier agreement, such as the contract's term and termination fee provisions;
- training and identification of Supplier marketing representatives;
- protocols for Supplier in-person and telephone contacts with customers;
- added measures for protecting non-English speaking customers; and
- Processes for handling customer complaints and resolving disputes arising from Supplier marketing activities.

Recommendation: http://www.naesb.org/pdf4/retail_2011_ap_7_rec.doc

All interested parties, regardless of membership status within NAESB, are eligible to submit comments for consideration. The Retail Executive Committee will review the recommendation and comments during the next scheduled meeting following the end of the comment period and consider the recommendation for vote. This meeting is open and we encourage those who submit comments to attend.

All comments received by the NAESB office by end of business on August 12, 2011 will be posted on the Request and Standards Activity Applicable to Retail page: http://naesb.org/retail_request.asp and forwarded to the Retail Executive Committee members for their consideration. If you have difficulty downloading the recommendation, please call the NAESB office at (713) 356-0060.

Best Regards,

James Culliton

cc: Rae McQuade, President

COMMENTS OF DOMINION RETAIL, INC.

ON THE

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

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- **RXQ.23.3.6 Specific Practices for Direct Mail Marketing (page 19)**

RXQ.23.3.6.6 " If a Retail Customer responds by telephone to a Direct Mail Marketing solicitation the verification process in RXQ.23.3.5.8 should be followed."

RECOMMENDED NEW LANGUAGE: "If a Retail customer responds by telephone to a Direct Mail Marketing solicitation, or if the Retail Customer contacts the Supplier unsolicited, the verification process in RXQ.23.3.5.8 should be followed."

DISCUSSION: There are instances when customers contact the Supplier unsolicited because they may have heard via friends or other sources about a Supplier offering and would like to enroll with that Supplier. It would seem appropriate that the same verification process should be followed.

- **RXQ.23.3.8 Supplier Disclosure Statements (pages 22-23)**

RXQ.23.3.8.3 "The Supplier's disclosure statement should include, but is not limited to, the following information:

- The Supplier's name;
- The Supplier's website;

- The Supplier's telephone numbers for inquiries, verification and complaints
- The service(s) that will be provided;
- A statement that the Supplier is an independent seller of gas, electricity and/or energy service, licensed by the Applicable Regulatory Authority;
- A statement that the Supplier and its Marketing Agent is not representing or acting on behalf of the Distribution Company, governmental bodies, or consumer groups;
- The price per unit of energy, consistent with the Distribution Company's billing format, exclusive of any state or local taxes (See RXQ.23.3.8.4 and RXQ.23.3.8.5);
- The length of the contract term;
- An approximate service commencement date;
- Any Rescission period and the process for rescinding;
- The contract termination date;
- Any fees for Retail Customer cancellation prior to such date;
- Method for Retail Customer cancellation prior to such date;
- Any material limitations, conditions, or exclusions;
- Any other fees or costs to the Retail Customer;
- If applicable, whether the Supplier will perform a credit check and require a deposit, including the amount;
- Who will bill for the Supplier's service(s);
- The Supplier's generation resource mix (environmental disclosure), if appropriate;
- The method whereby the Retail Customer will be notified of changes to the material terms and conditions of the contract, and;
- Other relevant or required disclosures, as required by the Applicable Regulatory Authority."

RECOMMENDED NEW LANGUAGE: "The supplier's disclosure statement should include the following information:

- *Price;*
- *Fixed or variable and, if variable, how the price is determined;*

- *Length of the Agreement and end date;*
- *Process Customer may use to rescind the Agreement without penalty;*
- *Amount of early termination fee and method of calculation;*
- *Amount of late payment fee and method of calculation;*
- *Renewal;*
- *Conditions under which savings to the customer are guaranteed."*

DISCUSSION: Disclosure statements originated, most recently, with the adoption of the so-called "Shumer Box" that appears with credit card application forms. Rep. Charles Shumer of New York was responsible for amending the Truth-in-Lending Act in 2000 that required credit card companies to disclose fees and credit card interest rates in their promotional material in a very easy-to-read fashion so that consumers could easily determine what their costs were. The "Shumer Box" is a table with two columns that summarizes the key features of the cost of a credit card. Typically there are 5-10 key points listed on the table.

The New York Public Service Commission (PSC) in its Uniform Business Practices (UBP) has, for a number of years, also required retail energy marketers, or energy service companies ("ESCOs" as they are known in NY), to also include a customer disclosure statement with the customer's contract terms and conditions (attached is a copy of such a form used in New York by an ESCO). Note that there are eight key provisions from the sales contract that are listed in the Shumer Box.

The Illinois Commerce Commission (ICC) is also considering requiring marketers to include a disclosure statement with their sales contracts. However, the ICC's proposed Marketing Standards have not yet been officially approved and the concept of a "disclosure statement" was a very controversial item in the stakeholder working group. While consumer advocates support the concept, other parties such as marketers believe that the very lengthy disclosure statement (similar to that of NAESB's proposed language) goes far beyond merely "disclosure" and constitutes a costly, virtual duplication of the entire sales contract terms and conditions. Consequently, they also believe that such a lengthy document would probably confuse consumers more than help them understand their agreement, and that a highly summarized disclosure statement like that adopted in NY would be far more appropriate, informative, and useful for price comparisons by consumers.

[redacted]

RESIDENTIAL ELECTRICITY SALES AGREEMENT

CUSTOMER DISCLOSURE STATEMENT

Price	For the first two billing cycles after the enrollment with [redacted] has become effective, the price will be [redacted] less than [redacted] Electricity Supply Charge, plus applicable taxes, charges and fees ("Introductory Term"). Variable Price will be charged after the Introductory Term.
Fixed or Variable and, if Variable, How the Price is Determined	Variable Price - After the Introductory Term, the price will be calculated each month by multiplying (i) the price of electricity by (ii) the amount of electricity used in the billing cycle plus (iii) applicable taxes, fees and charges levied by the Utility for distribution and other services ("Post Introductory Term").
Length of the Agreement and End Date	Introductory Term is in effect for the first two billing cycles. At any time during the Post Introductory Term, [redacted] may offer you the option to purchase electricity at a fixed price for a stated period of time, in place of the Variable Price. [redacted] will notify customer of such option in writing.
Process Customer May Use to Rescind the Agreement Without Penalty	Customer may cancel at any time without penalty.
Amount of Early Termination Fee and Method of Calculation	There is no early termination fee.
Amount of Late Payment Fee And Method of Calculation	N/A
Renewal	After the Introductory Term, should [redacted] choose to switch you from the variable price to a fixed price option, you shall receive written notification of the renewal terms not less than 30 days or more than 60 days prior to the renewal date (the "Renewal Term"). You will have three business days from receipt of the first billing statement of your Renewal Term to cancel the renewal agreement without termination fees.
Conditions Under Which Savings to the Customer are Guaranteed	For the first two billing cycles after enrollment has become effective, the price will be [redacted] less than [redacted] Supply Charge, plus applicable taxes, charges and fees ("Introductory Term").

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Requesters: **Open ADE Task Force**
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Request Title: **Energy Services Provider Interface Standard**

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 UCAIug OpenADE Task Force submitted a request for the initiation of NAESB Model Business Practices on July 29, 2010 (R10008) to standardize the interface which allows for the exchange of energy usage information between designated parties. The UCAIug OpenADE Task Force provided the artifacts on which these Model Business Practices were based.

These Model Business Practices will build on the NAESB Energy Usage Information (EUI) Model and, subject to the Governing Documents and Applicable Regulatory Authority, will help enable Retail Customers to share energy usage information with Third Parties who have acquired the right to act in this role. This Energy Services Provider Interface (ESPI) will provide a consistent method for Retail Customers to authorize a Third Party to gain access to energy usage data. Doing so will help enable Retail Customers to choose Third Party products to assist them to better understand their energy usage and to make more economical decisions about their usage. ESPI will contribute to the development of an open and interoperable

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method for Third Party authorization and machine-to-machine exchange of Retail Customer usage information.

RECOMMENDED STANDARDS:

REQ.21 ENERGY SERVICES PROVIDER INTERFACE

EXECUTIVE SUMMARY

This document establishes the Model Business Practices for the Energy Services Provider Interface (ESPI). For Retail Customers to better realize the benefits of the Smart Grid, Retail Customer related data (e.g., usage information, etc.) should be made available in a timely manner to the Retail Customer and to the Authorized Third Parties chosen by the Retail Customer.

ESPI encompasses a variety of interactions between Retail Customers, Distribution Companies, and Third Parties. In a business environment where best practices are voluntary, Model Business Practices should be applied within the context of regulatory requirements and agreements. These Model Business Practices define ESPI as a specific available interface, but any obligation to use it would be established by Governing Documents and Applicable Regulatory Authority rules and regulations not these Model Business Practices

INTRODUCTION

The North American Energy Standards Board (NAESB) is a voluntary non-profit organization comprised of members from all aspects of the natural gas and electric industries. Within NAESB, the Retail Electric Quadrant (REQ) and the Retail Gas Quadrant (RGQ) focus on issues impacting the retail sale of energy to Retail Customers. REQ / RGQ Model Business Practices are intended to provide guidance to Distribution Companies, Suppliers, and other Market Participants involved in providing energy service to Retail Customers. The focus of these Model Business Practices is the Energy Service Provider Interface.

The purpose of ESPI is to provide a consistent and broadly applicable interface to enable Retail Customer authorization of exchange of EUI from Data Custodians to Third Parties. For the purpose of the descriptions of interactions in ESPI, actions of contracted agents of a Distribution Company are considered the actions of the Distribution Company.

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These Model Business Practices are voluntary and do not address policy issues that are the subject of state legislation or regulatory decisions. These voluntary Model Business Practices have been adopted by NAESB with the realization that as the industry evolves, additional and amended Model Business Practices may be necessary. Any industry participant seeking additional or amended Model Business Practices (including principles, definitions, data elements, process descriptions, and technical implementation instructions) should submit a request to the NAESB office, detailing the change, so that the appropriate process may take place to amend the Model Business Practice.

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BUSINESS PROCESSES AND PRACTICES

Overview

REQ.21.1 Principles

REQ.21.1.1 The processes for ESPI should minimize the complexity associated with authorizing Third Parties to access Retail Customers energy usage data.

REQ.21.1.2 The processes associated with ESPI are subject to and should be consistent with any related requirements established by the Governing Documents and Applicable Regulatory Authority.

REQ.21.2 Definitions

REQ.21.2.B Technical Definitions

REQ.21.2.B.1 **Authorizing Entity:** An Entity (e.g. PUC, Distribution Company) who approves Third Parties to utilize ESPI-compliant system(s) within a jurisdiction.

REQ.21.2.B.2 **Third Party:** An Entity which provides some service to a Retail Customer based on information to which it does not have direct access and over which it has no direct authority over. A Third Party relies on a Data Custodian to provide access to Retail Customer information.

REQ.21.2.B.3 **Authorized Third Party:** A Third Party that has been approved by an Authorizing Entity for the relevant jurisdiction and has met the requirements of the Applicable Regulatory Authority and Governing Documents to utilize the Energy Services Provider Interface

REQ.21.2.B.4 **Energy Service Provider Interface:** A standardized machine-to machine interface that permits a Data Custodian to share, at the Retail Customer's request and under the Retail Customer's

direction, a broad set of that Retail Customer's Data Custodian data with Authorized Third Parties.

REQ.21.2.B.5 **Personally Identifiable Information:** any information about an individual maintained, including (1) any information that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records; and (2) any other information that is linked or linkable to an individual, such as medical, educational, financial, and employment information[1].

REQ.21.2.B.6 **Data Custodian:** A Data Custodian holds Retail Customer resource information and will share this information with Third Parties only in accordance with the Governing Documents, Applicable Regulatory Authority and the direction of the Retail Customer. A Data Custodian typically has direct access to the pertinent information (e.g., by directly acquiring electricity usage data from a meter). A Data Custodian may be a Distribution Company.

REQ.21.2.B.7 **Energy Usage Information***:* Any information concerning a Retail Customer's use of energy.

REQ.21.2.C Acronyms

Abbreviation / Acronym	Meaning
ADE	Automatic Data Exchange
ESPI	Energy Services Provider Interface
EUI	Energy Usage Information
NISTIR	National Institute of Standards and Technology Interagency Report
PII	Personally Identifiable Information

REQ.21.3 Model Business Practices

[1] Definition based upon NIST Special Publication 800-122, Guide to Protecting the Confidentiality of Personally Identifiable Information (PII) April 2010, page 2-1.

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REQ.21.3.1 General Practices for Energy Services Provider Interface (ESPI)

REQ.21.3.1.1 To the extent required by the Applicable Regulatory Authority, or as otherwise agreed by Data Custodian consistent with Applicable Regulatory Authority, Authorized Third Parties and Data Custodians should exchange Retail Customer's EUI at the Retail Customer's request pursuant to the requirements as set forth in NAESB REQ.21, subject to the Governing Documents.

REQ.21.3.1.2 The ESPI relationship requires a set of agreements between a Retail Customer-Authorized Third Party, a Retail Customer-Data Custodian, and an Authorized Third Party-Data Custodian to ensure that the appropriate information is provided as needed and other information access is restricted.

REQ.21.3.1.3 A Third Party should not be able to access Personally Identifiable Information (PII) from a Data Custodian. PII may only be provided to a Third Party by the Retail Customer.

REQ.21.3.1.4 Subject to the Governing Documents and Applicable Regulatory Authority, ESPI should enable a Retail Customer to share EUI for such Retail Customer with Authorized Third Parties who have acquired the right to act in this role.

REQ.21.3.1.5 A system conforming to ESPI should allow exchange of usage information without requiring access to PII.

REQ.21.3.1.6 All information exchanged by ESPI should be secure in accordance with the security recommendations stated herein. Such recommendations are subject to the relevant Governing Documents and Applicable Regulatory Authority.

REQ.21.3.1.7 A Retail Customer should have the ability to authorize the Data Custodian to release EUI for such Retail Customer to an Authorized Third Party who has acquired the right to act in this role, subject to the Governing Documents and Applicable Regulatory Authority.

REQ.21.3.1.8 Subject to the Governing Documents and Applicable Regulatory Authority, a Retail Customer should have the ability to authorize multiple Authorized Third Parties to have limited time based access to specified EUI or other types of information for such Retail Customer, with any default expiration for such access

established by such Governing Documents or Applicable Regulatory Authority.

REQ.21.3.1.9 Subject to the Governing Documents and Applicable Regulatory Authority, a Retail Customer should have the ability to designate a specific expiration date, extend any specific expiration date, or indicate an open-ended access timeframe other than the default access period.

REQ.21.3.1.10 A system conforming to ESPI should have the capability to support the Retail Customers' ability to select / revoke which Authorized Third Parties are authorized for access to EUI.

REQ.21.3.1.11 A system conforming to ESPI should have the capability to notify the relevant Authorized Third Parties, Data Custodian and Retail Customers when access has been granted, access has been changed, or access has been revoked for a UsagePoint.

REQ.21.3.1.12 Subject to the Governing Documents and Applicable Regulatory Authority, a system conforming to ESPI should be consistent with the applicable guidelines around security and authorization for Third Party data access as set forth in NISTIR 7628.

REQ.21.3.1.13 Future versions of ESPI should be backwards compatible, including provisions for exchanging versioning information and negotiating interface capabilities.

REQ.21.3.1.14 Any Third Party wishing to access EUI via ESPI must establish and maintain a trusted relationship with each Data Custodian who provides an ESPI compliant system. Subject to the Governing Documents and Applicable Regulatory Authority, both the Data Custodian and the Authorized Third Party should disallow EUI access requests from Entities who are not Authorized Third Parties.

REQ.21.3.1.15 Subject to the Governing Documents and Applicable Regulatory Authority, confidentiality should be maintained during communications of any information.

REQ.21.3.1.16 Subject to the Governing Documents and Applicable Regulatory Authority, Third Parties must be authorized by the Authorizing Entity and/or the Data Custodian to be an Authorized Third Party

and utilize the Data Custodian's ESPI compliant system and must maintain their status as an Authorized Third Party.

REQ.21.3.1.17 If an Authorizing Entity exists within a jurisdiction, the Authorizing Entity should make available to Retail Customers a list of Third Parties who have been authorized to use ESPI.

REQ.21.3.1.18 Subject to the Governing Documents and Applicable Regulatory Authority, EUI should be made available to Authorized Third Parties (as directed by the Retail Customer) in a reasonable and timely fashion.

REQ.21.3.1.19 When the required Authorized relationship described in this recommendation for an Entity is terminated, access to EUI by such Entity via ESPI should not be granted.

REQ.21.3.1.20 Participants in ESPI and their relationships should be identified with globally unique identifiers.

REQ.21.3.1.21 Procedures for the creation and dissolution of trusted relationships between any two parties should be preconditions for the use of ESPI. The standardization of these procedures, however, is outside the scope of this Model Business Practice.

REQ.21.3.1.22 Upon dissolution of any of the required trusted relationships for an Entity, any ESPI relationships should be terminated and parties notified via a defined method.

REQ.21.3.1.23 If and when the relationships or criteria, pursuant to these model business practices and/or as agreed to among any two or more of the parties, change, all affected parties should be notified via a defined method.

REQ.21.3.1.24 Interoperable and widely supported technologies should be used to ensure adoption regardless of development and deployment platforms used.

REQ.21.3.1.25 The technologies chosen should be well specified, with active communities, tools, and/or frameworks available.

REQ.21.3.1.26 Technologies chosen should be compatible and interoperable with technologies specified for access to HAN resources.

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REQ.21.3.1.27 To the extent required by the Applicable Regulatory Authority, Authorized Third Parties and Data Custodians should follow privacy guidance recommended in NAESB REQ.22, "Third Party Access to Smart Meter-based Information", subject to Governing Documents

REQ.21.3.1.28 This business practice only constrains applications purporting to conform to it. It is not intended to be applicable for all customer information transfers to Authorized Third Parties, but rather, only those transfers between applications conforming to ESPI.

REQ.21.3.1.29 Future versions of ESPI, and extensions employed by Authorized Third Parties and Data Custodians to exchange Retail Customer's EUI at the Retail Customer's request where not specified by ESPI, should conform to NAESB REQ 18, as EUI may be updated from time to time.

REQ.21.4 Models

REQ.21.4.1 Profile of REQ.18 Energy Usage Information Model

The following model represents the implementable profile for ESPI of NAESB PAP10 EUI model. Note that associations stereotyped <<link>> are marked as Non-navigable, since they are actually represented using atom:link.

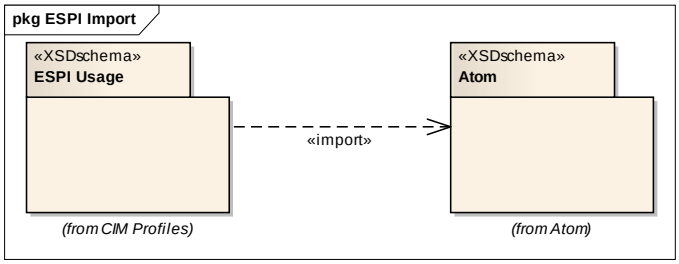

Figure 1: ESPI Import

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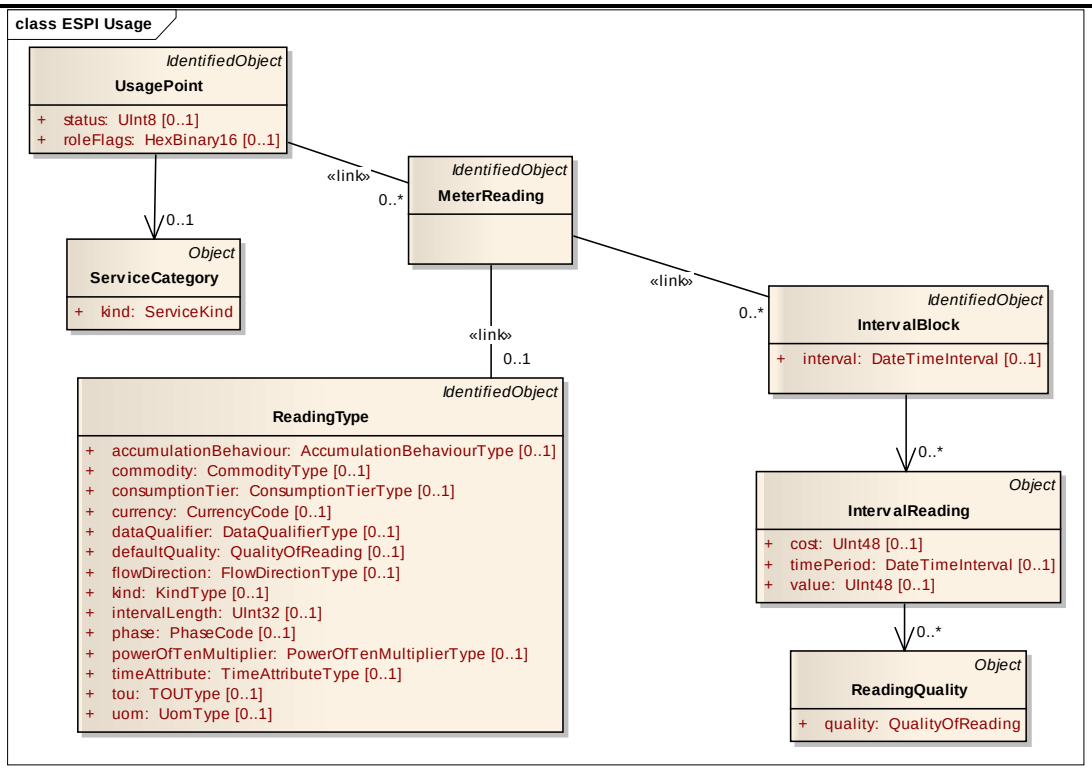

Figure 2: ESPI Usage

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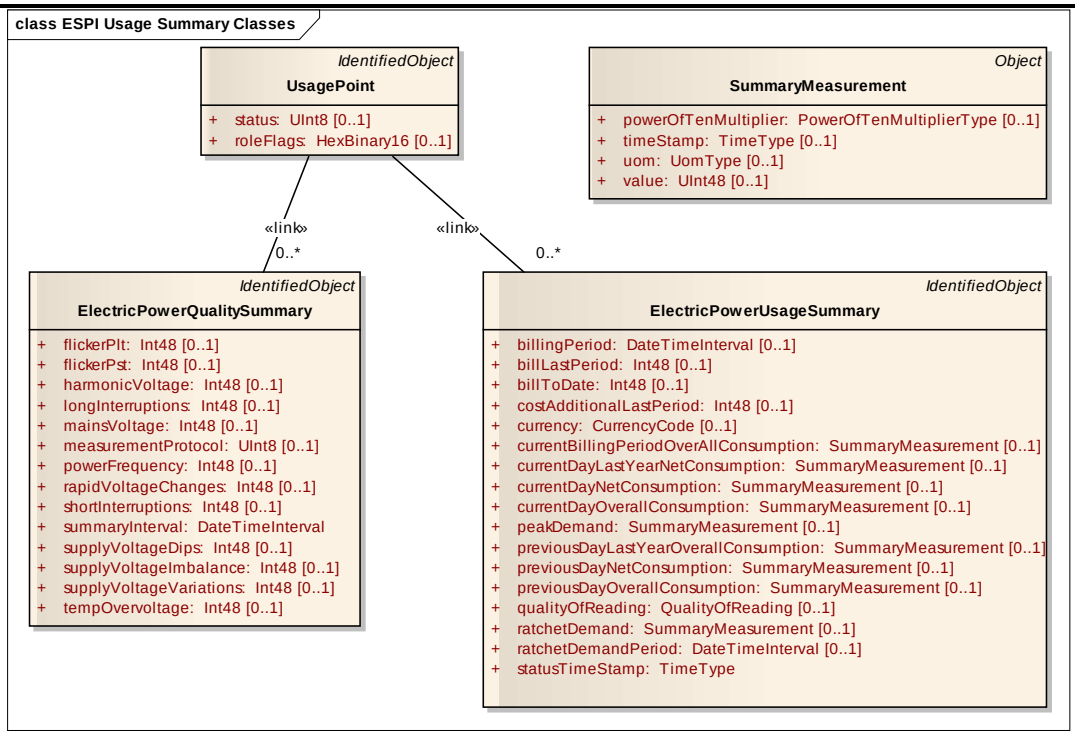

Figure 3: ESPI Usage Summary Classes

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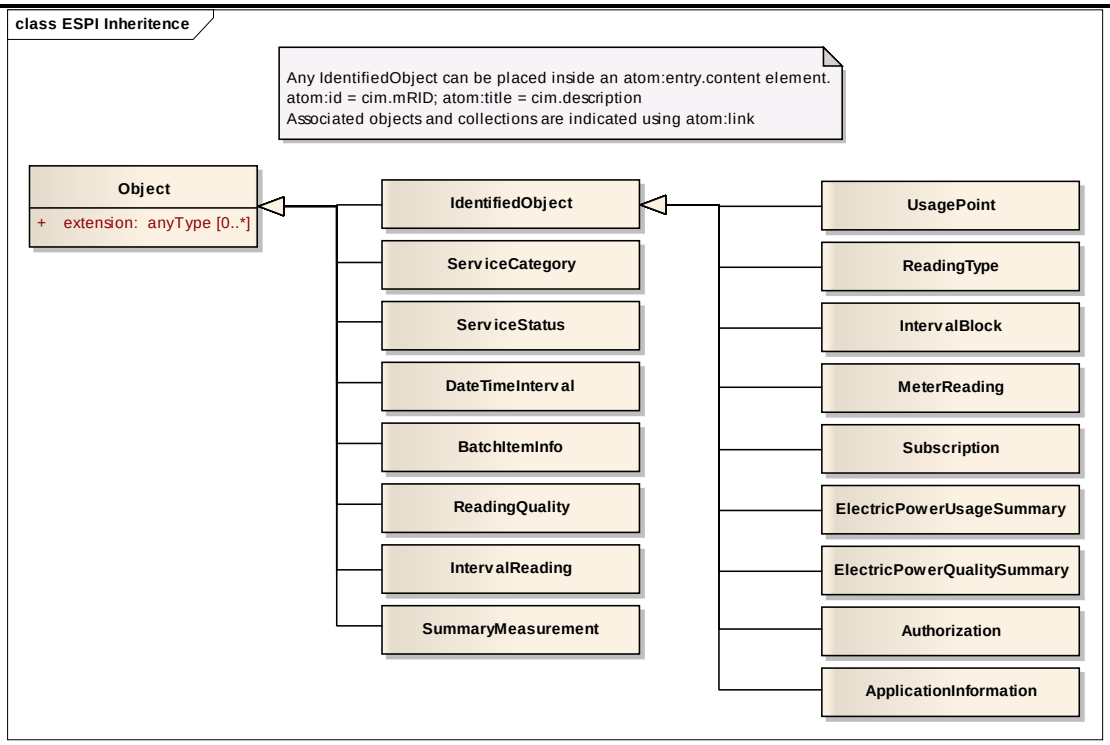

Figure 4: ESPI Inheritence

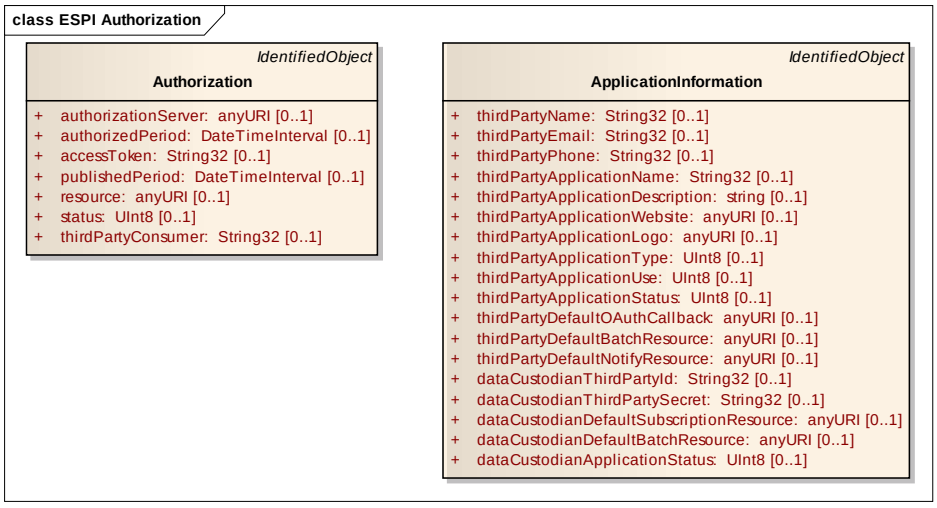

Figure 5: ESPI Authorization

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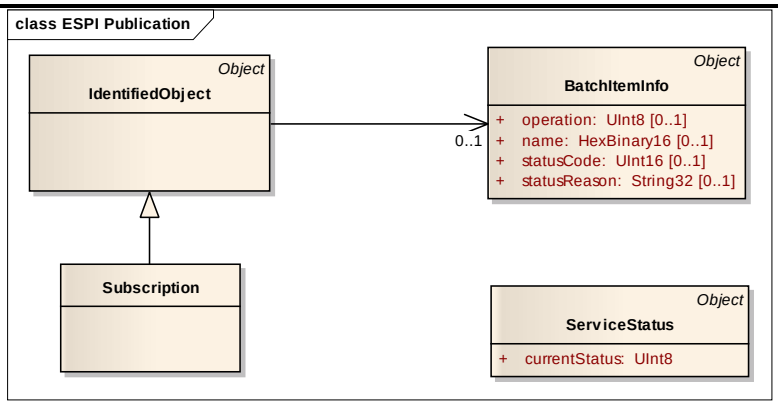

Figure 6: ESPI Publication

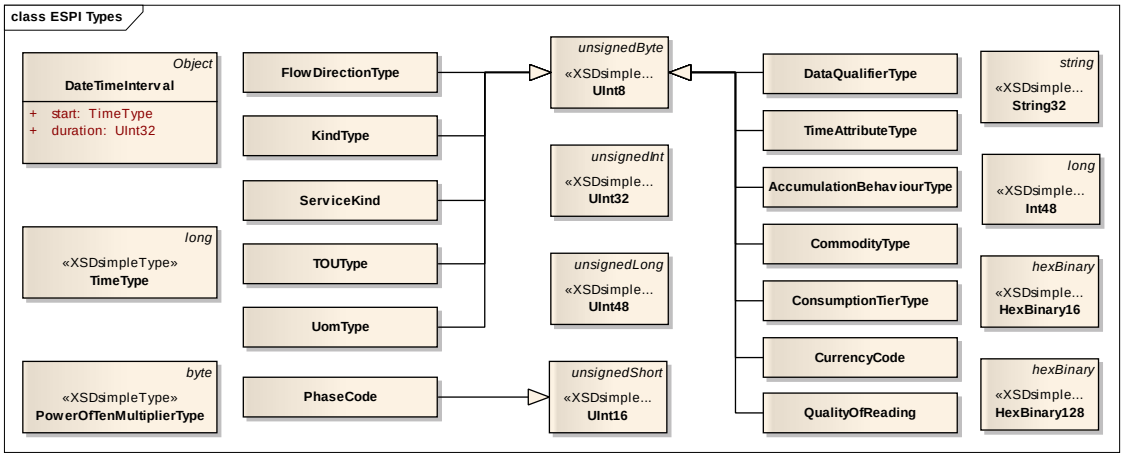

Figure 7: ESPI Types

BatchItemInfo

Includes elements that make it possible to include multiple transactions in a single (batch) request.

Name	Type	Description
operation	*UInt8*	Specifies the operation requested of this item. 0=Create 1=Read 2=Update 3=Delete
name	*HexBinary16*	An identifier for this object that is only unique within the containing collection.
statusCode	*UInt16*	Indicates the status code of the associated transaction.

Name	Type	Description
		200 - Ok 201 - Created 204 - No Content 301 - Moved Permanently 302 - Redirect 304 - Not Modified 400 - Bad Request 401 - Unauthorized 403 - Forbidden 404 - Not Found 405 - Method Not Allowed 410 - Gone 500 - Internal Server Error
statusReason	*String32*	Indicates the reason for the indicated status code.

Object

Superclass of all object classes to allow extensions.

Name	Type	Description
extension	*anyType*	Contains an extension.

ServiceStatus

Contains the current status of the service.

Name	Type	Description
currentStatus	*UInt8*	The current status of the service. 0 = Unavailable 1 = Normal, operational

Subscription

Defines the parameters of a subscription between third party and data custodian

ApplicationInformation

Contains information about a Third Party Application requesting access to the DataCustodian services. Information requested may include items such as Organization Name, Website, Contact Info, Application Name, Description, Icon, Type, default Notification and Callback endpoints, and may also include agreement with terms of service.

Name	Type	Description
thirdPartyName	*String32*	The name of the organization to which access will be granted.

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Name	Type	Description
thirdPartyEmail	*String32*	The e-mail address of the organization to which access will be granted. (For debugging - not to be shared with customers)
thirdPartyPhone	*String32*	The phone number of the organization to which access will be granted. (For debugging - not to be shared with customers)
thirdPartyApplicationName	*String32*	The name of the application to which access will be granted.
thirdPartyApplicationDescription	*string*	A description of the application.
thirdPartyApplicationWebsite	*anyURI*	The link to the main page of the application.
thirdPartyApplicationLogo	*anyURI*	The link to the logo image for the application. Size greater than 180 x 150 may be cropped or reduced.
thirdPartyApplicationType	*UInt8*	A code indicating the type of the application. Defined types are: 1 - Web Application 2 - Desktop Application 3 - Mobile Application
thirdPartyApplicationUse	*UInt8*	A code indicating the expected use of the application. Defined uses are: 1 - Energy management 2 - Comparisons 3 - Government
thirdPartyApplicationStatus	*UInt8*	A code indicating the current status of the application. Defined statuses are: 1 - Development 2 - Production (Live) 3 - Retired (Remove)
thirdPartyDefaultOAuthCallback	*anyURI*	The default redirect back to the application after authorization grant.
thirdPartyDefaultBatchResource	*anyURI*	The default endpoint for asynchronous delivery of Batch data using push.
thirdPartyDefaultNotifyResource	*anyURI*	The default endpoint for third party notification of Batch data availability, that is then requested from the data custodian via the Batch resource.
dataCustodianThirdPartyId	*String32*	A key to be associated with this application, to be provided in OAuth requests. (Provided

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Name	Type	Description
		by dataCustodian, cannot be modified)
dataCustodianThirdPartySecret	*String32*	A secret to be associated with this application, used to sign OAuth requests. (Provided by dataCustodian, cannot be modified)
dataCustodianDefaultSubscriptionResource	*anyURI*	The default endpoint for Subscription requests. (Provided by dataCustodian, updated in approved applications objects, cannot be modified by third party)
dataCustodianDefaultBatchResource	*anyURI*	The default endpoint for Batch requests. (Provided by dataCustodian, updated in approved applications objects, cannot be modified by third party)
dataCustodianApplicationStatus	*UInt8*	A code indicating the current status of the application. (Provided by dataCustodian, cannot be modified) Defined statuses are: 1 - Review 2 - Production (Live) 3 - On hold 4 - Revoked

Authorization

Represents a permission granted by an owner for access to a resource.

Name	Type	Description
authorizationServer	*anyURI*	Contains the URI link to the authorization endpoint associated with this authorization.
authorizedPeriod	*DateTimeInterval*	Restricts access to requests or subscriptions within this date time interval.
accessToken	*String32*	Contains the access token associated with this authorization.
publishedPeriod	*DateTimeInterval*	Restricts access to only the objects within the associated resource that were published within this date time interval.
resource	*anyURI*	Contains the identifier of the resource, same as was specified in OAuth "scope".
status	*UInt8*	The status of this authorization. 0 - Revoked 1 - Active
thirdPartyConsumer	*String32*	Contains the identifier for the Third Party.

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IdentifiedObject

This is a root class to provide common naming attributes for all classes needing naming attributes

ElectricPowerQualitySummary

A summary of power quality events. This information represents a summary of power quality information typically required by customer facility energy management systems. It is not intended to satisfy the detailed requirements of power quality monitoring. All values are as defined by measurementProtocol during the period. The standards typically also give ranges of allowed values; the information attributes are the raw measurements, not the "yes/no" determination by the various standards. See referenced standards for definition, measurement protocol and period.

Name	Type	Description
flickerPlt	*Int48*	A measurement of long term Rapid Voltage Change in hundredths. flickerPlt is derived from 2 hours of Pst values (12 values combined in cubic relationship).
flickerPst	*Int48*	flickerPst is a value measured over 10 minutes that characterizes the likelihood that the voltage fluctuations would result in perceptible light flicker. A value of 1.0 is designed to represent the level that 50% of people would perceive flicker in a 60 watt incandescent bulb. The value reported is represented as an integer in hundredths.
harmonicVoltage	*Int48*	A measurement of the Harmonic Voltage during the period. For DC, distortion is with respect to a signal of zero Hz.
longInterruptions	*Int48*	A count of Long Interruption events (as defined by measurementProtocol) during the summary interval period.
mainsVoltage	*Int48*	A measurement of the Mains [Signaling] Voltage during the summary interval period in uV.
measurementProtocol	*UInt8*	A reference to the source standard used as the measurement protocol definition. Examples are: 0 = "IEEE1519-2009" 1 = "EN50160"
powerFrequency	*Int48*	A measurement of the power frequency during the summary interval period in uHz.

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Name	Type	Description
rapidVoltageChanges	*Int48*	A count of Rapid Voltage Change events during the summary interval period
shortInterruptions	*Int48*	A count of Short Interruption events during the summary interval period
summaryInterval	*DateTimeInterval*	Interval of summary period
supplyVoltageDips	*Int48*	A count of Supply Voltage Dip events during the summary interval period
supplyVoltageImbalance	*Int48*	A count of Supply Voltage Imbalance events during the summary interval period
supplyVoltageVariations	*Int48*	A count of Supply Voltage Variations during the summary interval period
tempOvervoltage	*Int48*	A count of Temporary Overvoltage events (as defined by measurementProtocol) during the summary interval period

ElectricPowerUsageSummary

Summary of usage for a billing period

Name	Type	Description
billingPeriod	*DateTimeInterval*	The billing period to which the included measurements apply
billLastPeriod	*Int48*	The amount of the bill for the previous period , in millionths of the currency specified in the ReadingType for this reading (e.g. 840 = USD, US dollar).
billToDate	*Int48*	The bill amount related to the billing period as of the date received, in millionths of the currency specified in the ReadingType for this reading. (e.g. 840 = USD, US dollar).
costAdditionalLastPeriod	*Int48*	Additional charges from the last billing period, in millionths of the currency specified in the ReadingType for this reading. (e.g. 840 = USD, US dollar).
currency	*CurrencyCode*	The ISO 4217 code indicating the currency applicable to the bill amounts in the summary. See list at http://www.unece.org/cefact/recommendations/rec09/rec09_ecetrd203.pdf
currentBillingPeriodOverAllConsumption	*SummaryMeasurement*	The total consumption for the billing period
currentDayLastYearNetConsum	*SummaryMeasurement*	The amount of energy consumed one year ago interpreted as same day of week same

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Name	Type	Description
ption		week of year (see ISO 8601).
currentDayNetConsumption	*SummaryMeasurement*	Net consumption for the current day (delivered - received)
currentDayOverallConsumption	*SummaryMeasurement*	Overall energy consumption for the current day
peakDemand	*SummaryMeasurement*	Peak demand recorded for the current period
previousDayLastYearOverallConsumption	*SummaryMeasurement*	The amount of energy consumed on the previous day one year ago interpreted as same day of week same week of year (see ISO 8601).
previousDayNetConsumption	*SummaryMeasurement*	Net consumption for the previous day
previousDayOverallConsumption	*SummaryMeasurement*	The total consumption for the previous day
qualityOfReading	*QualityOfReading*	Indication of the quality of the summary readings
ratchetDemand	*SummaryMeasurement*	The current ratchet demand value for the ratchet demand period
ratchetDemandPeriod	*DateTimeInterval*	The period over which the ratchet demand applies
statusTimeStamp	*TimeType*	Date/Time status of this UsageSummary

ServiceCategory

Category of service provided to the customer.

Name	Type	Description
kind	*ServiceKind*	Service classification Examples are: 0 - electricity 1 - gas The list of specific valid values per the standard are itemized in ServiceKind.

UsagePoint

Logical point on a network at which consumption or production is either physically measured (e.g. metered) or estimated (e.g. unmetered street lights).

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Name	Type	Description
status	*UInt8*	Specifies the current status of this usage point. The only valid values are: 0 = off 1 = on
roleFlags	*HexBinary16*	Specifies the roles that this usage point has been assigned. Bit 1 - isMirror Bit 2 - isPremisesAggregationPoint Bit 3 - isPEV Bit 4 - isDER Bit 5 - isRevenueQuality Bit 6 - isDC Bit 7-16 - Reserved

HexBinary128 «XSDsimpleType»

A 128-bit field encoded as a hex string (32 characters / 16 octets)

HexBinary16 «XSDsimpleType»

A 16-bit field encoded as a hex string (4 characters / 2 octets)

Int48 «XSDsimpleType»

Signed integer, max inclusive 281474976710655 (2^48-1), restriction of xs:long

String32 «XSDsimpleType»

Character string of max length 32

UInt16 «XSDsimpleType»

Unsigned integer, max inclusive 65535 (2^16-1), same as xs:unsignedShort

UInt32 «XSDsimpleType»

Unsigned integer, max inclusive 4294967295 (2^32-1), same as xs:unsignedInt

UInt48 «XSDsimpleType»

Unsigned integer, max inclusive 281474976710655 (2^48-1), restriction of xs:unsignedLong

UInt8 «XSDsimpleType»

Unsigned integer, max inclusive 255 (2^8-1), same as xs:unsignedByte

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AccumulationBehaviourType

The only valid values are:

0 = Not Applicable
1 = BulkQuantity
3 = Cumulative
4 = DeltaData
6 = Indicating
9 = Summation
12 = Instantaneous

CommodityType

The only valid values are:

0 = Not Applicable
1 = Electricity secondary metered value (a premise meter is typically a secondary meter)
2 = Electricity primary metered value
4 = Air
7 = NaturalGas
8 = Propane
9 = PotableWater
10 = Steam
11 = WasteWater
12 = HeatingFluid
13 = CoolingFluid

ConsumptionTierType

The only valid values are:

0 = Not Applicable
1 = Block Tier 1
2 = Block Tier 2
3 = Block Tier 3
4 = Block Tier 4
5 = Block Tier 5
6 = Block Tier 6
7 = Block Tier 7
8 = Block Tier 8
9 = Block Tier 9
10 = Block Tier 10
11 = Block Tier 11
12 = Block Tier 12
13 = Block Tier 13
14 = Block Tier 14
15 = Block Tier 15
16 = Block Tier 16

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CurrencyCode

Follows codes defined in ISO 4217. Full list at tiny.cc/4217.

0 - Not Applicable
36 - Australian Dollar
124 - Canadian Dollar
840 - US Dollar
978 - Euro

DataQualifierType

The only valid values are:

0 = Not Applicable
2 = Average
8 = Maximum
9 = Minimum
12 = Normal

DateTimeInterval

Interval of date and time. End is not included because it can be derived from the start and the duration.

Name	Type	Description
start	*TimeType*	Date and time that this interval started.
duration	*UInt32*	Duration of the interval, in seconds.

FlowDirectionType

The only valid values are:

0 = Not Applicable
1 = Forward
19 = Reverse

KindType

The only valid values are:

0 = Not Applicable
3 = Currency
8 = Demand
12 = Energy
37 = Power

PhaseCode

The only valid values are:

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0 = Not Applicable
129 = Phase AN
128 = Phase A
132 = Phase AB
64 = Phase BN
64 = Phase B
32 = Phase CN
32 = Phase C
224 = Phase ABC
66 = Phase BC
40 = Phase CA
512 = Phase S1
256 = Phase S2
768 = Phase S1S2
513 = Phase S1N
257 = Phase S2N
769 = Phase S1S2N

PowerOfTenMultiplierType «XSDsimpleType»

The only valid values are:

0 = None
1 = deca=x10
2 = hecto=x100
-3 = mili=x10-3
3 = kilo=x1000
6 = Mega=x106
-6 = micro=x10-3
9 = Giga=x109

QualityOfReading

List of codes indicating the quality of the reading, using specification:

0 – valid (validated)
7 - manually edited
8 - estimated
10 - questionable
11 - derived
12 - projected (forecast)
13 - mixed
14 - raw
15 - normalized for weather
16 - other

ServiceKind

The only valid values are:

0 - electricity
1 - gas
2 - water
4 - pressure
5 - heat
6 - cold
7 - communication
8 - time

SummaryMeasurement

An aggregated summary measurement reading.

Name	Type	Description
powerOfTenMultiplier	*PowerOfTenMultiplierType*	The multiplier part of the unit of measure, e.g. "kilo" (k)
timeStamp	*TimeType*	The date and time (if needed) of the summary measurement.
uom	*UomType*	The units of the reading, e.g. "Wh"
value	*UInt48*	The value of the summary measurement.

TOUType

The only valid values are:

0 = NotApplicable
1 = TOU A
2 = TOU B
3 = TOU C
4 = TOU D
5 = TOU E
6 = TOU F
7 = TOU G
8 = TOU H
9 = TOU I
10 = TOU J
11 = TOU K
12 = TOU L
13 = TOU M
14 = TOU N
15 = TOU O

TimeAttributeType

The only valid values are:

0 = Not Applicable
1 = 10-minute
2 = 15-minute
4 = 24-hour

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5 = 30-minute
7 = 60-minute
11 = Daily
13 = Monthly
15 = Present
16 = Previous
24 = Weekly
32 = ForTheSpecifiedPeriod
79 = Daily30minuteFixedBlock

TimeType «XSDsimpleType»

Time is a signed 64 bit value representing the number of seconds since 0 hours, 0 minutes, 0 seconds, on the 1st of January, 1970.

UomType

The only valid values are:

0 = Not Applicable
5 = A (Current)
29 = Voltage
31 = J (Energy joule)
33 = Hz (Frequency)
38 = Real power (Watts)
42 = m3 (Cubic Meter)
61 = VA (Apparent power)
63 = VAr (Reactive power)
65 = Cos? (Power factor)
67 = V² (Volts squared)
69 = A² (Amp squared)
71 = VAh (Apparent energy)
72 = Real energy (Watt-hours)
73 = VArh (Reactive energy)
106 = Ah (Ampere-hours / Available Charge)
119 = ft3 (Cubic Feet)
122 = ft3/h (Cubic Feet per Hour)
125 = m3/h (Cubic Meter per Hour)
128 = US gl (US Gallons)
129 = US gl/h (US Gallons per Hour)
130 = IMP gl (Imperial Gallons)
131 = IMP gl/h (Imperial Gallons per Hour)
132 = BTU
133 = BTU/h
134 = Liter
137 = L/h (Liters per Hour)
140 = PA(gauge)
155 = PA(absolute)
169 = Therm

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IntervalBlock

Time sequence of Readings of the same ReadingType.

Name	Type	Description
interval	*DateTimeInterval*	Specifies the time period during which the contained readings were taken.

IntervalReading

Specific value measured by a meter or other asset. Each Reading is associated with a specific ReadingType.

Name	Type	Description
cost	*UInt48*	Specifies a cost associated with this reading, in millionths of the currency specified in the ReadingType for this reading. (e.g. 840 = USD, US dollar)
timePeriod	*DateTimeInterval*	The date time and duration of a reading. If not specified, readings for each "intervalLength" in ReadingType are present.
value	*UInt48*	Value in units specified by ReadingType

MeterReading

Set of values obtained from the meter.

ReadingQuality

Quality of a specific reading value or interval reading value. Note that more than one Quality may be applicable to a given Reading. Typically not used unless problems or unusual conditions occur (i.e., quality for each Reading is assumed to be 'Good' (valid) unless stated otherwise in associated ReadingQuality).

Name	Type	Description
quality	*QualityOfReading*	Quality, to be specified if different than ReadingType.defaultQuality. The specific format is specified per the standard is defined in QualityOfReading.

ReadingType

Characteristics associated with all Readings included in a MeterReading.

Name	Type	Description
accumulationBehaviour	*AccumulationBehaviourType*	Code indicating how value is accumulated over time for Readings of ReadingType. The list of valid values per the standard are defined in AccumulationBehaviorType.

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Name	Type	Description
		Examples are: 0 = Not Applicable 1 = BulkQuantity 3 = Cumulative
commodity	*CommodityType*	Code for commodity classification of Readings of ReadingType. The valid values per the standard are defined in CommodityType. Examples are: 0 = Not Applicable 1 = Electricity secondary metered value (a premise meter is typically a secondary meter) 2 = Electricity primary metered value 4 = Air 7 = NaturalGas
consumptionTier	*ConsumptionTierType*	Code for consumption tier associated with a Reading of ReadingType. The valid values are define in ConsumptionTierType. Examples are: 0 = Not Applicable 1 = Block Tier 1 2 = Block Tier 2
currency	*CurrencyCode*	Code for the currency for costs associated with this ReadingType. The valid values per the standard are defined in CurrencyCode. Examples are: 0 - Not Applicable 36 - Australian Dollar 124 - Canadian Dollar 840 - US Dollar 978 - Euro
dataQualifier	*DataQualifierType*	Code describing a salient attribute of Readings of ReadingType. Valid values per the standard are defined in DataQualifierType. Examples are: 0 = Not Applicable 2 = Average
defaultQuality	*QualityOfReading*	Default value to be used if no value of ReadingQuality.quality is provided.

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Name	Type	Description
		Specific format and valid values per the standard are specified in QualityOfReading.
flowDirection	*FlowDirectionType*	Direction associated with current related Readings. valid values per the standard are defined in FlowDirectionType. Examples are: 0 = Not Applicable 1 = Forward 19 = Reverse
kind	*KindType*	Code for general classification of a Reading of ReadingType. Valid values per the standard are defined in KindType. Examples are: 0 = Not Applicable 3 = Currency 8 = Demand
intervalLength	*UInt32*	Default interval length specified in seconds for Readings of ReadingType.
phase	*PhaseCode*	Code for phase information associated with Readings of ReadingType. Valid values per the standard are defined in PhaseCode. Examples are: 0 = Not Applicable 129 = Phase AN 128 = Phase A 132 = Phase AB
powerOfTenMultiplier	*PowerOfTenMultiplierType*	Code for the power of ten multiplier which, when used in combination with the uom, specifies the actual unit of measure for Readings of ReadingType. Valid values per the standard are defined in PowerOfTenMultiplierType. Examples are: 0 = None 1 = deca=x10 2 = hecto=x100 -3 = mili=x10-3
timeAttribute	*TimeAttributeType*	Code used to specify a particular type of time interval method for Readings of ReadingType. Valid values per the standard

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Name	Type	Description
		are defined in TimeAttributeType. Examplesare: 0 = Not Applicable 1 = 10-minute 2 = 15-minute
tou	*TOUType*	Code for the TOU type of Readings of ReadingType. valid values per the standard are defined in TOUType. Examples are: 0 = NotApplicable 1 = TOU A 2 = TOU B
uom	*UomType*	Code for the base unit of measure for Readings of ReadingType. Used in combination with the powerOfTenMultiplier to specify the actual unit of measure. Valid values per the standard are defined in UomType. Examples are: 0 = Not Applicable 5 = A (Current) 29 = Voltage

REQ.21.4.2 Additional Models in Support of Services

REQ.21.4.2.2 Authorization

An Authorization is a Customer grant of Third Party access to specific resources. The attributes of this object are listed below. The structure and format of these fields is defined by OAuth.

- Information consumer (Third Party) identifier (Consumer Key)
- Resource subject (Scope)
  Specifies the resource to which access from the information provider is granted by the customer to the information consumer
- Authentication Token (Access Token)
  One or more token / secret pairs proving the identity of the requester to be the Customer associated with the resource. Different methods may be defined against which token / secret pairs are created and verified.
- Authorized period
- Status (requested, valid, invalid, error, unavailable)

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REQ.21.5 Related Model Business Practices

REQ.21.5.1 Conformance to REQ.18 Energy Usage Information Model

ESPI services conform to REQ.18 Energy Usage Information Model (PAP10), due to the ability to directly transform between the models without loss of precision, and without external inputs. The ESPI model uses the same concept names and structures as NAESB PAP10 EUI.

REQ.21.6 Technical Implementation

REQ.21.6.1 Protocol Specifications

ESPI endpoints implement the following protocol aspects.

REQ.21.6.1.1 Security

Providers of ESPI services, including both data custodian and third party, protect their systems, networks, and interface endpoints against threats, as recommended in NIST-IR and Security Profile For Third Party Data Access.

REQ.21.6.1.1.1 Encryption

Establishment of mutually-authenticated encrypted channels is performed using HTTP/S, as documented in IETF RFC 2818, over which data may be securely transferred between Data Custodian and Third Party.

REQ.21.6.1.1.2 User Authorization

OAuth, as documented in IETF RFC 5849, is used for authorization grant and access by Retail Customers and Authorized Third Parties to shared Data Custodian resources. This protocol results in access tokens that are used to subscribe to specific user data, or to request it immediately, if supported.

REQ.21.6.2 Communication Specifications

This section defines the expected behavior of implementations using the ESPI RESTful style. This style uses HTTP methods as verbs and URIs as nouns.

During initial configuration, the data custodian issues the Third Party an Id (key) and secret required by RFC 5849. If supported, ESPI service providers may make available an "ApplicationInformation" feed and allow applications to be created, updated, and deleted using AtomPub methods. They may require trusted credentials for access.

ESPI endpoints expose resources as described by Atom, IETF RFC 4287.

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- Representations are identified as media type "`application/atom+xml`"
- ESPI namespace and types ("`http://naesb.org/espi`") are used for objects in `<content>` element
- `espi:mRID` is implemented by `atom:id`
  - UUIDs are used, as specified in IETF RFC 4122
- `espi:description` is implemented by `atom:title`
- `atom:published` and `atom:updated` are used
- Associated objects use `atom:link` (`rel="related"`)

The following addressable objects (specializations of IdentifiedObject) are defined by the ESPI schema, and can be made available using AtomPub feeds.

- UsagePoint
- ReadingType
- IntervalBlock
- MeterReading
- Subscription
- ElectricPowerUsageSummary
- ElectricPowerQualitySummary
- Authorization
- ApplicationInformation

Links shall use the following tags and values to convey link types.

Association	**rel**	**type**
UsagePoint → MeterReading	`related`	`application/atom+xml`
UsagePoint → ElectricPowerQualitySummary	`related`	`application/atom+xml`
UsagePoint → ElectricPowerUsageSummary	`related`	`application/atom+xml`
MeterReading → IntervalBlock	`related`	`application/atom+xml`
MeterReading → ReadingType	`related`	`application/atom+xml`

ESPI endpoints use HTTP and/or HTTPS, IETF RFC 2616 and 2818, to expose ESPI resources using the method conventions in Atom Publishing Protocol, IETF RFC 5023.

URIs are kept as short as possible, and do not exceed 255 bytes.

Relative URIs may be used when resources are on the same host. Additional definition regarding URIs and HTTP/S follow the IETF specifications.

A URI example is provided below.

- `https://espi.datacustodian.com/{third_party_id}/Batch`

Since all URIs are opaque references, there is no mandated form. However, it may be useful to organize them hierarchically, in order to define URIs for the

appropriate containers (feeds), and to manage permissions. URIs should be as persistent as possible, but they may change. `atom:id`, however, does not change, even if the resource is moved or replicated. Clients accessing out-of-date URIs may be redirected, but if they are not, may need to request the current preferred resource location.

The following query parameters are used to filter the resources returned by a feed. These use typical "`?name=value[&…]`" syntax.

- `published-max, published-min`
- `updated-max, updated-min`
- `max-results`
- `start-index`

Date and time values for the above parameters use RFC 3339 format.

REQ.21.6.3 Examples

The following examples show the creation, retrieval, update, and deletion of an object within a feed.

Upon authorization of a resource, the OAuth "scope" attribute contains the URI of the resource. With it, the client can request a subscription to it as in the example below. Note that this URI is a reference to the target resource of the subscription. (The resource being subscribed to) The Subscription object identifier is not specified, since it is assigned by the Data Custodian. Note also that signed OAuth parameters are included in the header to prove authorization.

```
POST /Subscription HTTP/1.1
Host: espi.datacustodian.com
Content-Type: application/atom+xml
Content-Length: 163

<?xml version="1.0" encoding="UTF-8"?>
<entry xmlns="http://www.w3.org/2005/Atom"
    xsi:schemaLocation="http://naesb.org/espi espi.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <link rel="related" href="/User/9b6c7063"/>
  <content>
    <Subscription xmlns="http://naesb.org/espi"/>
  </content>
</entry>
```

The server may refuse this request, if valid authorization was not provided, in which case result "`401 Not Authorized`" or similar, is returned.

If the request is accepted, the server responds with the full resource representation, as in the response example below.

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```
HTTP/1.1 200 OK
Content-Type: application/atom+xml
Content-Length: 335

<?xml version="1.0" encoding="UTF-8"?>
<entry xmlns="http://www.w3.org/2005/Atom"
    xsi:schemaLocation="http://naesb.org/espi espi.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <id>urn:uuid:e69c4c25-2885-4de0-a3d8-d29b5f823b79</id>
  <link rel="self" href="/Subscription/7f23"/>
  <link rel="related" href="/User/9b6c7063"/>
  <content>
    <Subscription xmlns="http://naesb.org/espi"/>
  </content>
  <published>2012-01-23T05:11:38Z</published>
  <updated>2012-01-23T05:11:38Z</updated>
</entry>
```

Retrieval of the object is performed using GET. The example below shows the request – the response is the same as the response to POST above.

```
GET /Subscription/7f23 HTTP/1.1
Host: espi.datacustodian.com
```

Deletion uses DELETE, as in the example below. Again, authorization parameters are included.

```
DELETE /Subscription/7f23 HTTP/1.1
Host: espi.datacustodian.com
```

Response is simply the status of the request, as below.

```
HTTP/1.1 200 OK
```

Batch processing involves inclusion of the "`Batch`" attributes with regular objects in a list, as in the example below. This example shows delivery of new objects.

```
<?xml version="1.0" encoding="UTF-8"?>
<feed
    xmlns="http://www.w3.org/2005/Atom"
    xsi:schemaLocation="http://naesb.org/espi espi.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <id>urn:uuid:046638c0-8701-11e0-9d78-0800200c9a66</id>
  <title>ThirdPartyX Batch Feed</title>
  <updated>2012-05-21T18:01:00Z</updated>
  <link rel="self" href="/83e269c1"/>
  <entry>
    <id>urn:uuid:c990b150-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/ThirdParty/83e269c1/Batch"/>
  <entry>
    <id>urn:uuid:c990b150-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/User/9b6c7063/UsagePoint/01"/>
    <link rel="up" href="/User/9b6c7063/UsagePoint"/>
    <link rel="related" href="/User/9b6c7063/UsagePoint/01/MeterReading"/>
```

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```
    <title>Elm St.</title>
    <content>
      <UsagePoint xmlns="http://naesb.org/espi">
        <ServiceCategory>
          <kind>0</kind>
        </ServiceCategory>
      </UsagePoint>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
  <entry>
    <id>urn:uuid:f2034e91-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/User/9b6c7063/UsagePoint/01/MeterReading/01"/>
    <link rel="up" href="/User/9b6c7063/UsagePoint/01/MeterReading"/>
    <link rel="related" href="/User/9b6c7063/UsagePoint/01/MeterReading/01/IntervalBlock"/>
    <link rel="related" href="/ReadingType/07"/>
    <title>Hourly Energy Consumption</title>
    <content>
      <MeterReading xmlns="http://naesb.org/espi"/>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
  <entry>
    <id>urn:uuid:f2034e93-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self"
href="/User/9b6c7063/UsagePoint/01/MeterReading/01/IntervalBlock/0173"/>
    <link rel="up" href="/User/9b6c7063/UsagePoint/01/MeterReading/01/IntervalBlock"/>
    <title/>
    <content>
      <IntervalBlock xmlns="http://naesb.org/espi">
        <interval>
          <duration>86400</duration>
          <start>1325397600</start>
        </interval>
        <IntervalReading>
          <cost>3000000</cost>
          <timePeriod>
            <duration>3600</duration>
            <start>1325397600</start>
          </timePeriod>
          <value>383</value>
        </IntervalReading>
        <IntervalReading>
          <cost>3000000</cost>
          <timePeriod>
            <duration>3600</duration>
            <start>1325401200</start>
          </timePeriod>
          <value>427</value>
        </IntervalReading>
      </IntervalBlock>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
  <entry>
    <id>urn:uuid:2557def0-8321-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/ReadingType/07"/>
    <link rel="up" href="/ReadingType"/>
    <title>Energy Delivered (kWh)</title>
    <content>
      <ReadingType xmlns="http://naesb.org/espi">
        <accumulationBehaviour>4</accumulationBehaviour><!--DeltaData-->
        <commodity>1</commodity><!--Electricity-->
        <consumptionTier>0</consumptionTier><!--N/A-->
        <currency>0</currency><!--N/A-->
        <dataQualifier>12</dataQualifier><!--Normal-->
        <flowDirection>1</flowDirection><!--Forward-->
        <kind>12</kind><!--Energy-->
        <phase>0</phase><!--N/A-->
        <powerOfTenMultiplier>3</powerOfTenMultiplier><!--kilo-->
        <timeAttribute>0</timeAttribute><!--N/A-->
        <tou>0</tou><!--N/A-->
        <uom>72</uom><!--Watt hours-->
```

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```
      </ReadingType>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
</feed>
```

REQ.21.6.4 Conformance

Conformant Data Custodian implementations include the following:

- Subscriptions
  - Accept POST to Subscription, Batch resource
  - Allow subscriptions to authorized resources
- Delivery
  - Accept GET to Batch resource, specific to each Authorized Third Party.
  - Optionally support POST to Authorized Third Party Notification resource
  - Optionally support POST to Authorized Third Party Batch resource
  - Optionally support GET of resources directly

Conformant Third Party implementations include the following:

- Security
  - Server certificates and mutually authenticated HTTPS
  - Make requests to OAuth endpoints
- Subscriptions
  - Submit POST requests to Subscription, Batch resource
  - Sign requests with access tokens
- Delivery
  - Submit GET request to Batch resource
  - Optionally accept POST to Authorized Third Party Notification resource
  - Optionally accept POST to Authorized Third Party Batch resource
  - Optionally GET resources directly

All conformant implementations include the following:

- Security
  - Server certificates and mutually authenticated HTTPS
  - Accept requests to OAuth endpoints
- Content
  - Information elements with the meaning defined herein use the format and structure defined herein.
  - Additional information elements not defined herein are placed in extension elements as defined by the ESPI schema herein, use a namespace different from the ESPI schema herein, and are optional.

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- It is recommended that any additional information elements included in an implementation be submitted for consideration in future versions of ESPI.

REQ.21.6.5 XML Schema

The following is the XML Schema (espi.xsd) definition used to declare the format of the ESPI types. This is the official normative version of these definitions. A separate version of this file, in plain text, appropriate for machine reading, can be obtained through the NAESB office.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns="http://naesb.org/espi"
targetNamespace="http://naesb.org/espi" elementFormDefault="qualified"
attributeFormDefault="unqualified" version="0.03">
  <xs:import namespace="http://www.w3.org/2005/Atom" schemaLocation="atom.xsd"/>
  <xs:complexType name="ApplicationInformation">
    <xs:annotation>
      <xs:documentation>Contains information about a Third Party Application requesting access
to the DataCustodian services. Information requested may include items such as Organization
Name, Website, Contact Info, Application Name, Description, Icon, Type, default Notification
and Callback endpoints, and may also include agreement with terms of
service.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="dataCustodianApplicationStatus" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the current status of the application.
(Provided by dataCustodian, cannot be modified)
Defined statuses are:
1 - Review
2 - Production (Live)
3 - On hold
4 - Revoked</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianDefaultBatchResource" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for Batch requests. (Provided by
dataCustodian, updated in approved applications objects, cannot be modified by third
party)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianDefaultSubscriptionResource" type="xs:anyURI"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for Subscription requests. (Provided by
dataCustodian, updated in approved applications objects, cannot be modified by third
party)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianThirdPartyId" type="String32" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A key to be associated with this application, to be provided
in OAuth requests. (Provided by dataCustodian, cannot be modified)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianThirdPartySecret" type="String32" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A secret to be associated with this application, used to sign
OAuth requests. (Provided by dataCustodian, cannot be modified)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationDescription" type="xs:string" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A description of the application.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationLogo" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The link to the logo image for the application. Size greater
than 180 x 150 may be cropped or reduced.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationName" type="String32" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The name of the application to which access will be
granted.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationStatus" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the current status of the application.
Defined statuses are:
1 - Development
2 - Production (Live)
3 - Retired (Remove)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationType" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the type of the application.
Defined types are:
1 - Web Application
2 - Desktop Application
3 - Mobile Application</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationUse" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the expected use of the application.
Defined uses are:
1 - Energy management
2 - Comparisons
3 - Government</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationWebsite" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The link to the main page of the
application.</xs:documentation>
            </xs:annotation>
```

```
          </xs:element>
          <xs:element name="thirdPartyDefaultBatchResource" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for asynchronous delivery of Batch data
using push.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyDefaultNotifyResource" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for third party notification of Batch
data availability, that is then requested from the data custodian via the Batch
resource.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyDefaultOAuthCallback" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default redirect back to the application after
authorization grant.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyEmail" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The e-mail address of the organization to which access will be
granted. (For debugging - not to be shared with customers)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyName" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The name of the organization to which access will be
granted.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyPhone" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The phone number of the organization to which access will be
granted. (For debugging - not to be shared with customers)</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="Authorization">
    <xs:annotation>
      <xs:documentation>Represents a permission granted by an owner for access to a
resource.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="accessToken" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the access token associated with this
authorization.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="authorizationServer" type="xs:anyURI" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the URI link to the authorization endpoint associated
with this authorization.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="authorizedPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Restricts access to requests or subscriptions within this date
time interval.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="publishedPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Restricts access to only the objects within the associated
resource that were published within this date time interval.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="resource" type="xs:anyURI" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the identifier of the resource, same as was specified
in OAuth "scope".</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="status" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The status of this authorization.
0 - Revoked
1 - Active</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyConsumer" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the identifier for the Third
Party.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IntervalBlock">
    <xs:annotation>
      <xs:documentation>Time sequence of Readings of the same ReadingType.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="interval" type="DateTimeInterval" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the time period during which the contained readings
were taken.</xs:documentation>
            </xs:annotation>
```

```
          </xs:element>
          <xs:element name="IntervalReading" type="IntervalReading" minOccurs="0"
maxOccurs="unbounded"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IntervalReading">
    <xs:annotation>
      <xs:documentation>Specific value measured by a meter or other asset. Each Reading is
associated with a specific ReadingType.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="cost" type="UInt48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies a cost associated with this reading, in millionths
of the currency specified in the ReadingType for this reading.  (e.g. 840 = USD, US
dollar)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ReadingQuality" type="ReadingQuality" minOccurs="0"
maxOccurs="unbounded"/>
          <xs:element name="timePeriod" type="DateTimeInterval" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The date time and duration of a reading. If not specified,
readings for each "intervalLength" in ReadingType are present.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="value" type="UInt48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Value in units specified by ReadingType</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="MeterReading">
    <xs:annotation>
      <xs:documentation>Set of values obtained from the meter.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReadingQuality">
    <xs:annotation>
      <xs:documentation>Quality of a specific reading value or interval reading value. Note
that more than one Quality may be applicable to a given Reading. Typically not used unless
problems or unusual conditions occur (i.e., quality for each Reading is assumed to be 'Good'
(valid) unless stated otherwise in associated ReadingQuality).</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="quality" type="QualityOfReading" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Quality, to be specified if different
thanReadingType.defaultQuality.

The specific format  is specified per the standard is defined in
QualityOfReading.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReadingType">
    <xs:annotation>
      <xs:documentation>Characteristics associated with all Readings included in a
MeterReading.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="accumulationBehaviour" type="AccumulationBehaviourType"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code indicating how value is accumulated over time for
Readings of ReadingType. The list of valid values per the standard are defined in
AccumulationBehaviorType.

Examples are:
0 = Not Applicable
1 = BulkQuantity
3 = Cumulative</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="commodity" type="CommodityType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for commodity classification of Readings of ReadingType.
The valid values per the standard are defined in CommodityType.

Examples are:
0 = Not Applicable
1 = Electricity secondary metered value (a premise meter is typically a secondary meter)
2 = Electricity primary metered value
4 = Air
7 = NaturalGas</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="consumptionTier" type="ConsumptionTierType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for consumption tier associated with a Reading of
ReadingType. The valid values are define in ConsumptionTierType.

Examples are:
0 = Not Applicable
1 = Block Tier 1
2 = Block Tier 2</xs:documentation>
```

```
            </xs:annotation>
          </xs:element>
          <xs:element name="currency" type="CurrencyCode" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the currency for costs associated with this
ReadingType.  The valid values per the standard are defined in CurrencyCode.

Examples are:
0 - Not Applicable
36 - Australian Dollar
124 - Canadian Dollar
840 - US Dollar
978 - Euro</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataQualifier" type="DataQualifierType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code describing a salient attribute of Readings of
ReadingType. Valid values per the standard are defined in DataQualifierType.

Examples are:
0 = Not Applicable
2 = Average</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="defaultQuality" type="QualityOfReading" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Default value to be used if no value of ReadingQuality.quality
is provided.

Specific format and valid values per the standard are specified in
QualityOfReading.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="flowDirection" type="FlowDirectionType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Direction associated with current related Readings. valid
values per the standard are defined in FlowDirectionType.

Examples are:
0 = Not Applicable
1 = Forward
19 = Reverse</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="intervalLength" type="UInt32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Default interval length specified in seconds for Readings of
ReadingType.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="kind" type="KindType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for general classification of a Reading of ReadingType.
Valid values per the standard are defined in KindType.

Examples are:

0 = Not Applicable
3 = Currency
8 = Demand</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="phase" type="PhaseCode" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for phase information associated with Readings of
ReadingType. Valid values per the standard are defined in PhaseCode.

Examples are:
0 = Not Applicable
129 = Phase AN
128 = Phase A
132 = Phase AB</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="powerOfTenMultiplier" type="PowerOfTenMultiplierType"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the power of ten multiplier which, when used in
combination with the uom, specifies the actual unit of measure for Readings of ReadingType.
Valid values per the standard are defined in PowerOfTenMultiplierType.

Examples are:
0 = None
1 = deca=x10
2 = hecto=x100
-3 = mili=x10-3</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="timeAttribute" type="TimeAttributeType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code used to specify a particular type of time interval method
for Readings of ReadingType. Valid values per the standard are defined in TimeAttributeType.

Examplesare:
0 = Not Applicable
1 = 10-minute
2 = 15-minute</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="tou" type="TOUType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the TOU type of Readings of ReadingType. valid values
per the standard are defined in TOUType.
Examples are:
0 = NotApplicable
1 = TOU A
2 = TOU B</xs:documentation>
            </xs:annotation>
```

```
          </xs:element>
          <xs:element name="uom" type="UomType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the base unit of measure for Readings of ReadingType.
Used in combination with the powerOfTenMultiplier to specify the actual unit of measure. Valid
values per the standard are defined in UomType.

Examples are:
0 = Not Applicable
5 = A (Current)
29 = Voltage</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IdentifiedObject">
    <xs:annotation>
      <xs:documentation>This is a root class to provide common naming attributes for all
classes needing naming attributes</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="BatchItemInfo" type="BatchItemInfo" minOccurs="0" maxOccurs="1"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ServiceCategory">
    <xs:annotation>
      <xs:documentation>Category of service provided to the customer.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="kind" type="ServiceKind" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Service classification
Examples are:
0 - electricity
1 - gas

The list of specific valid values per the standard are itemized in
ServiceKind.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UsagePoint">
    <xs:annotation>
      <xs:documentation>Logical point on a network at which consumption or production is
either physically measured (e.g. metered) or estimated (e.g. unmetered street
lights).</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="roleFlags" type="HexBinary16" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the roles that this usage point has been assigned.
Bit 1 - isMirror
Bit 2 - isPremisesAggregationPoint
Bit 3 - isPEV
Bit 4 - isDER
Bit 5 - isRevenueQuality
Bit 6 - isDC
Bit 7-16 - Reserved</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ServiceCategory" type="ServiceCategory" minOccurs="0"
maxOccurs="1"/>
          <xs:element name="status" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the current status of this usage point.

The only valid values are:

0 = off
1 = on</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ElectricPowerQualitySummary">
    <xs:annotation>
      <xs:documentation>A summary of power quality events. This information represents a
summary of power quality information typically required by customer facility energy management
systems. It is not intended to satisfy the detailed requirements of power quality monitoring.
All values are as defined by measurementProtocol during the period. The standards typically
also give ranges of allowed values; the information attributes are the raw measurements, not
the "yes/no" determination by the various standards. See referenced standards for definition,
measurement protocol  and period.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="flickerPlt" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of long term Rapid Voltage Change in hundredths.

flickerPlt is derived from 2 hours of Pst values (12 values combined in cubic
relationship).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="flickerPst" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>flickerPst is a value measured over 10 minutes that
characterizes the likelihood that the voltage fluctuations would result in perceptible light
```

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flicker. A value of 1.0 is designed to represent the level that 50% of people would perceive
flicker in a 60 watt incandescent bulb.

The value reported is represented as an integer in hundredths.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="harmonicVoltage" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of the Harmonic Voltage during the period. For
DC, distortion is with respect to a signal of zero Hz.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="longInterruptions" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Long Interruption events (as defined by
measurementProtocol) during the summary interval period.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="mainsVoltage" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of the Mains [Signaling] Voltage during the
summary interval period in uV.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="measurementProtocol" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A reference to the source standard used as the measurement
protocol definition.

Examples are:
0 = "IEEE1519-2009"
1 = "EN50160"</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="powerFrequency" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of the power frequency during the summary
interval period in uHz.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="rapidVoltageChanges" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Rapid Voltage Change events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="shortInterruptions" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Short Interruption events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="summaryInterval" type="DateTimeInterval" minOccurs="1"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Interval of summary period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="supplyVoltageDips" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Supply Voltage Dip events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="supplyVoltageImbalance" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Supply Voltage Imbalance events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="supplyVoltageVariations" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Supply Voltage Variations during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="tempOvervoltage" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Temporary Overvoltage events (as defined by
measurementProtocol) during the summary interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ElectricPowerUsageSummary">
    <xs:annotation>
      <xs:documentation>Summary of usage for a billing period</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="billingPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The billing period to which the included measurements
apply</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="billLastPeriod" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The amount of the bill for the previous period , in millionths
of the currency specified in the ReadingType for this reading (e.g. 840 = USD, US
dollar).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="billToDate" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The bill amount related to the billing period as of the date
received, in millionths of the currency specified in the ReadingType for this reading. (e.g.
840 = USD, US dollar).</xs:documentation>
            </xs:annotation>
          </xs:element>
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          <xs:element name="costAdditionalLastPeriod" type="Int48" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Additional charges from the last billing period, in millionths
of the currency specified in the ReadingType for this reading.  (e.g. 840 = USD, US
dollar).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currency" type="CurrencyCode" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The ISO 4217 code indicating the currency applicable to the
bill amounts in the summary. See list at
http://www.unece.org/cefact/recommendations/rec09/rec09_ecetrd203.pdf</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentBillingPeriodOverAllConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The total consumption for the billing
period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentDayLastYearNetConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The amount of energy consumed one year ago interpreted as same
day of week same week of year (see ISO 8601).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentDayNetConsumption" type="SummaryMeasurement" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Net consumption for the current day (delivered -
received)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentDayOverallConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Overall energy consumption for the current
day</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="peakDemand" type="SummaryMeasurement" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Peak demand recorded for the current period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="previousDayLastYearOverallConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The amount of energy consumed on the previous day one year ago
interpreted as same day of week same week of year  (see ISO 8601).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="previousDayNetConsumption" type="SummaryMeasurement" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Net consumption for the previous day</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="previousDayOverallConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The total consumption for the previous day</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="qualityOfReading" type="QualityOfReading" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Indication of the quality of the summary
readings</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ratchetDemand" type="SummaryMeasurement" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The current ratchet demand value for the ratchet demand
period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ratchetDemandPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The period over which the ratchet demand
applies</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="statusTimeStamp" type="TimeType" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Date/Time status of this UsageSummary</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="HexBinary128">
    <xs:annotation>
      <xs:documentation>A 128-bit field encoded as a hex string (32 characters / 16
octets)</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:hexBinary">
      <xs:maxLength value="16"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="HexBinary16">
    <xs:annotation>
      <xs:documentation>A 16-bit field encoded as a hex string (4 characters / 2
octets)</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:hexBinary">
      <xs:maxLength value="2"/>
    </xs:restriction>
```

```
  </xs:simpleType>
  <xs:simpleType name="String32">
    <xs:annotation>
      <xs:documentation>Character string of max length 32</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="UInt16">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 65535 (2^16-1), same as
xs:unsignedShort</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedShort"/>
  </xs:simpleType>
  <xs:simpleType name="UInt32">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 4294967295 (2^32-1), same as
xs:unsignedInt</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedInt"/>
  </xs:simpleType>
  <xs:simpleType name="UInt48">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 281474976710655 (2^48-1), restriction
of xs:unsignedLong</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedLong">
      <xs:maxInclusive value="281474976710655"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="UInt8">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 255 (2^8-1), same as
xs:unsignedByte</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedByte"/>
  </xs:simpleType>
  <xs:simpleType name="Int48">
    <xs:annotation>
      <xs:documentation>Signed integer, max inclusive 281474976710655 (2^48-1), restriction of
xs:long</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:long">
      <xs:maxInclusive value="281474976710655"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="AccumulationBehaviourType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = BulkQuantity
3 = Cumulative
4 = DeltaData
6 = Indicating
9 = Summation
12 = Instantaneous</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="CommodityType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = Electricity secondary metered value (a premise meter is typically a secondary meter)
2 = Electricity primary metered value
4 = Air
7 = NaturalGas
8 = Propane
9 = PotableWater
10 = Steam
11 = WasteWater
12 = HeatingFluid
13 = CoolingFluid</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="ConsumptionTierType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = Block Tier 1
2 = Block Tier 2
3 = Block Tier 3
4 = Block Tier 4
5 = Block Tier 5
6 = Block Tier 6
7 = Block Tier 7
8 = Block Tier 8
9 = Block Tier 9
10 = Block Tier 10
11 = Block Tier 11
12 = Block Tier 12
13 = Block Tier 13
14 = Block Tier 14
15 = Block Tier 15
16 = Block Tier 16</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="CurrencyCode">
    <xs:annotation>
      <xs:documentation>Follows codes defined in ISO 4217. Full list at tiny.cc/4217.
```

```
0 - Not Applicable
36 - Australian Dollar
124 - Canadian Dollar
840 - US Dollar
978 - Euro</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="DataQualifierType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
2 = Average
8 = Maximum
9 = Minimum
12 = Normal</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="DateTimeInterval">
    <xs:annotation>
      <xs:documentation>Interval of date and time. End is not included because it can be
derived from the start and the duration.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="duration" type="UInt32" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Duration of the interval, in seconds.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="start" type="TimeType" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Date and time that this interval started.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="FlowDirectionType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = Forward
19 = Reverse</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="KindType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
3 = Currency
8 = Demand
12 = Energy
37 = Power</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="PhaseCode">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
129 = Phase AN
128 = Phase A
132 = Phase AB
64 = Phase BN
64 = Phase B
32 = Phase CN
32 = Phase C
224 = Phase ABC
66 = Phase BC
40 = Phase CA
512 = Phase S1
256 = Phase S2
768 = Phase S1S2
513 = Phase S1N
257 = Phase S2N
769 = Phase S1S2N</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt16"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:simpleType name="PowerOfTenMultiplierType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = None
1 = deca=x10
2 = hecto=x100
-3 = mili=x10-3
3 = kilo=x1000
6 = Mega=x106
-6 = micro=x10-3
9 = Giga=x109</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:byte"/>
  </xs:simpleType>
  <xs:complexType name="QualityOfReading">
```

```
    <xs:annotation>
      <xs:documentation>List of codes indicating the quality of the reading, using
specification:

0 – valid (validated)
7 - manually edited
8 - estimated
10 - questionable
11 - derived
12 – projected (forecasted)
13 - mixed
14 - raw
15 - normalized for weather
16 - other </xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="ServiceKind">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 - electricity
1 - gas
2 - water
4 - pressure
5 - heat
6 - cold
7 - communication
8 - time</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="TimeAttributeType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = 10-minute
2 = 15-minute
4 = 24-hour
5 = 30-minute
7 = 60-minute
11 = Daily
13 = Monthly
15 = Present
16 = Previous
24 = Weekly
32 = ForTheSpecifiedPeriod
79 = Daily30minuteFixedBlock</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:simpleType name="TimeType">
    <xs:annotation>
      <xs:documentation>Time is a signed 64 bit value representing the number of seconds since
0 hours, 0 minutes, 0 seconds, on the 1st of January, 1970.</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:long"/>
  </xs:simpleType>
  <xs:complexType name="TOUType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = NotApplicable
1 = TOU A
2 = TOU B
3 = TOU C
4 = TOU D
5 = TOU E
6 = TOU F
7 = TOU G
8 = TOU H
9 = TOU I
10 = TOU J
11 = TOU K
12 = TOU L
13 = TOU M
14 = TOU N
15 = TOU O</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="UomType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
5 = A (Current)
29 = Voltage
31 = J (Energy joule)
33 = Hz (Frequency)
38 = Real power (Watts)
42 = m3 (Cubic Meter)
61 = VA (Apparent power)
63 = VAr (Reactive power)
65 = Cos? (Power factor)
67 = V² (Volts squared)
69 = A² (Amp squared)
71 = VAh (Apparent energy)
72 = Real energy (Watt-hours)
73 = VArh (Reactive energy)
106 = Ah (Ampere-hours / Available Charge)
119 = ft3 (Cubic Feet)
122 = ft3/h (Cubic Feet per Hour)
125 = m3/h (Cubic Meter per Hour)
128 = US gl (US Gallons)
```

```
129 = US gl/h (US Gallons per Hour)
130 = IMP gl (Imperial Gallons)
131 = IMP gl/h (Imperial Gallons per Hour)
132 = BTU
133 = BTU/h
134 = Liter
137 = L/h (Liters per Hour)
140 = PA(gauge)
155 = PA(absolute)
169 = Therm</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="SummaryMeasurement">
    <xs:annotation>
      <xs:documentation>An aggregated summary measurement reading.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="powerOfTenMultiplier" type="PowerOfTenMultiplierType"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The multiplier part of the unit of measure, e.g. "kilo"
(k)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="timeStamp" type="TimeType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The date and time (if needed) of the summary
measurement.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="uom" type="UomType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The units of the reading, e.g. "Wh"</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="value" type="UInt48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The value of the summary measurement.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="BatchItemInfo">
    <xs:annotation>
      <xs:documentation>Includes elements that make it possible to include multiple
transactions in a single (batch) request.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="name" type="HexBinary16" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>An identifier for this object that is only unique within the
containing collection.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="operation" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the operation requested of this item.

0=Create
1=Read
2=Update
3=Delete</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="statusCode" type="UInt16" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Indicates the status code of the associated transaction.

200 - Ok
201 - Created
204 - No Content
301 - Moved Permanently
302 - Redirect
304 - Not Modified
400 - Bad Request
401 - Unauthorized
403 - Forbidden
404 - Not Found
405 - Method Not Allowed
410 - Gone
500 - Internal Server Error</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="statusReason" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Indicates the reason for the indicated status
code.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="Object">
    <xs:annotation>
      <xs:documentation>Superclass of all object classes to allow
extensions.</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:element name="extension" type="xs:anyType" minOccurs="0" maxOccurs="unbounded">
        <xs:annotation>
          <xs:documentation>Contains an extension.</xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
```

```
  </xs:complexType>
  <xs:complexType name="ServiceStatus">
    <xs:annotation>
      <xs:documentation>Contains the current status of the service.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="currentStatus" type="UInt8" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The current status of the service.

0 = Unavailable
1 = Normal, operational</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="Subscription">
    <xs:annotation>
      <xs:documentation>Defines the parameters of a subscription between third party and data
custodian</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="ApplicationInformation" type="ApplicationInformation"/>
  <xs:element name="Authorization" type="Authorization"/>
  <xs:element name="IntervalBlock" type="IntervalBlock"/>
  <xs:element name="IntervalReading" type="IntervalReading"/>
  <xs:element name="MeterReading" type="MeterReading"/>
  <xs:element name="ReadingQuality" type="ReadingQuality"/>
  <xs:element name="ReadingType" type="ReadingType"/>
  <xs:element name="IdentifiedObject" type="IdentifiedObject"/>
  <xs:element name="ServiceCategory" type="ServiceCategory"/>
  <xs:element name="UsagePoint" type="UsagePoint"/>
  <xs:element name="ElectricPowerQualitySummary" type="ElectricPowerQualitySummary"/>
  <xs:element name="ElectricPowerUsageSummary" type="ElectricPowerUsageSummary"/>
  <xs:element name="AccumulationBehaviourType" type="AccumulationBehaviourType"/>
  <xs:element name="CommodityType" type="CommodityType"/>
  <xs:element name="ConsumptionTierType" type="ConsumptionTierType"/>
  <xs:element name="CurrencyCode" type="CurrencyCode"/>
  <xs:element name="DataQualifierType" type="DataQualifierType"/>
  <xs:element name="DateTimeInterval" type="DateTimeInterval"/>
  <xs:element name="FlowDirectionType" type="FlowDirectionType"/>
  <xs:element name="KindType" type="KindType"/>
  <xs:element name="PhaseCode" type="PhaseCode"/>
  <xs:element name="QualityOfReading" type="QualityOfReading"/>
  <xs:element name="ServiceKind" type="ServiceKind"/>
  <xs:element name="TimeAttributeType" type="TimeAttributeType"/>
  <xs:element name="TOUType" type="TOUType"/>
  <xs:element name="UomType" type="UomType"/>
  <xs:element name="SummaryMeasurement" type="SummaryMeasurement"/>
  <xs:element name="BatchItemInfo" type="BatchItemInfo"/>
  <xs:element name="Object" type="Object"/>
  <xs:element name="ServiceStatus" type="ServiceStatus"/>
  <xs:element name="Subscription" type="Subscription"/>
</xs:schema>
```

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Appendices

This section contains informative descriptions, use cases and diagrams used by the committee in developing the Model Business Practices. These Appendices are not normative.

A. Overview

The scope of these Model Business Practices includes authorization by the Retail Customer and the Automatic Data Exchange of the EUI to the Authorized Third Party in accordance with parameters (e.g. term of access, type of data, quantity of data, etc.) determined by the Retail Customer subject to the Governing Documents and Applicable Regulatory Authority. The diagram below shows the logical components involved in this authorization and data exchange process. Note that while the authorization process shown in this figure is made using a web browser, the services provided by the Authorized Third Party are not required to use a web browser to deliver such services.

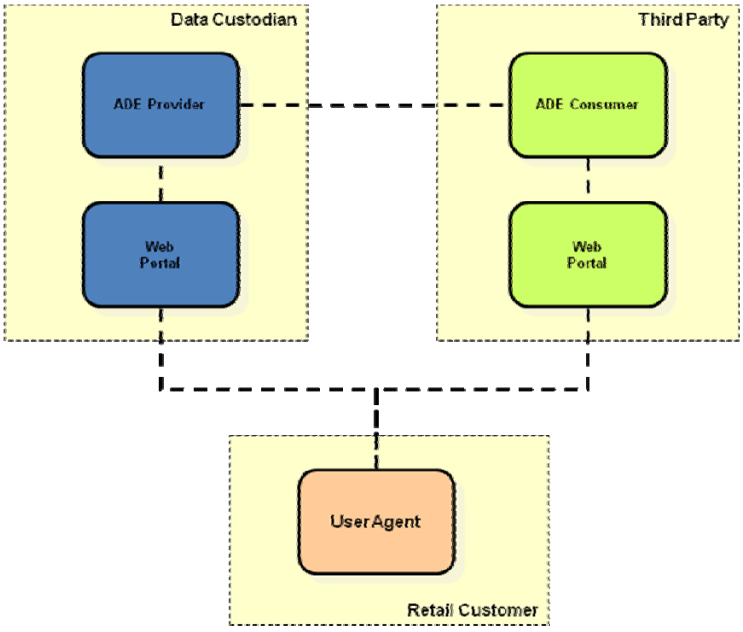

Figure 8: Overview of Logical Components

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

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Request No.: R10008
Request Title: Energy Services Provider Interface Standard

B. Use Cases

This section presents a superset of the use cases that are informative of the third party data access relationship. Alternative use cases are presented for certain activities that can be achieved in different ways, such as the delivery of shared resource information by push or by pull.

The concept of a Shared Resource Key is used throughout these use cases. A Shared Resource Key is a token used to uniquely identify an instance of a Third Party data access relationship (i.e., each Retail Customer-Data Custodian-Third Party combination for a particular resource will have a unique Shared Resource Key). A Shared Resource Key contains no PII regarding the Retail Customer and so can be freely shared among all three roles without unnecessary disclosure of sensitive information. Once the relationship is established, inclusion of a Shared Resource Key in an interaction is sufficient to identify a specific Third Party data access relationship.

These Use Cases are illustrative, do not impose any obligations and are subject to the Governing Documents and the requirements of the Applicable Regulatory Authority. All statements of steps and preconditions should be interpreted to follow this constraint.

Each use case contains the following sections:

- Use Case Description: This is a summary of the use case, describing the overall purpose.
- Pre-Conditions: These are conditions that must be true for the use case to be successfully executed.
- Invariant Conditions: These are properties that will be true any time the use case is initiated, regardless of whether it terminates successfully.
- Post-Conditions: These are properties that will be true only if the use case terminates successfully. This requires that all preconditions and all condition checks (e.g., for validity of a request) be satisfied during execution of the use case.
- Basic Path Scenario: This defines the series of steps undertaken by each role during successful execution of the use case. The scenario is depicted graphically in a Unified Modeling Language (UML) sequence diagram and each step is summarized in text.

The following use cases are informative and not normative.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
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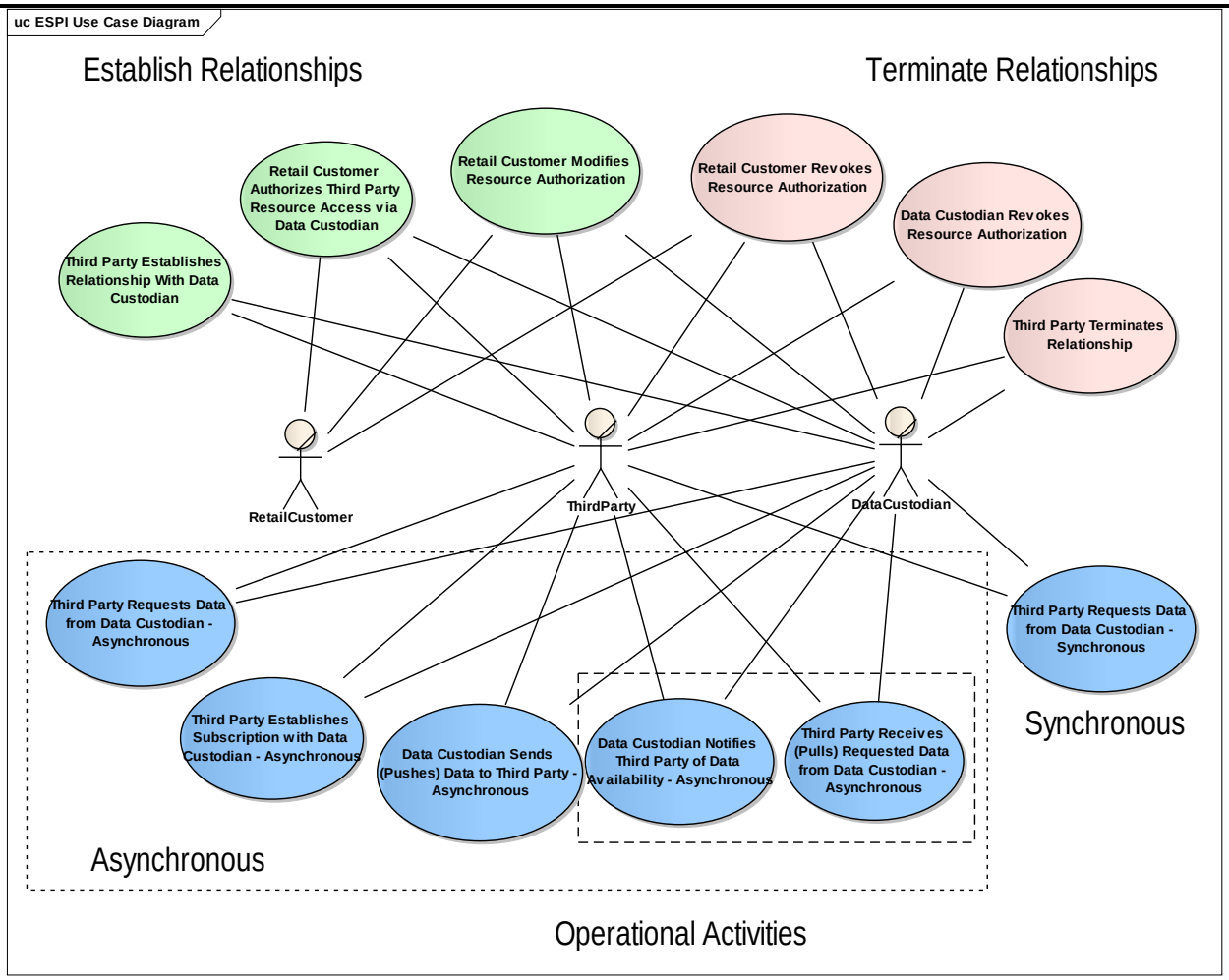

Figure 9**:** ESPI Use Case Diagram

1: Third Party Establishes Relationship With Data Custodian

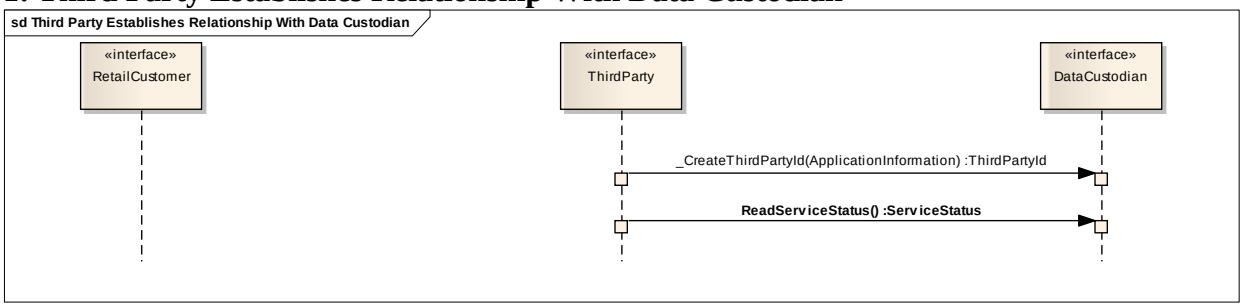

Figure 10**:** Third Party Establishes Relationship With Data Custodian

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

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Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Description

A Third Party service provider wants to register with a Data Custodian to provide services to Retail Customers with data stored at the Data Custodian.

Pre-Condition: Third Party had demonstrated that it meets eligibility, security and privacy requirements.
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: A Shared Identity Key is generated to allow the Third Party to identify its identity to Data Custodian.
Post-Condition: The Third Party has permission to get specified resource data from the Data Custodian with permission of a Retail Customer.

Scenario: Basic Path

1. The Third Party wishes to provide value added services to Retail Customers with data stored by the Data Custodian.
~~1.~~2. Third Party requests that the Data Custodian establish relationship.
~~1.~~3. Third Party provides proof that they meet the requirements for eligibility, data security and privacy protection.
~~1.~~4. Third Party provides description of the services it wishes provide for Retail Customers.
~~1.~~5. The Data Custodian generates an Identity Key for the Third Party. Third Party will use this key to identify itself during Use Cases 2 through 12.
~~1.~~6. The Data Custodian adds the Third Party to its list of available services it presents to Retail Customers in Use Case 2.
~~1.~~7. Third Party adds Data Custodian to its list of Data Custodians it presents in Use Case 2.
~~1.~~8. Third Party persists the Identity Key.
~~1.~~9. As needed, Third Party checks their ability to connect to the service, and obtains the current status of the service.

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2: Retail Customer Authorizes Third Party Resource Access via Data Custodian

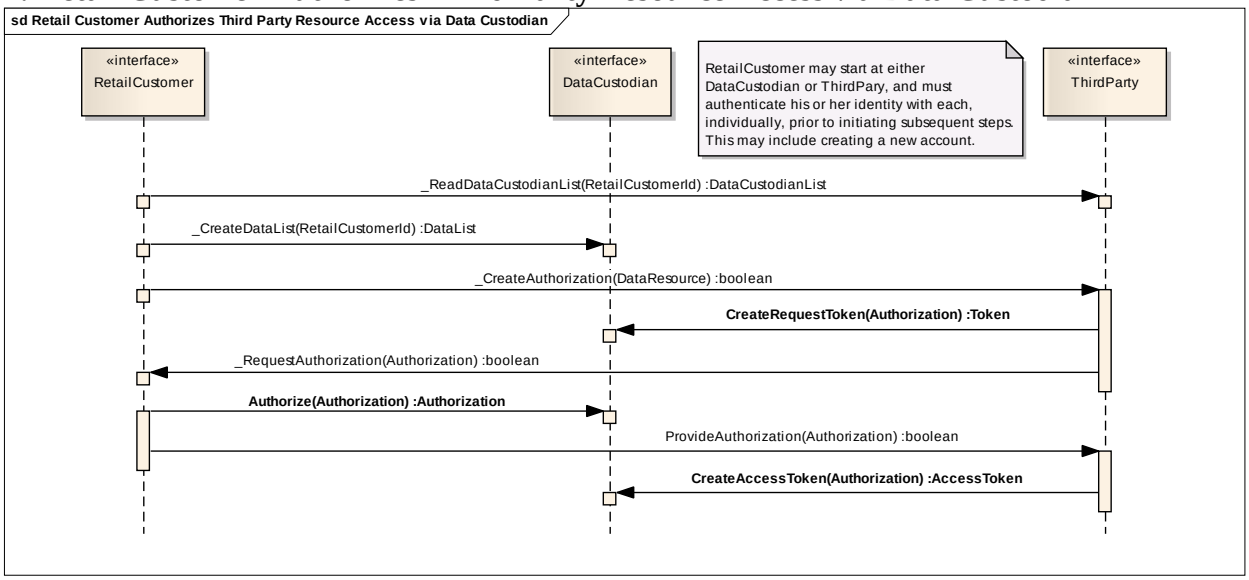

Figure 11**:** Retail Customer Authorizes Third Party Resource Access via Data Custodian

Description

A Retail Customer wants to grant permission for a Data Custodian to share a particular data resource with a Third Party. The Retail Customer initiates the process through the Data Custodian.

Pre-Condition: Retail Customer has established accounts with Data Custodian and Third Party.
Pre-Condition: Third Party has an established account with Data Custodian.
Pre-Condition: Data Custodian and Third Party have published and made Retail Customer aware of their privacy policy related to collection and handling of customer information.
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: A Shared Resource Key is generated to allow all three roles to refer to the same shared resource without disclosing PII. This key is known to all three roles.
Post-Condition: The Third Party has the Retail Customer's permission to get the specified resource data from the Data Custodian.
Post-Condition: The Data Custodian sends the Retail Customer confirmation of establishment of the Third Party data access relationship.

Scenario: Basic Path
1. The Retail Customer decides to grant permission for the Data Custodian to share their resource data with the Third Party
~~1.~~2. (Optional) Retail Customer finds their appropriate Data Custodian from Third Party, and navigates to the appropriate place to begin establishment of sharing relationship.
~~1.~~3. Retail Customer requests that the Data Custodian establish a new data access relationship.
~~1.~~4. Data Custodian presents the Retail Customer with a list of resources that can be shared with Third Parties. Any additional attributes (e.g., duration for which permission should be granted) that can be selected are also presented.

~~1.~~5. Retail Customer selects a resource to share, sets any available attributes for the relationship, and specifies a Third Party that is known to the Data Custodian. Selecting these parameters and completing the interaction indicates permission for the Data Custodian to grant the specified Third Party access to the specified shared resource.

~~1.~~6. The relationship will only be created if the Data Custodian accepts the selections for the Third Party (e.g., a Data Custodian may constrain access to certain resource attributes depending on resource sensitivity).

~~1.~~7. Data Custodian generates a Shared Resource Key (Request Token) to begin creation of this relationship and provides it to the Third Party. Each Shared Resource Key is unique to the relationship between a Retail Customer, Data Custodian, Third Party, and specific data resource.

~~1.~~8. Third Party requests authorization of the token by the Retail Customer, via the Data Custodian.

~~1.~~9. Retail Customer authenticates with Data Custodian and authorizes the Request Token.

~~1.~~10. Third Party exchanges the authorized Request Token for an Access Token from the Data Custodian.

~~1.~~11. Third Party and Data Custodian persist the Authorization, associating it with its identity of the Retail Customer.

3: Retail Customer Modifies Resource Authorization

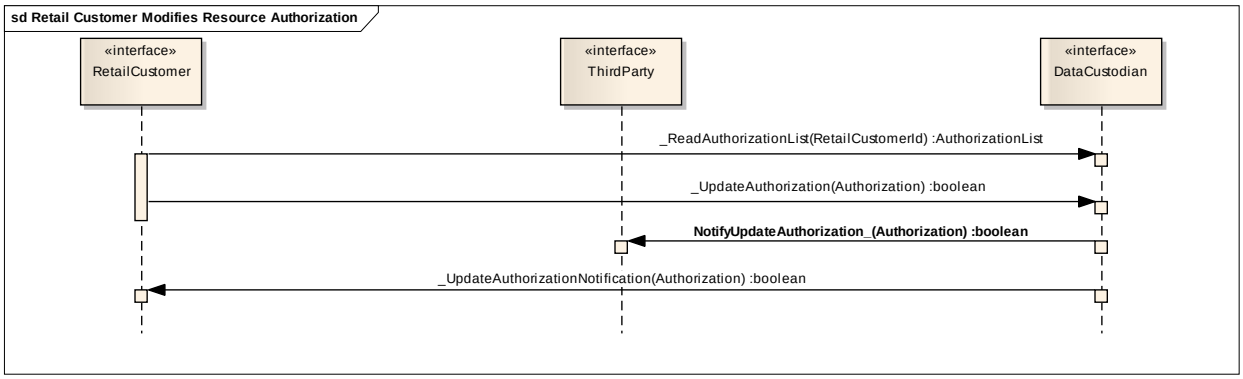

Figure 12**:** Retail Customer Modifies Resource Authorization

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party and wants to either extend or restrict the permissions associated with that relationship.

Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: Future interactions between the Data Custodian and the Third Party with respect to the specified resource are constrained by the modified permissions.
Post-Condition: The Third Party handles any data not allowed by the termination of the relationship in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the data in control of the Third Party are deleted).

Post-Condition: The Data Custodian sends the Retail Customer confirmation of modification of the permissions of the Third Party data access relationship.

Scenario: Basic Path

1. Retail Customer chooses to modify relationship permissions with the Data Custodian.
1.2. Data Custodian presents the Retail Customer with a list of resources that are shared with Third Parties. If the Retail Customer may only grant access to one resource, S2 and S3 may be skipped.
1.3. Retail Customer chooses particular resource whose permissions he/she wishes to modify.
1.4. Data Custodian provides available resource attributes and current settings to Retail Customer.
1.5. Retail Customer chooses new settings.
1.6. The new permissions governing the relationship will apply only if the Data Custodian accepts the selections for the Third Party (e.g., a Data Custodian may constrain access to certain resource attributes depending on resource sensitivity).
1.7. Data Custodian persists the new permissions, which will be used from this point forward to constrain the relationship (until further changed or the relationship is terminated).
1.8. Data Custodian notifies Third Party that permissions have changed (identifying the resource by its Shared Resource Key). This notification may be immediate or deferred (e.g., as part of a resource push from Use Case 8, perhaps as part of a header).
1.9. Data Custodian notifies Retail Customer that permissions have been changed.
1.10. The Third Party handles any data not allowed by the modification of the resource authorization in the manner specified in any service agreements among the parties in the relationship.

4: Retail Customer Revokes Resource Authorization

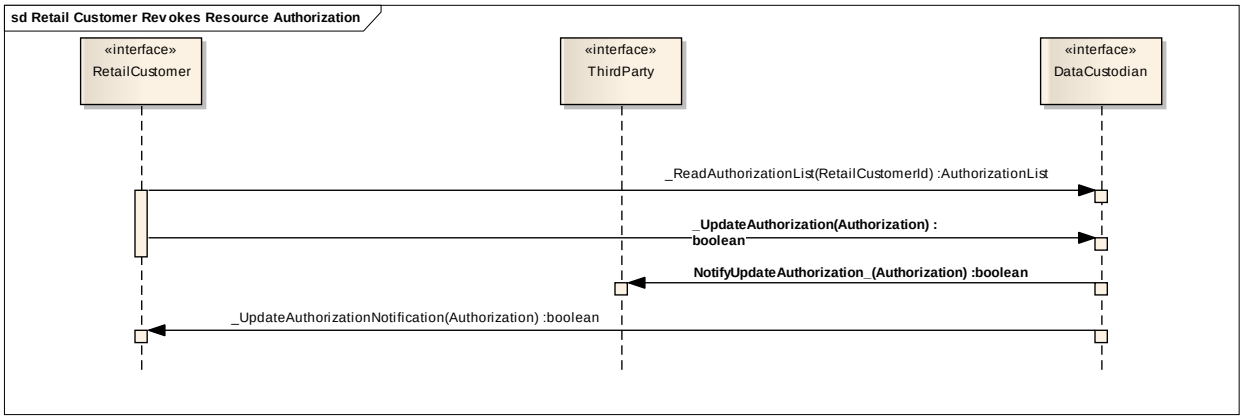

Figure 13**:** Retail Customer Revokes Resource Authorization

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party and wants to terminate that relationship

Pre-Condition: Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.

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Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: Both the Third Party and the Data Custodian delete the Shared Resource Key for the relationship and no future interactions are permitted for that relationship.
Post-Condition: The Third Party handles any data not allowed by the termination of the relationship in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the data in control of the Third Party are deleted)
Post-Condition: The Data Custodian sends the Retail Customer confirmation of termination of the Third Party data access relationship.

Scenario: Basic Path
1. Retail Customer requests that Data Custodian terminate the data access relationship.
~~1.~~2. Data Custodian presents the Retail Customer with a list of resources for which there are valid relationships with Third Parties. If the Retail Customer only has one valid relationship, S2 and S3 may be skipped.
~~1.~~3. Retail Customer chooses a resource whose relationship is to be terminated.
~~1.~~4. Data Custodian terminates the relationship, deleting the appropriate Shared Resource Key from its list of valid relationships.
~~1.~~5. Data Custodian notifies Third Party that the relationship has been terminated (identifying the relationship by its Shared Resource Key).
~~1.~~6. Data Custodian notifies Retail Customer that the relationship has been terminated.
~~1.~~7. The Third Party handles any data not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship.

5: Data Custodian Revokes Resource Authorization

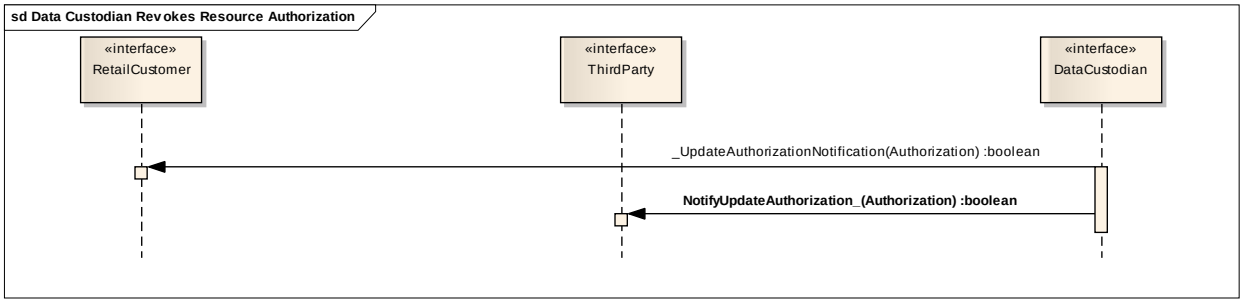

Figure 14**:** Data Custodian Revokes Resource Authorization

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Data Custodian wants to terminate the relationship (for whatever reason).

Pre-Condition: Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.

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Post-Condition: Both the Third Party and the Data Custodian delete the Shared Resource Key for the relationship and no future interactions are permitted for that relationship.
Post-Condition: The Third Party handles any data not allowed by the termination of the relationship in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the data in control of the Third Party are deleted).
Post-Condition: The Data Custodian sends the Retail Customer notification of termination of the Third Party data access relationship.

Scenario: Basic Path
1. Data Custodian decides to terminate relationship with Third Party.
~~1.~~2. Data Custodian notifies Retail Customer of termination decision; no acknowledgement or confirmation is required.
~~1.~~3. Data Custodian notifies Third Party of termination of the relationship, identifying the relationship by a Shared Resource Key.
~~1.~~4. The Third Party handles any data not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship.

6: Third Party Terminates Relationship

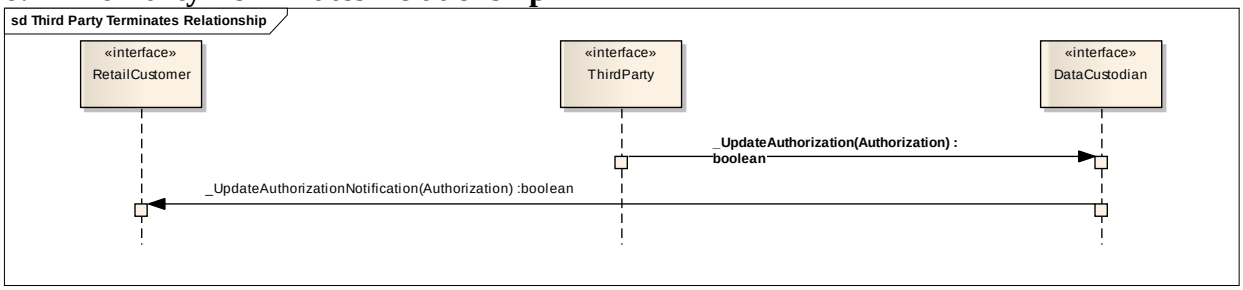

Figure 15**:** Third Party Terminates Relationship

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party determines that it no longer wants to provide services to the Retail Customer and terminates the relationship.

Pre-Condition: Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: Both the Third Party and the Data Custodian delete the Shared Resource Key for the relationship and no future interactions are permitted for that relationship.
Post-Condition: The Third Party handles any data not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the data in control of the Third Party are deleted within

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Post-Condition: The Data Custodian sends the Retail Customer notification of termination of the Third Party data access relationship.

Scenario: Basic Path
1. Third Party decides to terminate a third party data access relationship.
~~1.~~2. Third Party notifies Data Custodian of termination of relationship, identifying the relationship by the Shared Resource Key.
~~1.~~3. An invalid request (e.g., specification of a Shared Resource Key not associated with the Third Party) will not be accepted.
~~1.~~4. Data Custodian deletes Shared Resource Key, terminating the relationship.
~~1.~~5. Data Custodian notifies the Retail Customer of termination of the relationship. No acknowledgement or confirmation is required.
~~1.~~6. The Third Party handles any data not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship.

7: Third Party Establishes Subscription with Data Custodian - Asynchronous

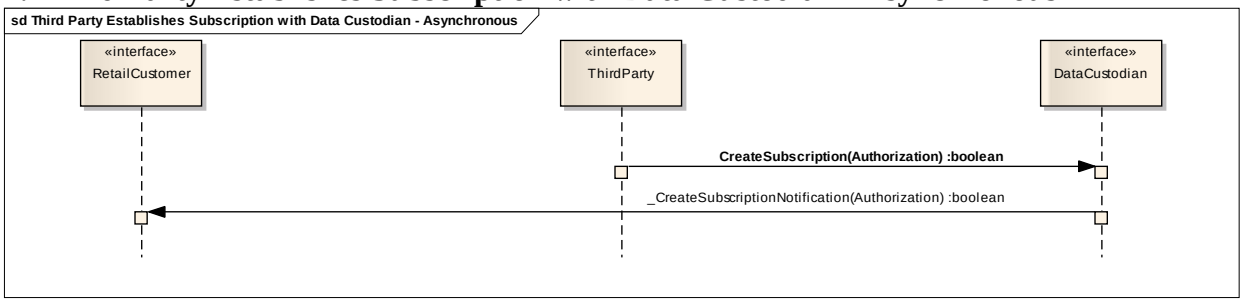

Figure 16**:** Third Party Establishes Subscription with Data Custodian - Asynchronous

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party establishes a *subscription* indicating the circumstances (i.e., an agreed-upon schedule and/or specification of special events) under which the Data Custodian should provide the Third Party with the relevant resource data.
Depending on the services offered by a Data Custodian, the subscription may indicate the circumstances under which the Data Custodian will send resource data or only notification that resource data is available (i.e., whether the Data Custodian supports a push or pull model). Subscriptions may be parameterized, if supported by the Data Custodian, to define preferred delivery criteria (e.g., new data whenever available or only once per day).
Pre-Condition: Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: The Data Custodian records a valid subscription on behalf of the Third Party. Future data availability triggers satisfying the subscription will result in the appropriate information being sent to the Third Party.
Post-Condition: Data Custodian sends the Third Party confirmation of its subscription request

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Post-Condition: Data Custodian sends the Retail Customer notification of the Third Party's subscription request

Scenario: Basic Path
1. Third Party requests that the Data Custodian establish a new subscription.
1.2. Third Party provides Data Custodian with information defining the subscription request. At a minimum, this information includes a Shared Resource Key identifying the resource whose data is to be shared. The information may include additional subscription parameters, as supported by the Data Custodian.
1.3. The subscription will not be accepted if the Shared Resource Key is invalid.
1.4. The Data Custodian saves the subscription information, associating the subscription with the Shared Resource Key and the Third Party.
1.5. The Data Custodian notifies the Third Party that the subscription request was successful. No acknowledgement or confirmation is required.
1.6. The Data Custodian notifies the Retail Customer that the Third Party has completed a subscription for their resource data. No confirmation is required, as the Third Party already has permissions as indicated by the valid Shared Resource Key. If the subscription is not acceptable to the Retail Customer, Use Case 3 can be exercised to modify permissions for the Third Party.

8: Third Party Requests Data from Data Custodian - Asynchronous

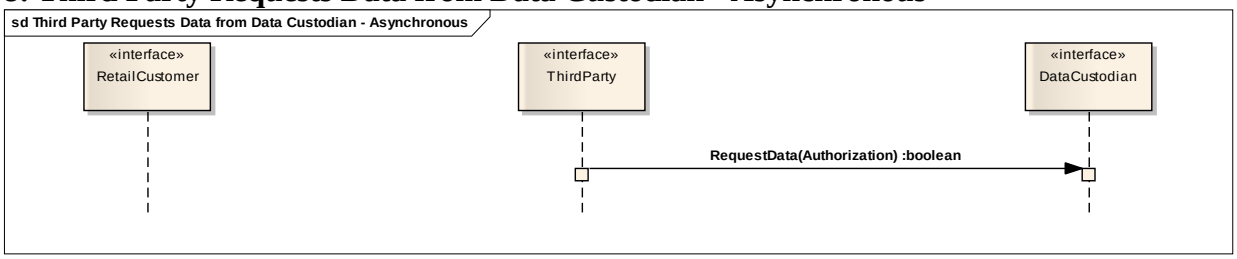

Figure 17**:** Third Party Requests Data from Data Custodian - Asynchronous

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party requests specific resource data to be delivered with next transfer.

Pre-Condition: Third Party has an established account with Data Custodian
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship
Invariant Constraint: No resource data or personal data is provided to the Third Party by the Data Custodian as part of this interaction.
Post-Condition: The Data Custodian records the request on behalf of the Third Party. Future data availability triggers will result in the appropriate information being sent to the Third Party.
Post-Condition: Data Custodian sends the Third Party confirmation of its data request.

Scenario: Basic Path
1. Third Party decides to request resource data from the Data Custodian.
1.2. Data Custodian Checks validity of request.
1.3. Data Custodian queues request for next asynchronous transfer.
1.4. Data Custodian sends confirmation to Third Party.

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9: Data Custodian Sends (Pushes) Data to Third Party - Asynchronous

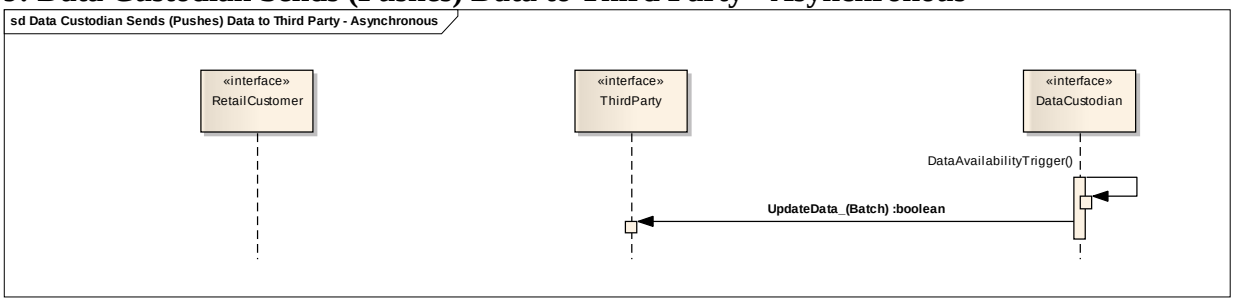

Figure 18**:** Data Custodian Sends (Pushes) Data to Third Party - Asynchronous

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party has established a subscription for receiving the relevant resource data from the Data Custodian. This resource data is sent (pushed) to the subscribed Third Party by the Data Custodian when an event triggers indicates a need to push new resource data.
Conditions observable to the Data Custodian change, causing a data availability trigger to be checked to see if there is a need to push resource data to the Third Party. Such triggers can be caused by any of the following observable changes

- New resource data is received by the Data Custodian
- A new subscription is received by the Data Custodian
- A pre-defined interval has elapsed
- A request for resource data has been received from a Third Party

Pre-Condition: Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Pre-Condition: A subscription by the Third Party to receive resource data from the Data Custodian has been established.
Invariant Constraint: No personal information is provided to the Third Party by the Data Custodian.
Post-Condition: The Data Custodian sends resource data to the subscribed Third Party.
Post-Condition: Only data specifically requested or modified and in a subscription is sent to the Third Party.

Scenario: Basic Path
1. A data availability trigger is received by the Data Custodian.
~~1.~~2. Data Custodian determines the Shared Resource Keys associated with the data availability trigger. It then determines if there are any subscriptions associated with the Shared Resource Key and whether the conditions of the subscription are satisfied (i.e., if it is time to send out resource data). If so, it proceeds to S3.
~~1.~~3. Data Custodian determines the Third Party associated with the subscriptions. This includes a check that the Third Party is still in a valid relationship with the Data Custodian and any other relevant checks prior to releasing resource data to that Third Party.
~~1.~~4. Data Custodian provides data resources to Third Party.

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~~1.~~5. Third party persists data for the period specified by data retention requirements.

10: Data Custodian Notifies Third Party of Data Availability - Asynchronous

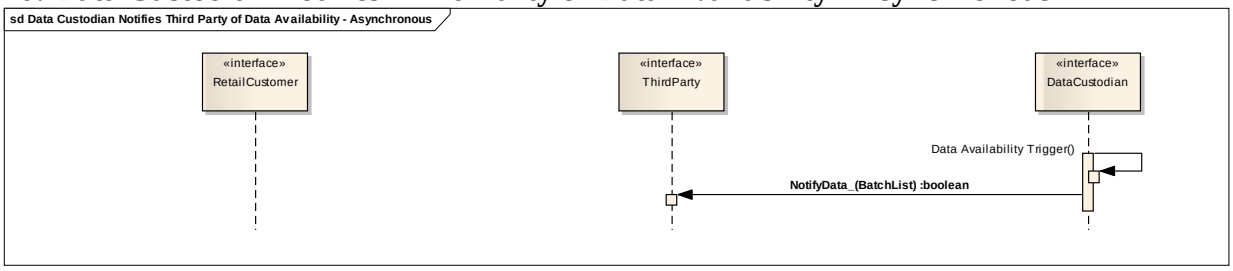

Figure 19**:** Data Custodian Notifies Third Party of Data Availability - Asynchronous

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party has established a subscription for receiving the relevant resource data from the Data Custodian. A Third Party is notified when new data satisfying its subscription parameters is available. Conditions observable to the Data Custodian change, causing a data availability trigger to be checked to see if there is a need to notify a Third Party of resource data availability. Such triggers can be caused by any of the following observable changes

- New resource data is received by the Data Custodian
- A new subscription is received by the Data Custodian
- A pre-defined interval has elapsed
- A request for resource data has been received from a Third Party

Pre-Condition: Third Party has an established account with Data Custodian
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Pre-Condition: Data Custodian has resource data relevant to the Third Party
Invariant Constraint: No personal information is provided to the Third Party by the Data Custodian
Post-Condition: The Data Custodian has resource data (e.g., electricity usage data) that is available for access by the Third Party
Post-Condition: The Data Custodian sends the Third Party notification of availability of resource data

Scenario: Basic Path

1. A data availability trigger event is received by the Data Custodian.

~~1.~~2. Data Custodian determines the Shared Resource Keys associated with the data availability trigger. The Data Custodian then determines if there are any subscriptions associated with the Shared Resource Key and whether the conditions of the subscription are satisfied (i.e., if it is time to notify a Third Party). If so, it proceeds to S3.

~~1.~~3. Data Custodian determines the Third Party associated with subscriptions. This includes a check that the Third Party is still in a valid relationship with the Data Custodian and any other relevant checks prior to determining that it is appropriate to send resource data to that Third Party

~~1.~~4. Data Custodian notifies the Third Party of the availability of resource data associated with the Shared Resource Key. Note that notification can take different forms. Notification could be sent asynchronously as soon as the

trigger is evaluated. Notification for several resources could be bundled for delivery to a common Third Party. Notification could be queued, awaiting the next scheduled interaction with the Third Party (e.g., as part of a response to a regular pull from the Third Party). No mechanism or timing is specified.

11: Third Party Receives (Pulls) Requested Data from Data Custodian - Asynchronous

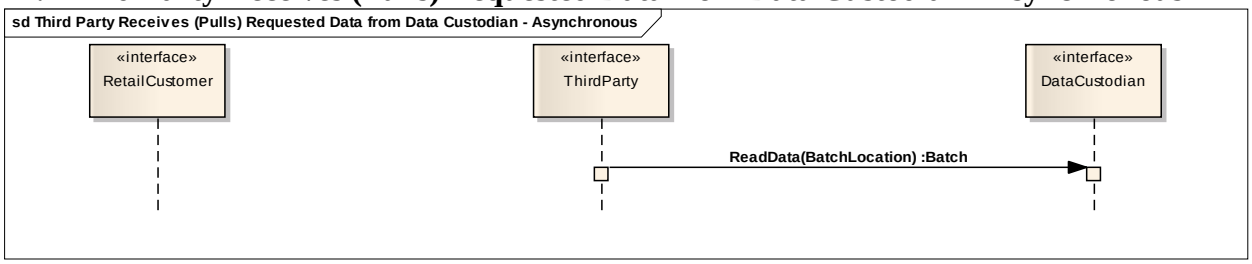

Figure 20**:** Third Party Receives (Pulls) Requested Data from Data Custodian - Asynchronous

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party requests the relevant subscribed and requested resource data from the Data Custodian, who replies with the data if the request is valid.

Pre-Condition: Third Party has an established account with Data Custodian
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship
Pre-Condition: Data Custodian has resource data relevant to the Third Party
Invariant Constraint: No personal data is provided to Third Parties by the Data Custodian.
Post-Condition: The Data Custodian replies with the requested data
Post-Condition: Only the requested resource data is provided by the Data Custodian

Scenario: Basic Path
1. Third Party receives notification or periodically attempts to pull resource data from the Data Custodian.
~~1.~~2. Data Custodian checks validity of request.
~~1.~~3. Data Custodian replies with requested and subscribed resource data to Third Party.
~~1.~~4. Third Party persists resource data for use in performing services for Retail Customer.

12: Third Party Requests Data from Data Custodian - Synchronous

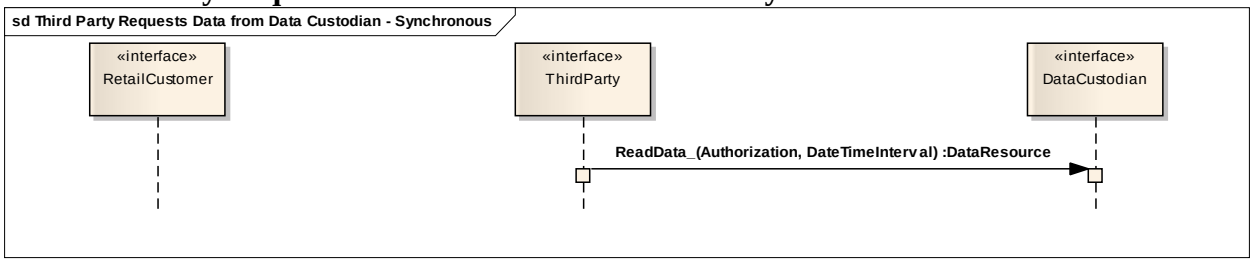

Figure 21**:** Third Party Requests Data from Data Custodian - Synchronous

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For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Description

The Retail Customer has an existing third party data access relationship with a particular Data Custodian and Third Party. The Third Party directly requests specific resource data from the Data Custodian, who replies with the requested data synchronously if the request is valid.

Pre-Condition: Third Party has an established account with Data Custodian
Pre-Condition: Retail Customer has established a Third Party data access relationship with the Data Custodian and the Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship
Pre-Condition: Third Party requests authorized resource data
Invariant Constraint: No personal data is provided to Third Parties by the Data Custodian.
Post-Condition: The Data Custodian replies with the requested data.
Post-Condition: Only the requested resource data is provided by the Data Custodian.

Scenario: Basic Path
1. Third Party decides to pull resource data from the Data Custodian.
~~1.~~2. Third Party specifies the resource data being requested. The request must contain the Shared Resource Key. It may also contain parameters (e.g., the period over which the specified data is requested), if permitted by Data Custodian.
~~1.~~3. Data Custodian checks validity of request (e.g., Shared Resource Key is still valid and registered with this Third Party or validity of any additional parameters).
~~1.~~4. Data Custodian sends requested resource data to Third Party.
Third Party persists resource data for use in performing services for Retail Customer.

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For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

C. ESPI Abstract Services

This section provides definition of the abstract services used in the use cases. These are the services that will be specified fully for the ESPI model business practice specification. The services are named using the following conventions, since not all are intended to be fully standardized.

- Underscore before the method name means "to be done, but not standardized"
- Underscore after the method name means "optional"

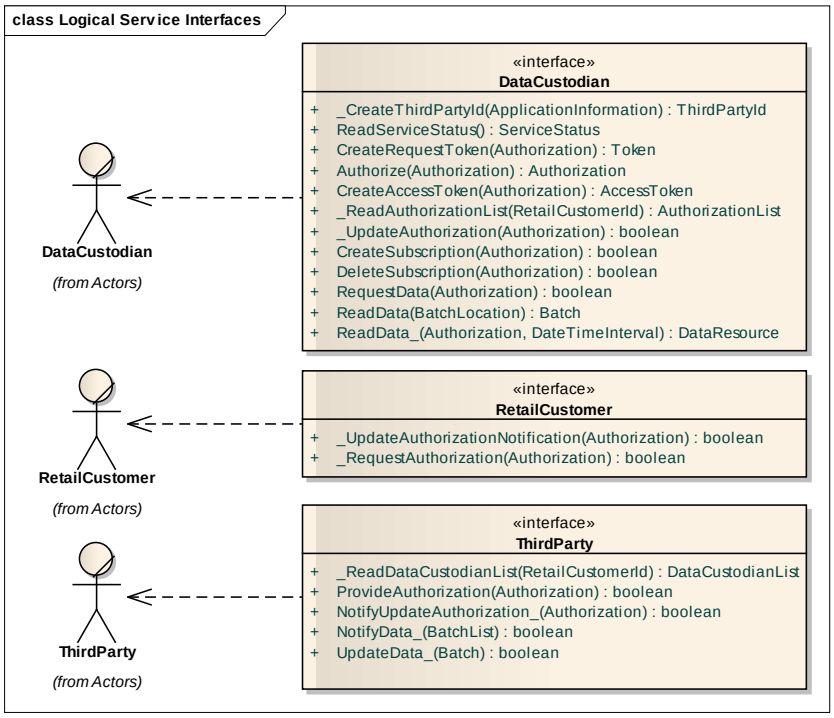

Figure: 22 - Logical Service Interfaces

DataCustodian

The DataCustodian service interface contains methods to be called by Third Party in order to authorize and receive data.

Operations

Method	Notes	Parameters
_CreateThirdPartyId() ThirdPartyId	Allows Data Custodian to obtain agreement to terms of service, contact information and application details about a Third Party application. Provides Third Party with service key and consumer secret.	**ApplicationInformation** [in] ApplicationInformation
ReadServiceStatus() ServiceStatus	Allows Third Parties to check their ability to access the Data Custodian service, and its current status.	

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Method	Notes	Parameters
CreateRequestToken() Token	Allows Third Party to request an unauthorized request token.	**Authorization** [in] authRequest
Authorize() Authorization	Provides ability for Retail Customer to authenticate and verify desire to authorize a Third Party request token. This results in a verifier to be used with CreateAccessToken.	**Authorization** [in] authorization
CreateAccessToken() AccessToken	Allows Third Party to exchange an authorized request token for an access token.	**Authorization** [in] authRequest
_ReadAuthorizationList() AuthorizationList	Allows Retail Customer to choose an existing Authorization. Is not standardized, since the method involves user input.	**RetailCustomerId** [in] customerID
_UpdateAuthorization() boolean	Provides ability to update an existing Authorization.	**Authorization** [in] authorization
CreateSubscription() boolean	Allows Third Party to request ongoing updates to the data resources associated with the specified Authorization, to be delivered asynchronously.	**Authorization** [in] authorization
DeleteSubscription() boolean	Removes the data resources associated with the specified Authorization from the subscriptions.	**Authorization** [in] authorization
RequestData() boolean	Allows Third Parties to request initial transfer of existing authorized data, or re-transfer of same. Results are delivered asynchronously.	**Authorization** [in] authorization
ReadData() Batch	Allows Third Party request ("pull") of asynchronously requested and subscribed data.	**BatchLocation** [in] batch
ReadData_() DataResource	Allows "on demand" (synchronous) access to authorized data. Some providers may choose not to make this method available.	**Authorization** [in] authorization **DateTimeInterval** [in] requestedInterval

RetailCustomer

The Retail Customer service interface represents methods used to make requests of the Retail Customer.

Operations

Method	Notes	Parameters
_UpdateAuthorizationNotification() boolean	This method is not standardized, but provides notification to the Retail Customer that an Authorization was updated. May be optional, based on policies of Data Custodian.	**Authorization** [in] authorization
_RequestAuthorization() boolean	This method represents the delivery of the request to authorize an access grant. The normal flow implements this using a URL redirect, but other methods may be possible.	**Authorization** [in] authorization

ThirdParty

The Third Party service interface contains methods to be called by the Data Custodian.

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Operations

Method	Notes	Parameters
_ReadDataCustodianList() DataCustodianList	This is a non-standardized method to allow the Retail Customer to find their Data Custodian.	**RetailCustomerId** [in] reatilCustomerID
ProvideAuthorization() boolean	This method represents the callback after authorization of a request token.	**Authorization** [in] authorization
NotifyUpdateAuthorization_() boolean	This method allows for a Data Custodian to notify a Third Party when an authorization has been modified, so that timely requests to extend authorizations can be provided to Retail Customer, and so that the Third Party can differentiate between problems and lack of authorization.	**Authorization** [in] authorization
NotifyData_() boolean	This optional method can be implemented in order to avoid having to poll for new data. It is called by the Data Custodian to indicate that requested authorized data is available via ReadData.	**BatchList** [in] batchList
UpdateData_() boolean	This method can be implemented by the Third Party to allow asynchronous transfers to use the "push" model for delivery. If used, notify is not used, and polling is avoided.	**Batch** [in] data

The following table contains a listing of these Logical Interface Operations, along with the expected Physical Operation for informative purposes. Physical operation names in parentheses are passed programmatically

Actor	Description	Logical	Physical
Data Custodian	Ability to get service status	ReadServiceStatus	ServiceStatus
Data Custodian	Initiate signed request_token request per RFC 5849	CreateRequestToken	request_token
Data Custodian	Initiate signed authorize request per RFC 5849	Authorize	authorize
Data Custodian	Initiate signed access_token request per RFC 5849	CreateAccessToken	access_token
Data Custodian	Update existing authorization	NotifyUpdateAuthorization_	Authorization
Data Custodian	Revoke existing authorization (Retail Customer)	NotifyUpdateAuthorization_	Authorization
Data Custodian	Terminate existing authorization via service	UpdateAuthorization	Authorization
Data Custodian	Request subscription to authorized resource	CreateSubscription	Subscription (from config)
Data Custodian	Request authorized data resource(s)	RequestData	(request_token scope)
Data Custodian	Receive requested and subscribed data resources	ReadData	(dataCustodianDefaultBatchResource)
Data Custodian	Request and receive authorized data resource(s)	ReadData_	(request_token scope)

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Actor	Description	Logical	Physical
Third Party	Initiate callback specified in request_token per RFC 5849	ProvideAuthorization	(request_token callback)
Third Party	Revoke existing authorization (Data Custodian)	NotifyUpdateAuthorization_	Authorization
Third Party	Send requested and subscribed data resources	UpdateData_	(thirdPartyDefaultBatchResource)
Third Party	Notify requested and subscribed data is available	NotifyData_	(thirdPartyDefaultNotifyResource)

Logical Information Model

This section contains descriptions of the data elements used in the abstract services.

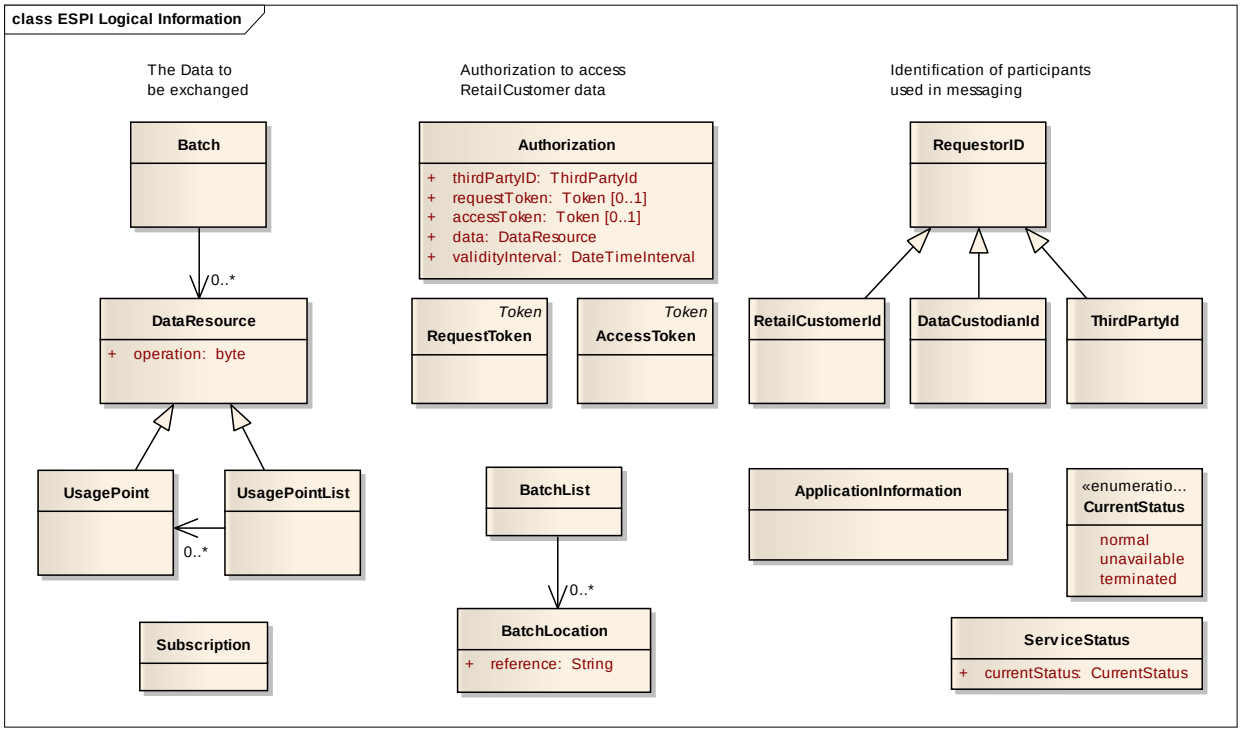

Figure 23: ESPI Logical Information Model

AccessToken

AccessToken is a shared key representing the relationship between a RetailCustomer, DataCustodian, and ThirdParty for a particular data resource.

ApplicationInformation

Includes (non-standardized) information about the Third Party Application requesting access to the DataCustodian services. Information requested may include items such as

Organization Name, Website, Contact Info, Application Name, Description, Icon, Type, default Notification and Callback endpoints, and may also include agreement with terms of service.

Authorization

Description of an authorization. Includes the information constraining and defining access to the Data. May include additional security elements, such as signature, timestamp, nonce, etc. as well as callback to allow redirection of the user agent.

Name	Type	Description
thirdPartyID	*ThirdPartyId*	The identifier issued to the Third Party by the Data Custodian.
requestToken	*Token*	An unauthorized token, issued by Data Custodian.
accessToken	*Token*	An access token that has been authorized by the user at the Data Custodian.
data	*DataResource*	The data resource to which the authorization was granted.
validityInterval	*DateTimeInterval*	The date time interval during which this access is authorized.

Batch

This object is simply a container to hold a number of data resources.

BatchList

BatchList is a container to refer to a multiple batches of data.

BatchLocation

Specifies the location of a specific batch of data.

Name	Type	Description
reference	*String*	

CurrentStatus «enumeration»

Valid values for current status.

Name	Type	Description
normal		
unavailable		
terminated		

DataCustodianId

An identifier for the Data Custodian.

DataResource

Generalization of any data object that can be exchanged.

Name	Type	Description
operation	*byte*	Create, Update, Delete

RequestToken

RequestToken is the first step toward obtaining an authorized AccessToken.

RequestorID

Generic superclass for identifiers.

RetailCustomerId

An identifier for the Retail Customer.

ServiceStatus

Contains the current status of the service.

Name	Type	Description
currentStatus	*CurrentStatus*	

Subscription

Defines the parameters of a subscription between third party and data custodian

ThirdPartyId

An identifier for the Third Party.

Token

A Token is a key associated with a secret used for securing exchanges.

UsagePointList

Container to hold multiple UsagePoint objects.

D. Model Conformance Information

The following table provides information about the elements included in ESPI and their relation to the NAESB PAP10 Energy Usage Information Model as well as the IEC TC57 CIM Model. Harmonization across these models is a goal of this recommendation, as is aligning with other usage information interfaces, including Smart Energy Profile 2.0.

PAP10 EUI Model Element	Type	ESPI Model Element	Type	CIM Notes
CustomerAuthorisation.name	String	(OAuth) access_token		N/A
CustomerAuthorisation.validityInterval	DateTimeInterval	(OAuth 2.0) expires_in		N/A

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PAP10 EUI Model Element	Type	ESPI Model Element	Type	CIM Notes
UsagePoint.name	String	UsagePoint.mRID	HexBinary128	Same
UsagePoint.description	String	UsagePoint.description	String32	Same
		UsagePoint.status	UInt8	connectionState
ServiceCategory.kind	ServiceKind	ServiceCategory.kind	ServiceKind	Same
ServiceKind.electricity		ServiceKind 0		(encoded)
ServiceKind.gas		ServiceKind 1		(encoded)
ServiceKind.water		ServiceKind 2		(encoded)
MeterReading.name	String	MeterReading.mRID	HexBinary128	Same
		MeterReading.description	String32	Same
ReadingType.name	String	ReadingType.mRID	HexBinary128	Same
		ReadingType.description	String32	Same
ReadingType.defaultQuality	QualityOfReading	ReadingType.defaultQuality	QualityOfReading	Recommended extension
ReadingType.direction	ReadingDirection	ReadingType.flowDirection	FlowDirectionType	Same
ReadingType.intervalLength	Duration	ReadingType.intervalLength	UInt32	Recommended extension
ReadingType.kind	ReadingKind	ReadingType.kind	KindType	measurementKind
ReadingType.multiplier	UnitMultiplier	ReadingType.powerOfTenMultiplier	PowerOfTenMultiplierType	Recommended extension
ReadingType.unit	UnitSymbol	ReadingType.uom	UomType	unit
		ReadingType.accumulationBehaviour	AccumulationBehaviourType	accumulation
		ReadingType.dataQualifier	DataQualifierType	Recommended extension
		ReadingType.tou	TOUType	Same
		ReadingType.currency	CurrencyCode	Same
		ReadingType.commodity	CommodityType	Same
		ReadingType.consumptionTier	ConsumptionTierType	Same
		ReadingType.phase	PhaseCode	phases
		IntervalBlock.mRID	HexBinary128	Recommended extension
		IntervalBlock.description	String32	Recommended extension
		IntervalBlock.interval	DateTimeInterval	Recommended extension
Reading.cost	Float	Reading.cost	UInt48	Recommended extension
Reading.timeStamp	AbsoluteDateTime	Reading.timePeriod	DateTimeInterval	Same
Reading.value	Float	Reading.value	UInt48	Same
ReadingQuality.quality	QualityOfReading	ReadingQuality.quality	QualityOfReading	Recommended extension
DateTimeInterval.start	AbsoluteDateTime	DateTimeInterval.start	TimeType	Same
DateTimeInterval.duration	Duration	DateTimeInterval.duration	UInt32	Uses "end" instead of "duration"
QualityOfReading.estimated		QualityOfReading *.8.0		(encoded)
QualityOfReading.raw		QualityOfReading 1.*		(encoded)
QualityOfReading.validated		QualityOfReading *.0.1		(encoded)
ReadingDirection.forward		FlowDirectionType 1		(encoded)
ReadingDirection.reverse		FlowDirectionType 19		(encoded)
ReadingKind.energy		FlowDirectionType 12		(encoded)
ReadingKind.power		FlowDirectionType 37		(encoded)
ReadingKind.demand		FlowDirectionType 8		(encoded)

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
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Request Title: Energy Services Provider Interface Standard

PAP10 EUI Model Element	Type	ESPI Model Element	Type	CIM Notes
UnitMultiplier.micro		PowerOfTenMultiplierType -6		(encoded)
UnitMultiplier.m		PowerOfTenMultiplierType -3		(encoded)
UnitMultiplier.c		PowerOfTenMultiplierType -2		(encoded)
UnitMultiplier.d		PowerOfTenMultiplierType -1		(encoded)
UnitMultiplier.k		PowerOfTenMultiplierType 3		(encoded)
UnitMultiplier.M		PowerOfTenMultiplierType 6		(encoded)
UnitMultiplier.G		PowerOfTenMultiplierType 9		(encoded)
UnitMultiplier.T		PowerOfTenMultiplierType 12		(encoded)
UnitMultiplier.none		PowerOfTenMultiplierType 0		(encoded)

4. SUPPORTING DOCUMENTATION

a. Description of Request:

b. Description of Recommendation:

c. Business Purpose:

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

Please see the ESPI Minutes posted on the ESPI web page: http://www.naesb.org/espi_task_force.asp

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

via email and posting

TO: NAESB Retail Electric Quadrant (REQ) Members and Interested Industry Participants

FROM: Jonathan Booe, Deputy Director

RE: Request for Formal Comments on the NAESB Retail Electric Quadrant Energy Services Provider Interface Task Force Recommendation

DATE: July 7, 2011

Dear NAESB REQ Members and Interested Industry Participants,

An industry formal comment period begins today, July 7, 2011, and ends on August 8, 2011 for the Retail Electric Quadrant recommendation below:

Recommendation:
2011 Retail Annual Plan Item 8(c): Develop standards to support inclusion of OpenADE requirements document into the NAESB Smart Grid standards (R10008), specifically to standardize the exchange of Energy Usage Information. Recommendation: http://www.naesb.org/pdf4/r10008_rec_070711.docx

All interested parties, regardless of membership status within NAESB, are eligible to submit comments for consideration. The Retail Electric Quadrant Executive Committee will review the recommendation and consider it for vote during an upcoming Executive Committee meeting. The Executive Committee will review all submitted comments.

All comments received by the NAESB office by the end of business, August 8, 2011 will be posted on the Home Page (Retail Request Page): http://www.naesb.org/retail_request.asp and forwarded to the REQ Executive Committee members for their consideration. If you have difficulty downloading the recommendation, please call the NAESB office at (713) 356-0060.

Best Regards,

Jonathan Booe

NAESB

cc: Rae McQuade, President

Instructions:
1. Indicate line number(s)
2. State your comment
3. Provide a suggested resolution, alternate wording, etc.

Comment #	Commentor Name	Line No.	Comment	Resolution
1	Xcel Energy	N/A	The Model Business Practices should be a document that makes a simple, yet compelling argument for ESPI. It is important that this be understood at the outset. For people unfamiliar with the ESPI and related technologies, it could be difficult to grasp how these Model Business Practices should be applied within the context of existing regulatory requirements and company policies. Since Regulatory Authorities are likely to have existing regulations or policies that address the Distribution Companies' obligations around the release of customer data, and Distribution Companies are also likely to have data privacy practices and procedures in place that address requests from customers or Third Parties to release information, it will be important for Distribution Companies and Regulatory Authorities to clearly understand the scope of these Model Business Practices and how they can and should be incorporated into an existing framework of policies and practices. To be useful to Distribution Companies and Regulatory Authorities, the ESPI Model Business Practices need to be articulated in a way that is widely and easily understood. While this doc	Xcel Energy suggests adding a paragraph within the introduction that clearly outlines the scope of these Model Business Practices. Users need to be able to visualize what the ESPI is and how these Model Business Practices should be applied within the context of existing policies, practices and regulatory requirements. This paragraph should provide examples of what the ESPI would look like, what types of third parties would use the ESPI, why third parties would use the ESPI, where the ESPI would apply, and where it would not apply. Such examples will help those unfamiliar with this technology to visualize its application and how these Model Business Practices fit within a broader data privacy context.
2	Xcel Energy	N/A	There is some inconsistency between the executive summary and the introduction. The executive summary states that "ESPI encompasses a variety of interactions between Retail Customers, Distribution Companies, and Third Parties." However, the introduction explains, "For the purpose of the decriptions of interactions in ESPI, action of contracted agents of a Distribution Company are considered the action of the Distribution Company." Due to this statement in the introduction, the ESPI relationship could be misunderstood to apply to contracted agents.	Xcel Energy suggests that a sentence be added to the introduction explaining that ESPI is not intended to apply to relationships with contracted agents.
3	Xcel Energy	21.3.3.28	REQ.21.3.1.28 currently reads, "This business practice only constrains applications purporting to conform to it." This statement could be interpreted to mean that any application claiming to be an ESPI would be covered by these business practices. In order for these business practices to apply to an application, the application must actually be an ESPI, it cannot merely "purport" to be one.	Xcel Energy suggests that the first sentence of REQ.21.3.1.28 be revised to read, "This business practice only constrains applications conforming to it."
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Instructions:
1. Indicate line number(s)
2. State your comment
3. Provide a suggested resolution, alternate wording, etc.

Comment #	Commentor Name	Line No.	Comment	Resolution
1	SCE	NA	There are no line numbers in the document.	Add line numbers to the final and all future versions of this specification and other NAESB specifications/recommendations.
2	SCE	REQ.21.3.1.1	Beginning of text is offset.	Delete space in front of "To the extent…"
3	SCE	REQ.21.3.1.8	Grammar. Comma after "limited"; change to "time-based"	"…to have limited, time-based access…"
4	SCE	REQ.21.3.1.26	"HAN" is missing from the defined acronyms table.	Correct.
5	SCE	REQ.21.3.1.27	Last sentence is missing a period.	Correct.
6	SCE	REQ.21.3.1.28	Unnecessary comma after "Parties"; missing "to" preposition.	"…Authorized Third Parties but rather, only to those…"
7	SCE	REQ.21.3.1.29	Unnecessary comma after "ESPI"; missing "a" article	"…of ESPI and extensions…" and "…to exchange a Retail Customer's…"
8	SCE	REQ.21.4.1	In general, there's a lack of information on where to find the UML documents, references to additional information, etc. It would also be good to inform readers that these are based on IEC CIM standards and are not arbitrary creations of NAESB. Would bolster credibility of ESPI.	Add paragraph in REQ.21.4.1 describing relevant information.
9	SCE	p13 - BatchItemInfo	There is generally a lack of normative/informative text describing the model objects, what they mean, how to use the different operations, etc. For example, there is no transition or explanation given on p13 where the text abruptly switches from UML models to BatchItemInfo.	Improve narrative text to provide context and transitions for readers through out this section of the document.
10	SCE	p14	statusReason should probably be String256 in order to allow for a more user-friendly explanation of the issue. 32 characters is pretty short.	Change attribute type to String256.
11	SCE	p14	Sentence under the "Subscription" header is missing a period.	Correct.
12	SCE	p14	"Subscription" section does not provide any normative examples nor references to an RFC or other source for expected implementations. This could lead to non-interoperable implementations or confusion.	Add RFC reference or other normative text on how to implement subscriptions under ESPI.
13	SCE	p14	thirdPartyName should probably be longer than 32 characters. "Southern California Edison" is 26 characters. One could envision longer names.	Consider changing to String64.
14	SCE	p15	thirdPartyEmail should be longer than 32 charactres.	Change to String64.
15	SCE	p15	thirdPartyApplicationDescription's type is not defined.	Suggest String256.
16	SCE	p15	In the thirdPartyApplicationUse, there are some other enumerations that would be good to have.	Add the following two enumerations: Academic, Law enforcement.
17	SCE	p16	"hirdPartyId" should probably be "thirdPartyId".	Add the "t."
18	SCE	p16	In the upper table, should make all of the parentheticals in the Description column sentences and remove the parentheses.	Change as suggested.
19	SCE	p16	In the status attribute, there are some other enumerations that would be good to have.	Consider adding an enumeration: Review
20	SCE	p16	In publishedPeriod, should switch "to only" to "only to".	Correct.
21	SCE	p16	In thirdPartyConsumer, it is unclear what this refers to. The Name says "Consumer" but the Description only mentions "Third Party."	Clarify intent and description.
22	SCE	p17	flickerPit description needs a unit of measure.	Change to: "… in hundredths of a Volt."
23	SCE	p18	billLastPeriod - clarify that it's the billing period	Change to: "…for the previous billing period,…"

Comment #	Commentor Name	Line No.	Comment	Resolution
24	SCE	p18	For billLastPeriod, billToDate, and costAdditionalLastPeriod - currency is represented in hundred-thousandths	Change.
25	SCE	p18	For billLastPeriod, billToDate, and costAdditionalLastPeriod - missing comma after "e.g."	Correct to: "… (e.g., 840 = USD…"
26	SCE	p18	URL in currency description should be updated.	Update.
27	SCE	p19	ESPI could be used for water, not just energy.	Replace "energy" with "commodity"
28	SCE	p18-19	The consumption attributes beginning with currentBillingPeriodOverAllConsumption through to previousDayOverallConsumption seem like they would better belong in Metering rather than Billing. These convey usage for a given time period. The bill amounts associated with those time periods should remain in this section. Generally, the historical readings and information object could use some further thinking and alignment.	Parse out the consumption-related items and add them to Metering objects or create separate object.
29	SCE	p19	ServiceCategory.kind - ESPI could be used for water, not just energy.	Add enumaration for: Water
30	SCE	p19	UsagePoint text - missing comma after "e.g."	"(e.g., metered)" and "(e.g., unmetered…)"
31	SCE	p20	status description - "The valid values are:"	Change as suggested.
32	SCE	p20	There's a list of generic attribute types that appears out of place. These would be better placed at the beginning of the model section as a primer for the different attribute types that will follow.	Change as suggested.
33	SCE	p21	CommodityType enumerated value = 2 (electiricty primary metered value) needs a more detailed description. It's unclear.	Improve description as done in enumerated value = 1
34	SCE	p22-23	Most of the attributes and their enumberated lists provided here appear to be duplcates of later tables for ReadingType.	Consider removing them if they're redundant.
35	SCE	p25	TimeType description: "…64-bit…" Missing dash.	Correct.
36	SCE	REQ.21.4.2.2	Missing period at end of "…to the information consumer."	Correct.
37	SCE	REQ.21.4.2.2	Items listed in parentheses after "Status" are examples. Add "e.g.,"	Change to: "Status (e.g., requested, valid…)"
38	SCE	REQ.21.5.1	Indentation of paragraph text does not match style of rest of document.	Correct.
39	SCE	REQ.21.6.1.1.2	Extra comma after "…user data"	Correct.
40	SCE	REQ.21.6.2	Capitalize "ID"	Correct.
41	SCE	REQ.21.5.1	Extra comma after "…precision"	Correct.
42	SCE	REQ.21.6.3	Incorrect grammar.	Change to: "…of the subscription (e.g., the resource being subscribed to). The Subscription object…"
43	SCE	p33	In the upper box, the <published> and <updated> values do not appear to be in RFC 3339 (UTC) format. This may be confusing and inconsistent with other implementations (e.g., SEP 2.0).	Correct if this was unintended.
44	SCE	p34	"Hourly Energy Consumption" would seem to fit better as a <description> attribute. Not aware of <title> being in the UML.	Correct if this was unintended.
45	SCE	REQ.21.6.4	Elaborate on or reference the method for "allowing subscriptions to authorized resources".	Correct.
46	SCE	p51	In the uc ESPI Use Case Diagrams, it would be nice to include numbers for ech of the ovals to facilitate matching the detailed use cases with the diagram.	Nice-to-have.
47	SCE	p53	Description box in upper section between DataCustodian and ThirdParty boxes is missing a "t" in ThirdParty.	Correct.
48	SCE	p53	"Retail Customer" is a singular noun, therefore must use a singular pronoun when specifying the basic path scenario: "…for the Data Custodian to share his resource data…" Suggest picking either "his" or "her" and sticking to it throughout. Or, could alternate by section.	Correct.
49	SCE	p54	Steps 10 and 11 have extra indentations between the numbers and text.	Correct.
50	SCE	p55	Missing period at end of "…terminate that relationship."	Correct.
51	SCE	p57	Incomplete sentence at the bottom of the page: "...Third Party are deleted within _____"	Complete sentence.
52	SCE	p58	Another discussion of subscriptions and their parameters without detail or reference.	Add RFC reference or other normative text on how to implement subscriptions under ESPI.
53	SCE	p65	CreateRequestToken()Token seems to contemplate a Third Party requesting an "unauthroized" request token. Should this be "authorized"?	Correct if this was unintended.

Comment #	Commentor Name	Line No.	Comment	Resolution
54	SCE	p66	Missing period after "…are passed programmatically."	Correct.
55	SCE	p71	Missing entries under supporting documentation.	Add in references for IEC CIM documents, subscription RFC, etc.
56	SCE	NA	There is no discussion of transmitting other, non-metering (PAP 10) data between service providers.	There should be a section (suggest REQ.21.5.2 or 21.6.6 or 21.7) added with a general, high level paragraph something like this: "Transmittal of non-REQ.18 Energy Usage Information Model Information Customers, data custodians, and third parties – subject to their jurisdiction's rules and regulations – may also use the methods described in this ESPI standard to authorize and exchange non-REQ.18 Energy Usage Information Model Information. Examples may include other NIST PAP data models, Smart Energy Profile 2.0 messages, etc. provided both the Data Custodian and Third Party have implemented and configured their systems to process the information. This may allow Data Custodians and Third Parties to offer customers another interface for receiving Data Custodian programs like demand response, billing communications, and pricing signals. Such implementations are out-of-scope for this version of ESPI and will not be tested during conformance and certification at this time."
57	SCE	NA	There is no Table of Contents or Table of Figures. This would be very helpful in navigating the document.	Add a TOC and TOF.
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Aug 5, 2011

Jonathan Booe
NAESB Deputy Director

Re: DTE Comments on NAESB REQ 21 Draft Dated Jul 6, 2011

Dear Mr. Booe,

DTE Energy appreciates the opportunity to submit comments on the proposed NAESB REQ.21, "Energy Services Provider Interface" (ESPI) standard. Our comments are made on the draft dated July 6, 2011.

REQ.21.3.1.27

REQ.21.3.1.27 references NAESB REQ.22, "Third Party Access to Smart-Meter-based Information." Our concern is that there are significant gaps and inconsistencies between REQ.21 and REQ.22.

REQ.21.2

The two documents differ greatly as far as what terms they define and, in the single instance in which they both define the same term, their definitions for that term are different. Please refer to the following table to note the differences at a glance:

Terms Defined in REQ.21.2	Terms Defined in REQ.22.2
Authorizing Entity	Applicable Regulatory Authority
Third Party	Distribution Company
Authorized Third Party	Entity
Energy Services Provider Interface	Governing Documents
Personally Identifiable Information	Retail Customer
Data Custodian	Authorization
Energy Usage Information	Privacy Use Case
	Smart Meter-Based Information
	Third Party

As can be seen, the only term defined in both documents is "Third Party." Unfortunately, the two standards define "Third Party" differently.

We are concerned that businesses that are trying to enact business practices based on these two standards would be presented with difficulties arising from the need to reconcile the differing terminological concepts.

We believe that the terms and definitions between REQ.21 and REQ.22 should be harmonized to facilitate usage of both standards together.

REQ.21.3

In general, a specific effort should be undertaken to review and ascertain the state of harmony between REQ.21.3 and REQ.22.3 and to assure consistency between them.

For example, REQ.21.3.1.23 appears to be inconsistent with REQ.22.3.3.1.6 regarding notifications in the event of changed relationships. REQ.21 says all parties should be notified in the event of changed relationships while REQ.22 specifically says notification is not required where Third Party ownership changes.

REQ.21.3.1.1

This paragraph reads, "To the extent required by the Applicable Regulatory Authority, or as otherwise agreed by Data Custodian consistent with Applicable Regulatory Authority, Authorized Third Parties and Data Custodians should exchange Retail Customer's EUI at the Retail Customer's request pursuant to the requirements as set forth in NAESB REQ.21, subject to the Governing Documents."

Our concern is that this document blurs the line between business policy and the technical aspects of the energy services provider interface. It can be construed that to be "ESPI-compliant" a provider would have to provide all of the energy usage data this standard identifies.

We believe that a clarifying statement should be made that ESPI compliance will entail utilization of the models, formats, etc. contained in this standard for whatever agreed upon data is to be shared as opposed to compliance meaning that all the described data points are to be included in the data sharing.

As an example, the "ElectricPowerQualitySummary" on page 17 includes data points related to voltage flicker, harmonics, frequency and others that are not technically feasible for measuring at this time. The AMI meters that are currently being built are not capable of making these measurements nor are there any other technologies currently available for measuring these quantities on mass scale at customer premises. Furthermore, there may be business reasons for not providing some of the data points described in the summaries.

REQ.21.6.5

In the XML Schema section, we would like to make note of one technical point. On page 45, there is a line that reads, "<xs:element name="start" type="TimeType" minOccurs="1" maxOccurs="1">". This line appears to be utilizing a separate, unique time structure rather than a standards XML time structure. This technical point should be reviewed.

Appendix D

In the table in Appendix D, Model Conformance Information, the CIM note for the "DataTimeInterval.duration" element states, "Uses 'end' instead of duration." We question the technical voracity of this deviation from typical CIM usage practice.

DTE Energy wishes to thank NAESB for its work on this standard and its consideration of these comments.

Ronald W Vader /s/
Senior Engineer,
Distribution Operations SmartCurrents Standards
DTE Energy

August 8, 2010

Jonathan Booe
NAESB
801 Travis Street
Suite 1675
Houston, TX 77002

Re: Request No. 10008, Recommendation for Model Business Practice for Energy Services Provider Interface Standard

Dear Mr. Booe:

The Edison Electric Institute ("EEI"), on behalf of its members, is pleased to submit the following comments to the North American Energy Standards Board ("NAESB") on the above-referenced Model Business Standard ("MBP") for the Retail Electric Quadrant ("REQ. 21") that the Open ADE Task Force requested.

EEI is an association of United States investor-owned electric utilities and industry associates worldwide. Its U.S. members serve almost 95 percent of all customers served by the shareholder-owned segment of the U.S. industry, about 70 percent of all electricity customers, and generate about 70 percent of the electricity delivered in the U.S.

EEI appreciates the efforts of the Open ADE Task Force and of NAESB to develop an MBP to standardize the interface that allows for the exchange of Energy Usage Information ("EUI") between designated parties. EEI recognizes that NAESB has achieved a good record of reaching broad consensus among market participants by developing standards and MBPs that are voluntary and do not address policy issues that are the subject of regulatory decisions. In this regard, NAESB has provided an excellent forum for the development of an MBP for Third Party Access to Smart Meter-Based Information ("REQ.22"),[1] which clearly is closely related to the MBP currently before the NAESB Executive Committee. EEI believes that REQ.21 should also avoid addressing policy issues that are the subject of regulatory decisions, should be internally consistent as well as consistent with REQ.22 – ideally both on a substantive basis and with respect to the use of terminology. Therefore, the Executive Committee should act to address these types of concerns. However, given the fact that this MBP is of a very technical nature addressing not only general practices for an Energy Services Provider Interface ("ESPI") but also includes profiles and additional models in support of such service,[2] the Executive Committee should also refer REQ.21 to the appropriate NAESB subcommittee for a thorough technical

[1] EEI notes its support and participation in the development of REQ.22.

[2] See e.g., REQ.21.4.1, et seq.

review before taking any formal action to approve the MBP.[3] EEI believes this action is consistent with NAESB procedures.[4]

COMMENTS

EEI submits the following comments and emphasizes that these comments are not intended to be exhaustive, but rather to highlight the need for the Executive Committee to revise REQ.21 and to refer it to the appropriate subcommittee for technical review.[5]

Executive Summary

EEI recommends that this section should be revised to replace "Retail Customer-related data (e.g., usage information)" with the term "Energy Usage Information" to be more specific and internally consistent. Additionally, NAESB should consider revising this term (and others) to be consistent with terms used in the REQ.22. By doing such revisions, these terms can avoid implicating policy concerns.

EEI agrees that it is important to be very clear that these MBPs do not create any obligation to use a specific available interface. Additionally, given the broad scope of interactions encompassed by the ESPI, it should not only be clear that it should be applied within the context of specific regulatory requirements and agreements, but that some aspects may not be appropriate to be applied in such contexts.

EEI also recommends that the Executive Summary should state that these MBPs are not intended to apply to the Data Custodian's disclosure, collection, use and handling of EUI in connection with the Data Custodian's or its agents' utility services, product or service fulfillment or billing and collection activities. This is necessary in order to be consistent with REQ.22.

Business Processes and Practices

REQ.21.1 Principles:

REQ.21.1.1: This principle should be revised to use the term "Energy Usage Information," consistent with REQ.22.

REQ.21.2.B Technical Definitions:

REQ.21.2.B.1: The term "Authorizing Entity" should be struck since it is inconsistent with REQ.22, which does not use this term. Additionally, the term is not necessary since if the term Authorized Third Party is properly defined, as recommended below, then in conjunction with the use of the term "Applicable Regulatory Authority," REQ.21.2.B.1 will be unnecessary

[3] EEI understands that the NAESB Technical Electronic Implementation Subcommittee ("TEIS") has the mission to develop recommendations for transaction sets, data communication standards and implementation guidelines to support standards and business practices of the REQ.

[4] See Retail Electric and Gas Procedures, §§ 6c-g.

[5] EEI notes that it is supportive of member company filings providing redlines to recommend specific revisions to the MBP.

and avoid implicating state policies addressing how a Third Party may become authorized to receive EUI.

REQ.21.2.B.2: The term "Third Party" should be defined with respect to Energy Usage Information for the Retail Customer, not on the ambiguous and overly broad term "information." Additionally, this term should distinguish a Third Party from a Data Custodian and its contracted agents, and the Applicable Regulatory Authority, Independent System Operators or other regional entities. This would make this term more consistent with REQ.22.

REQ.21.2.B.3: The term "Authorized Third Party" should be revised by striking the language "has been approved by an Authorizing Entity for the relevant jurisdiction." This language seems to encroach upon state policy decisions. This definition should be revised to make clear that an Authorized Third Party that is permitted to receive EUI in accordance with applicable law, regulation, the Governing Documents and any requirements of the Applicable Regulatory Authority and has met the requirements of the Applicable Regulatory Authority and Governing Documents to utilize the ESPI. EEI believes this would be more consistent with REQ.22.

REQ.21.2.B.4: In the interest of consistency and clarity, the term "Energy Services Provider Interface" should be revised so that it is clear that the information a Data Custodian is permitted to share is a broad set of a Retail Customer's EUI. It should also be revised to be clear that this set of EUI is limited to that which is held by that Data Custodian.

REQ.21.2.B.5: The term "Personally Identifiable Information" ("PII") should be revised to be specific that this information is about a Retail Customer as opposed to an undefined term such as "individual." Additionally, this term should be revised to qualify that it is limited to information "reasonably" used to distinguish or trace a Retail Customer's identity or "reasonably" linked or linkable to a Retail Customer.[6] Without these qualifications, the term is far too broad and may conflict with existing laws and policies, and may also have cost and feasibility implications with respect to the implementation of and compliance with the MBP. Additionally, although only the sharing of EUI is specifically addressed by this document, the definition of PII should recognize that EUI may be treated as a subset of PII in some jurisdictions or some Data Custodians. Therefore, this MBP should distinguish not simply between EUI and PII, but rather between EUI and "other" PII.

REQ.21.2.B.6: The term "Data Custodian" should be revised to strike the term "resource," since this term is undefined. Since the purpose of this MBP is to address the sharing of EUI, the term "resource" should be replaced with "Energy Usage Information." Also, this term should specify that the Data Custodian would only share EUI with "Authorized" Third Parties in accordance with the Governing Documents and any requirements of the Applicable Regulatory Authority and, at the request or direction of the Retail Customer. This term should be further revised to reflect that a Data Custodian has direct access to "Energy Usage Information" and should not imply the Data Custodian merely has access to "pertinent information," which is undefined and ambiguous.

[6] EEI is not clear that some of the examples of such information are relevant or reasonably linked to enabling Retail Customers to share EUI with Authorized Third Parties.

REQ.21.2.B.6: In order to be consistent with REQ.22, the term "Energy Usage Information" should be revised to refer to any information and data from a smart meter identifiable to an individual Retail Customer concerning that Retail Customer's energy usage, which may be made available pursuant to the Governing Documents consistent with any requirements of the Applicable Regulatory Authority. Such a revision would appropriately qualify this definition so that it is not overly broad and avoids any potential conflict with existing or future laws or policies.

REQ.21.3 Model Business Practices

REQ.21.3.1.1 General Practices for Energy Services Provider Interface (ESPI)

REQ.21.3.1.1: EEI is concerned that this practice, as drafted, may imply that to conform to ESPI, a Data Custodian would have to provide all the EUI that this standard identifies. This practice should be revised to make clear that ESPI conformity does not require all the described data points. It may be that some of the data points included in this MBP are not technically feasible to provide, or there are legitimate business reasons for not providing some of the data points described in the summaries. Additionally, this practice should be revised to allow for Authorized Third Parties and Data Custodians to exchange the Retail Customer's EUI at the request of both the Authorized Third Party and the Retail Customer. Once a Third Party has been authorized to access this information, it does not make sense to limit the flexibility of this practice solely to the request of a Retail Customer.

REQ.21.3.1.3: This practice should be revised to qualify that a Third Party should not be able to access EUI or any other PII except as permitted or required by the Governing Documents, the Applicable Regulatory Authority. Also, in order to be consistent with REQ.22, this practice should be revised to allow for an Authorized Third Party to obtain PII from more than just the Retail Customer, which may be an impracticable limitation.

REQ.21.3.1.8: This practice should be revised to strike the term "authorize," which should be replaced with "request or direct." The term "authorize" is not necessary with respect to Authorized Third Parties. Additionally, this practice should be revised to limit access to specified EUI and should not extend this access to undefined "other types of information for such Retail Customer" – this latter language should be struck.

REQ.21.3.1.10: Consistent with the recommendation for REQ.21.3.1.8, this practice should be revised to strike the term "authorize," which should be replaced with "request or direct." The term "authorize" is not necessary with respect to Authorized Third Parties.

REQ.21.3.1.15: This practice should be revised to specify that confidentiality should be maintained during communication of any EUI or other PII, and the undefined and overly broad term "information" should be struck.

REQ.21.3.1.16: This practice should be revised to provide that in the case of a transfer, merger, reorganization or disposition of or involving an Authorized Third Party does not require the Data Custodian to notify the Retail Customer of such a transaction. The Data Custodian is not well placed to monitor or notify the Customer of such an event, and this would likely represent a significant burden to the Data Custodian. Additionally, in the event of such

transaction, it is necessary to revise this practice to make clear that this situation would not require a new authorization, request or direction for the Data Custodian to continue to disclose EUI to the transferee, new owner or successor of the Authorized Third Party. Such revisions are also necessary to make this practice consistent with REQ.22.3.3.2.6.

REQ.21.3.1.17: This practice should be revised to make clear that providing a list of Third Parties who have been authorized by the Applicable Regulatory Authority or the Data Custodian to use ESPI is dependent on such a list existing within a particular jurisdiction. Consistent with the recommendation above regarding REQ.21.2.B.1, this practice should be revised to strike the term "Authorizing Entity," but also because in this practice it does not make sense to predicate the sharing of this type of list merely on the existence of such an entity within a jurisdiction. Even if the term "Authorizing Entity" were replaced by Applicable Regulatory Authority, this would run afoul of the fact that not all jurisdictions may require such a list to be complied or shared. If such a list exists in a jurisdiction that also requires it to be shared, then it should be made available by the Applicable Regulatory Authority or the Data Custodian, as applicable.

REQ.21.3.1.18: This practice should be revised to qualify that a Data Custodian providing EUI directly from the smart meter or before the data is validated for billing purposes can only provide EUI at the frequency that that information is registered or recorded in the smart meter, hence it must be recognized that such information has inherent limitations. Additionally, it is very important that this practice is clear that these MBPs do not establish or recommend any intervals at or which EUI will or should be provided or available – to do otherwise would clearly implicate policy that is in the purview of State jurisdiction.

REQ.21.3.1.21: Given that this practice states that the standardization of procedures and dissolution of trusted relationships between any two parties, it should simply be struck in its entirety. It is inappropriate for this practice to take the policy position that these types of procedures should be preconditions for the use of ESPI.

REQ.21.3.1.26: Given REQ.21.3.1.25 states that technologies chosen should be well specified, with active communities, tools, and/or frameworks available, it is not necessary to further specify in this practice that technologies chosen should be compatible and interoperable with technologies specified for access to HAN resources. Compatibility and interoperability of one technology with a specific set of resources is a decision that should be left to the appropriate policy makers in the context of a given jurisdiction. Thus, it is inappropriate to include this practice in the MBP.

REQ.21.3.1.28: This practice should be revised to make clear that this MBP only applies to applications purporting to conform it, not that it "constrains applications." The latter language inappropriately and incorrectly implies that this MBP is not voluntary. Additionally, it is important to qualify that this MBP does not compel that all data elements be used in order to conform to it.

CONCLUSION

EEI on behalf of its member companies, respectfully requests that NAESB ensure that future actions in developing the above described Model Business Practices will be consistent

with the these comments. EEI reiterates its appreciation for the work of NAESB and its consideration of these comments.

Respectfully submitted,

/s/Gregory T. Obenchain, P.E.
Gregory T. Obenchain, P.E.
Manager, Distribution Operations & Standards
Energy Delivery Group

Aryeh B. Fishman
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cc: Rae McQuade, President

From: chris@emeter.com [mailto:chris@emeter.com]
Sent: Monday, August 08, 2011 1:33 PM
To: naesbmail@naesb.org
Cc: svanausdall@xtensible.net
Subject: RE: Quality Codes

Jonathan,

Below are eMeter's formal comments on the draft ESPI standard. Please let me know of any questions. I plan to participate in tomorrow's call.

Thanks,

Chris King

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Twitter @SmartGridKing

From: Van Ausdall, Steven [mailto:svanausdall@xtensible.net]
Sent: Tuesday, July 12, 2011 9:28 AM
To: Chris King; espi@naesb.org
Subject: RE: Quality Codes

Chris,

Please submit this as a comment to NAESB in the current public review of ESPI. I know Jonathan monitors this list, so just let him know if you are not submitting any other comments, and we can use this as your submission.

Thanks!
Steve

From: chris@emeter.com [mailto:chris@emeter.com]
Sent: Friday, July 08, 2011 9:09 AM
To: Van Ausdall, Steven; espi@naesb.org
Subject: RE: Quality Codes

Steve,

We've had an enormous amount of experience with this coding over the years and have some insights on this. The key reference would be the widely-used NAESB VEE standards at http://www.naesb.org/pdf/ubp120500.pdf

I realize it's late in the process, but please see comments below. Also, we need definitions of each code; for the ones included in NAESB VEE, I have provided the definitions below from the NAESB document.

Chris

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From: espi-owner@naesb.org [mailto:espi-owner@naesb.org] **On Behalf Of** Van Ausdall, Steven
Sent: Wednesday, July 06, 2011 1:44 PM
To: espi@naesb.org
Subject: Quality Codes

ESPI Participants,

Here is the proposed list of quality codes, containing everything that was in the model plus those from PAP10. Values 13-16 and clarifications in parentheses were added. Please let us know if you see any problems.

0 - valid (validated)***[ck]*** Suggest NAESB definition.
7 - manually edited***[ck]*** Need to define.
8 - estimated***[ck]*** Suggest NAESB definition. Also, there are different estimation methods; I suggest we have different codes for each estimation rule in the NAESB VEE rules: 1) Linear Interpolation and 2) Reference Days.
10 - questionable***[ck]*** Need to define.
11 - derived ***[ck]*** Need to define. How does this differ from estimated? Does it? Derived from what?
12 - projected (forecast) ***[ck]*** Need to define.
13 - mixed***[ck]*** Need to define.
14 - raw***[ck]*** Suggest NAESB definition.
15 - normalized for weather***[ck]*** Need to define. There are, of course, many ways to do this. Is there an example elsewhere in the standard?
16 – other***[ck]*** Need to define. Does this necessarily exclude all of the other codes?
[ck] Of the above codes, 0, 14, and 8 are in the NAESB VEE code. Two other categories from the NAESB code are "Validated" and "Verified." I suggest we add these two to the list and use the NAESB VEE code definitions:

- ***Raw data - data that has not gone through the VEE process.***
- ***Valid data - data that has gone through all required validation checks and either passed them all or has been verified.***
- ***Verified data - data that failed at least one of the required validation checks but was determined to represent actual usage.***
- ***Validated Data - data that has been validated and possibly edited and/or estimated (VEE) in accordance with approved procedures. Page 116 of 196***
- ***Estimated - data that has been calculated based on standard***

estimation rules because the raw data was not valid or was missing. "Linear Interpolation" and "Reference Day" estimation methods are described in the NAESB Uniform Business Practices for Unbundled Electricity Metering, Volume 2.

Thanks,
Steve

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Cherry C. Hudgins
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August 8, 2011

VIA EMAIL
North American Energy Standards Board
Attn: Mr. Jonathan Booe, Deputy Director
801 Travis Street
Suite 1675
Houston, TX 77002

North American Energy Standards Board
Retail Electric Quadrant Executive Committee
Attn: Mr. Phil Precht, Chairman
801 Travis Street
Suite 1675
Houston, TX 77002

Re: Energy Services Provide Interface Standard/Model Business Practices

Ladies and Gentlemen:

Southern Company Services, Inc., as agent for Alabama Power Company, Georgia Power Company, Gulf Power Company and Mississippi Power Company (collectively, "Southern"), is pleased to have had the opportunity to participate in the development of the NAESB Energy Services Provider Interface ("ESPI") draft model business practices and thanks the NAESB ESPI Task Force for all of their hard work. Southern appreciates the opportunity to now provide formal comments on the current draft ESPI business practices.

While this letter does not detail each and every change proposed by Southern as reflected in the attached marked draft of the ESPI business practices, we want to highlight and outline our comments for the benefit of the ESPI Task Force and the NAESB REQ Executive Committee.

As more thoroughly explained below, Southern's comments can be categorized into five main areas.

First, the ESPI business practices should be made more consistent and harmonized with the recent NAESB REQ.22 (referred to herein as "Data Privacy" business practices). Southern recognizes that, in order to expedite their completion, the ESPI and Data Privacy business practices were developed in parallel. Unfortunately, this has resulted in a number of inconsistencies which need to be resolved due to, among other things, the closely related nature of the ESPI and Data Privacy business practices. For example, the current ESPI draft contains several terms which are similar to but called out/defined materially differently than in the Data Privacy business practices. Southern's recommendations to resolve at least some of these inconsistencies include the following:

- Revise the definition of "Third Party" to read as follows in order to be more consistent with the Data Privacy business practices:

> **Third Party:** An Entity which provides some service to a Retail Customer based on Energy Usage I~~i~~nformation for the Retail Customer to which it does not have direct access and over which it has no direct authority ~~over~~other than: the Data Custodian and its contracted agents, the Applicable Regulatory Authority, ISOs or other regional entities. ~~A Third Party relies on a Data Custodian to provide access to Retail Customer Information.~~

- Revise the definition of "Authorized Third Party" to read as follows in order to be more consistent with the Data Privacy business practices:

> **Authorized Third Party:** A Third Party that is permitted to receive EUI in accordance with applicable law, regulation, the Governing Documents and any requirements of the Applicable Regulatory Authority~~has been approved by an Authorizing Entity for the relevant jurisdiction~~ and has met the requirements of the Applicable Regulatory Authority and Governing Documents to utilize the Energy Services Provider Interface.

- Revise the definition of "Energy Usage Information" to read as follows in order to be more consistent with the term "Smart Meter-based Information" which is used in the Data Privacy business practices:

> **Energy Usage Information:** Any information and data from a smart meter identifiable to an individual~~concerning a~~ Retail Customer~~'s use of energy~~ concerning that Retail Customer's energy usage, which may be made available pursuant to the Governing Documents consistent with any requirements of the Applicable Regulatory Authority.

- Add to the Executive Summary on page 2 the following paragraph from the Executive Summary of the Data Privacy business practices:

> These Model Business Practices are not intended to apply to the Data Custodian's disclosure, collection, use and handling of Energy Usage Information in connection with the Data Custodian's or its agents' utility services, product or service fulfillment or billing and collection activities.

- Delete the last sentence of REQ.21.3.1.3 as it would prohibit an Authorized Third Party from gaining information from another Authorized Third Party or from the Data Custodian, which is inconsistent with the Data Privacy business practices which allow for that possibility.

- Add the following language to REQ.21.3.1.16 regarding transfer, merger, etc., which is similar to the language in REQ.22.3.3.2.6 of the Data Privacy business practices:

> In the case of a transfer, merger, reorganization or sale of or involving an Authorized Third Party, the Data Custodian is not required to notify the Retail Customer of the transfer, merger, reorganization or sale and a new authorization, request or direction is not required for the Distribution Company to continue to disclose the EUI to the transferee, subsequent owner or successor of the Authorized Third Party.

- Add the following language to REQ.21.3.1.18 regarding data quality which is largely similar to the language in REQ.22.3.9.1.1.1 of the Data Privacy business practices:

> It is recognized that a Data Custodian providing EUI directly from the smart meter or before the data is validated for billing purposes can only provide the EUI as that data is registered by or recorded in the smart meter. Retail Customers and the Third Parties to which such data is disclosed should acknowledge that there are inherent limitations in EUI disclosed before the Data Custodian has verified and validated it for billing purposes. Further, these Model Business Practices do not establish or recommend any intervals at or for which EUI will or should be provided or available.

- Delete the term "Authorizing Entity" in order to be consistent with the Data Privacy business practices which do not use such a term and allow for more flexibility as to how Third Parties become Authorized Third Parties.

As referenced above, Southern believes this harmonization process is important, especially in light of all the work by stakeholders to develop both the Data Privacy and ESPI business practices, and such harmonization process should not be rushed to an unsatisfactory completion. Instead, the Task Force's work product at the end of the call tomorrow to resolve these and other comments relating to inconsistency of the Data Privacy and ESPI business practices should be referred to NAESB's Technical Electronic Implementation Subcommittee ("TEIS") for review and confirmation and to identify and resolve any other inconsistencies. As you are aware, the TEIS was established for the following purposes:

> The mission of TEIS is to develop recommendations for transaction sets, data communication standards and implementation guidelines to support the standards and model business practices of the REQ.
>
> . . .
>
> The TEIS is primarily tasked with assessing and addressing those Requests for Standards or portions thereof involving data communications, ANSI data element and transaction set definitions, with an initial focus on electronic delivery mechanisms and on the technical implementation standards associated with (1) billing and payments, (2) customer enrollment and switching, (3) metering, (4) load profiling and (5) customer information.[1]

Southern's second area of comments concerns the number of internal inconsistencies in the draft ESPI business practices. For example, the draft uses a myriad of similar but different terms, such as "data", "resource data", "usage information", "energy usage data", "energy usage information", etc. The draft document also is somewhat inconsistent regarding the use of "Third Party", "Authorized Third Party" and "PII". We believe these and similar inconsistencies create unnecessary ambiguities. Accordingly, and as reflected in more detail in our attached markup, Southern recommends the consistent use of the terms "Energy Usage Information", "PII" and, unless the context clearly otherwise requires, "Authorized Third Party", among others.

Third, the draft ESPI business practices unnecessarily stray into policy areas in a few instances. While the line separating business practice from policy is sometimes blurred and difficult to discern, Southern believes NAESB, the Task Force and the Executive Committee must be diligent to ensure that the ESPI business practices do not create or promote policy. In connection therewith and as you are aware, the NAESB Bylaws and Operating Practices both provide that NAESB's committees, subcommittees, and task forces should avoid creating policy

[1] NAESB REQ Technical Electronic Implementation Subcommittee Mission, Feb. 25, 2004, p. 1.

in their standards development activities.[2] Accordingly, certain provisions should be deleted from the ESPI business practices such as those purporting to constrain or require certain technologies. For example, REQ.21.3.1.26 unnecessarily encroaches on policy issues and, by its terms, is outside the scope of NAESB's objectives and, therefore, should be deleted.

Fourth, Southern suggests a number of miscellaneous changes including the following:

- The use of "request" and "authorize" should also include "direction" (REQ.21.3.1.1, REQ.21.3.1.7, and REQ.21.3.1.8) to allow for more flexibility, as reflected in the attached markup.

- Language should be added to REQ.21.3.1.3 and REQ.21.3.1.17 to recognize the importance of the Governing Documents and the Applicable Regulatory Authority as reflected in the attached markup. For example, REQ.21.3.1.3 should be revised to read as follows:

  > A Third Party should not be able to access EUI or any other ~~Personally Identifiable Information (~~PII~~)~~ from a Data Custodian, except as permitted or required by the Governing Documents, the Applicable Regulatory Authority or, subject to the Governing Documents and the requirements of the Applicable Regulatory Authority, as otherwise requested or directed by the Retail Customer. ~~PII may only be provided to a Third Party by the Retail Customer.~~

- It seems inappropriate and counter-productive to precondition the use of ESPI on procedures that have not yet been created and could potentially apply to a Distribution Company's use of ESPI for its own purposes. Accordingly, REQ.21.3.1.21 should be deleted.

- Language should be added in first paragraph under "Use Cases" to clarify that the use cases relate to the Energy Usage Information relationship between Data Custodians and Authorized Third Parties.

- We also have made a few comments and raised some additional concerns/questions regarding Encryption, Communication Specifications, Conformance, Electric Power Usage Summary, TOUType, UomType, and Interval Reading, as reflected in more detail in the attached markup.

[2] NAESB Bylaws Amended by the Board of Directors Nov. 21, 2008, p. 5; NAESB Operating Practices as approved via Board Resolution – Mar. 24, 2011, p. 2.

- The definitions of Personally Identifiable Information and Energy Usage Information create what may be a false dichotomy for those jurisdictions and/or Data Custodians that consider or may consider Energy Usage Information to be a subset of Personally Identifiable Information. As referenced above, Southern has inserted suggested language in various part of the document to allow for the possibility that Energy Usage Information is a subset of Personally Identifiable Information, even though they may be discussed separately and treated separately for purposes of the ESPI document/model.

Last, and perhaps most importantly, the model in the ESPI standard/business practices contains a number of data elements calling for information which is neither now nor reasonably expected in the near future to be available. As you are aware, the NAESB Operating Practices provide:

> NAESB will carefully consider whether proposed standards are both timely and necessary. In particular, it will try to avoid adopting and implementing new standards, however beneficial, before the industry is able to reasonably make use of them.[3]

Accordingly, work remains to be done on the data model to resolve inconsistencies and eliminate data elements for which data is not available and will remain unavailable for some time. This is the case even though the ESPI standard/business practices are not "mandated" and only applications claiming conformance thereto should comply therewith. Southern believes it is in the best interest of all stakeholders to develop a model with which utilities can confidently now (or very shortly) fully comply (i.e., "use", as quoted from the Operating Practices above) as opposed to a model with which many utilities can neither now nor soon so comply.

Failure to make the model more consistent with existing deployed technologies could also create false expectations and, thereby, ultimately disappoint our customers and concern regulators. Among other things, unless changes to the model are adopted, utilities will not be able to claim that they are fully ESPI compliant, which could have adverse and unexpected consequences on not only such utilities, but also on their customers and on the adoption and use of the model. In connection therewith, Southern has proposed to revise REQ.21.3.1.28 to add the following proviso in order to help mitigate some of our concerns: "; provided not all data elements must be used in order to be ESPI conformant". However, it is preferable (and consistent with NAESB's Operating Practices) for the ESPI model to now be truncated, and thereby made usable, and then later updated and expanded as and when utilities and their vendors are better able to fully comply with such expanded model.

On a related point, as currently drafted, the ESPI model often mixes data elements that reflect monthly values with elements that reflect daily and/or hourly values. As an example, Southern has noted certain conflicting items in our markup in the Electric Power Usage

[3] NAESB Operating Practices as approved via Board Resolution – Mar. 24, 2011, p. 4 (emphasis added).

Summary which should be resolved, and other instances may exist. In connection therewith, Southern has suggested adding a sentence to the end of REQ.21.3.1.18 as follows:

> Further, these Model Business Practices do not establish or recommend any intervals at or for which EUI will or should be provided or available.

However, Southern's proposed changes to the ESPI model, while helpful, do not resolve all of the issues referenced above regarding the current usability of the ESPI model and related compliance issues. In addition, there is some concern (requiring further analysis) that Authorized Third Parties receiving Energy Usage Information may be able to reverse-engineer or otherwise use this data to rebuild and therefore gain improper access to proprietary information.

For these and the other reasons, Sothern joins those requesting that the NAESB REQ Executive Committee refer the Task Force's work product after tomorrow's call to the TEIS for more in-depth review, analysis and revision. Engaging the TEIS would be the most appropriate method for bringing final resolution to the important, varied and very technical concerns raised by Southern and others and would be consistent with the "deliberate" review required by NAESB Operating Practices. Engaging the TEIS would also be consistent with the related NAESB Procedure that NAESB standards not be adopted, however beneficial, before the industry is able to reasonably use them. Utilizing the TEIS to resolve the number of outstanding issues associated with ESPI would also help ensure broader industry involvement with the development of the ESPI standard/business practices than has been the case to date. In furtherance thereof, Southern commits to volunteering at least one working member of the TEIS to help resolve these and other outstanding issues. Southern would also welcome non-NAESB members to participate in the TEIS consistent with NAESB Practice that "[t]here is no requirement that a member of the TEIS be a NAESB Member."[4]

To the extent you have any questions or concerns about any of Southern's comments or questions, please do not hesitate to contact me.

Respectfully submitted,

/s/ Cherry C. Hudgins
Cherry C. Hudgins
Smart Energy Policy Manager
Southern Company Services, Inc.

[4] NAESB REQ Technical Electronic Implementation Subcommittee Mission, Feb. 25, 2004, p. 1.

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For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

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 UCAIug OpenADE Task Force submitted a request for the initiation of NAESB Model Business Practices on July 29, 2010 (R10008) to standardize the interface which allows for the exchange of ~~e~~Energy ~~u~~Usage ~~i~~Information between designated parties. The UCAIug OpenADE Task Force provided the artifacts on which these Model Business Practices were based.

These Model Business Practices will build on the NAESB Energy Usage Information (EUI) Model and, subject to the Governing Documents and any requirements of the Applicable Regulatory Authority, will help enable Retail Customers to share ~~e~~Energy ~~u~~Usage ~~i~~Information with Third Parties who have acquired the right to act in this role. This Energy Services Provider Interface (ESPI) will provide a consistent method for Retail Customers to authorize a Third Party to gain access to ~~e~~Energy ~~u~~Usage ~~data~~Information. Doing so will help enable Retail Customers to choose Third Party products to assist them to better understand their energy usage and to make more economical decisions about their usage. ESPI will contribute to the development of

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an open and interoperable method for Third Party authorization and machine-to-machine exchange of Retail Customer Energy ~~u~~Usage ~~i~~Information.

RECOMMENDED STANDARDS:

REQ.21 ENERGY SERVICES PROVIDER INTERFACE

EXECUTIVE SUMMARY

This document establishes the Model Business Practices for the Energy Services Provider Interface (ESPI). For Retail Customers to better realize the benefits of the Smart Grid, Retail Customer ~~related data (e.g.,~~Energy ~~u~~Usage ~~i~~Information~~, etc.)~~ should be made available in a timely manner to the Retail Customer and to the Authorized Third Parties chosen by the Retail Customer.

ESPI encompasses a variety of interactions between Retail Customers, Distribution Companies, and Third Parties. In a business environment where best practices are voluntary, Model Business Practices should be applied within the context of regulatory requirements and agreements. These Model Business Practices define ESPI as a specific available interface, but any obligation to use it would be established by Governing Documents and Applicable Regulatory Authority rules and regulations, and not by these Model Business Practices.

These Model Business Practices are not intended to apply to the Data Custodian's disclosure, collection, use and handling of Energy Usage Information in connection with the Data Custodian's or its agents' utility services, product or service fulfillment or billing and collection activities.

INTRODUCTION

The North American Energy Standards Board (NAESB) is a voluntary non-profit organization comprised of members from all aspects of the natural gas and electric industries. Within NAESB, the Retail Electric Quadrant (REQ) and the Retail Gas Quadrant (RGQ) focus on issues impacting the retail sale of energy to Retail Customers. REQ / RGQ Model Business Practices are intended to provide guidance to Distribution Companies, Suppliers, and other Market Participants involved in providing energy service to Retail Customers. The focus of these Model Business Practices is the Energy Services Provider Interface.

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The purpose of ESPI is to provide a consistent and broadly applicable interface to enable Retail Customer authorization of exchange of EUI from Data Custodians to Third Parties. For the purpose of the descriptions of interactions in ESPI, actions of contracted agents of a Distribution Company are considered the actions of the Distribution Company.

These Model Business Practices are voluntary and do not address policy issues that are the subject of state legislation or regulatory decisions. These voluntary Model Business Practices have been adopted by NAESB with the realization that, as the industry evolves, additional and amended Model Business Practices may be necessary. Any industry participant seeking additional or amended Model Business Practices (including principles, definitions, data elements, process descriptions, and technical implementation instructions) should submit a request to the NAESB office, detailing the change, so that the appropriate process may take place to amend the Model Business Practice.

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BUSINESS PROCESSES AND PRACTICES

Overview

REQ.21.1 Principles

REQ.21.1.1 The processes for ESPI should minimize the complexity associated with authorizing Third Parties to access Retail Customers' ~~e~~Energy ~~u~~Usage ~~data~~Information.

REQ.21.1.2 The processes associated with ESPI are subject to and should be consistent with any related requirements established by the Governing Documents and Applicable Regulatory Authority.

REQ.21.2 Definitions

REQ.21.2.B Technical Definitions

REQ.21.2.B.1 ~~**Authorizing Entity:** An Entity (e.g. PUC, Distribution Company) who approves Third Parties to utilize ESPI-compliant system(s) within a jurisdiction.~~

~~**REQ.21.2.B.2**~~ **Third Party:** An Entity which provides some service to a Retail Customer based on Energy Usage ~~i~~Information for the Retail Customer to which it does not have direct access and over which it has no direct authority ~~over~~ other than: the Data Custodian and its contracted agents, the Applicable Regulatory Authority, ISOs or other regional entities. ~~A Third Party relies on a Data Custodian to provide access to Retail Customer information.~~

REQ.21.2.B.~~3~~2 **Authorized Third Party:** A Third Party that is permitted to receive EUI in accordance with applicable law, regulation, the Governing Documents and any requirements of the Applicable Regulatory Authority ~~has been approved by an Authorizing Entity for the relevant jurisdiction~~ and has met the requirements of the Applicable Regulatory Authority and Governing Documents to utilize the Energy Services Provider Interface.

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REQ.21.2.B.43 **Energy Service Provider Interface:** A standardized machine-to machine interface that permits a Data Custodian to share, at the Retail Customer's request ~~and under the Retail Customer's~~ or direction, a broad set of that Retail Customer's Energy Usage Information held by that Data Custodian ~~data~~ with Authorized Third Parties.

REQ.21.2.B.54 **Personally Identifiable Information:** Subject to the Governing Documents and any requirements of the Applicable Regulatory Authority, the~~any~~ following information about an individual Retail Customer:~~maintained, including~~ (1) any information that can be reasonably used to distinguish or trace a~~n individual's~~Retail Customer's identity, such as name, social security number, date and place of birth, mother~~'~~'s maiden name, or biometric records; and (2) any other information that is reasonably linked or linkable to a~~n individual~~Retail Customer, such as medical, educational, financial, and employment information[1]. EUI may be included as PII in some jurisdictions or by some Data Custodians.

REQ.21.2.B.65 **Data Custodian:** A Data Custodian holds Retail Customer ~~resource~~Energy Usage ~~i~~Information and will share this information with Authorized Third Parties only in accordance with the Governing Documents, any requirements of the Applicable Regulatory Authority and, subject to the Governing Documents and the requirements of the Applicable Regulatory Authority, at the request or direction of the Retail Customer. A Data Custodian typically has direct access to the ~~pertinent~~Energy Usage ~~i~~Information (e.g., by directly acquiring electricity usage data from a meter). A Data Custodian may be a Distribution Company.

REQ.21.2.B.76 **Energy Usage Information:** Any information and data from a smart meter identifiable to an individual~~concerning a~~ Retail Customer~~'s use of energy.~~ concerning that Retail Customer's energy usage, which may be made available pursuant to the Governing Documents consistent with any requirements of the Applicable Regulatory Authority.

REQ.21.2.C Acronyms

[1] Definition based upon NIST Special Publication 800-122, Guide to Protecting the Confidentiality of Personally Identifiable Information (PII) April 2010, page 2-1.

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Abbreviation / Acronym	Meaning
ADE	Automatic Data Exchange
ESPI	Energy Services Provider Interface
EUI	Energy Usage Information
NISTIR	National Institute of Standards and Technology Interagency Report
PII	Personally Identifiable Information

REQ.21.3 Model Business Practices

REQ.21.3.1 General Practices for Energy Services Provider Interface (ESPI)

REQ.21.3.1.1 To the extent required by the Applicable Regulatory Authority~~,~~ or as otherwise agreed by the Data Custodian consistent with any requirements of the Applicable Regulatory Authority, Authorized Third Parties and Data Custodians should exchange Retail Customer's EUI at the Authorized Third Party's or Retail Customer's request or direction pursuant to the requirements as set forth in this NAESB REQ.21, subject to the Governing Documents.

REQ.21.3.1.2 The ESPI relationship requires a set of agreements between a Retail Customer-Authorized Third Party, a Retail Customer-Data Custodian, and an Authorized Third Party-Data Custodian to help ensure that the appropriate information is provided as needed and other information access is restricted.

REQ.21.3.1.3 A Third Party should not be able to access EUI or any other ~~Personally Identifiable Information (~~PII~~)~~ from a Data Custodian~~,~~ except as permitted or required by the Governing Documents, the Applicable Regulatory Authority or, subject to the Governing Documents and the requirements of the Applicable Regulatory Authority, as otherwise requested or directed by the Retail Customer. ~~PII may only be provided to a Third Party by the Retail Customer.~~

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REQ.21.3.1.4 Subject to the Governing Documents and Applicable Regulatory Authority, ESPI should enable a Retail Customer to share EUI for such Retail Customer with Authorized Third Parties who have acquired the right to act in this role.

REQ.21.3.1.5 A system conforming to ESPI should allow exchange of Energy U~~u~~sage ~~i~~Information without requiring Third Party access to any other PII.

REQ.21.3.1.6 All information exchanged by ESPI should be secure in accordance with the security recommendations ~~stated~~referenced herein. Such recommendations are subject to the relevant Governing Documents and any requirements of the Applicable Regulatory Authority.

REQ.21.3.1.7 A Retail Customer should have the ability to ~~authorize~~request or direct the Data Custodian to release EUI for such Retail Customer to an Authorized Third Party who has acquired the right to act in this role, subject to the Governing Documents and Applicable Regulatory Authority.

REQ.21.3.1.8 Subject to the Governing Documents and any requirements of the Applicable Regulatory Authority, a Retail Customer should have the ability to ~~authorize~~request or direct that multiple Authorized Third Parties ~~to~~ have limited time based access to specified EUI ~~or other types of information for such Retail Customer~~, with any default expiration for such access established by such Governing Documents or any requirements of the Applicable Regulatory Authority.

REQ.21.3.1.9 Subject to the Governing Documents and any requirements of the Applicable Regulatory Authority, a Retail Customer should have the ability to designate a specific expiration date, extend any specific expiration date, or indicate an open-ended access timeframe other than the default access period.

REQ.21.3.1.10 A system conforming to ESPI should have the capability to support the Retail Customers' ability to select ~~/~~or revoke which Authorized Third Parties are ~~authorized for~~permitted access to EUI for that Retail Customer.

REQ.21.3.1.11 A system conforming to ESPI should have the capability to notify the relevant Authorized Third Parties, Data Custodian(s) and

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Retail Customer(s) when access has been granted, access has been changed, or access has been revoked or otherwise terminated for a UsagePoint.

REQ.21.3.1.12 ~~Subject to the Governing Documents and Applicable Regulatory Authority, a~~ A system conforming to ESPI should be consistent with ~~the applicable~~any guidelines around security and authorization for Third Party data access as ~~set forth in NISTIR 7628~~determined to be applicable by the Governing Documents or any requirements of the Applicable Regulatory Authority.

REQ.21.3.1.13 Future versions of ESPI should be backwards compatible, including provisions for exchanging versioning information and negotiating interface capabilities.

REQ.21.3.1.14 Any Third Party wishing to access EUI via ESPI must establish and maintain a trusted relationship with each Data Custodian who provides an ESPI compliant system. Subject to the Governing Documents and Applicable Regulatory Authority, both the Data Custodian and the Authorized Third Party should disallow EUI access requests from Entities who are not Authorized Third Parties.

REQ.21.3.1.15 Subject to the Governing Documents and any requirements of the Applicable Regulatory Authority, confidentiality should be maintained during communications of any EUI or other PII~~information~~.

REQ.21.3.1.16 Subject to the Governing Documents and any requirements of the Applicable Regulatory Authority, a Third Party~~ies~~ must be ~~authorized by the Authorizing Entity and/or the Data Custodian to be~~ an Authorized Third Party ~~and~~to utilize the Data Custodian's ESPI compliant system and must maintain ~~their~~its status as an Authorized Third Party. In the case of a transfer, merger, reorganization or sale of or involving an Authorized Third Party, the Data Custodian is not required to notify the Retail Customer of the transfer, merger, reorganization or sale and a new authorization, request or direction is not required for the Distribution Company to continue to disclose the EUI to the transferee, subsequent owner or successor of the Authorized Third Party.

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REQ.21.3.1.17 If ~~an Authorizing Entity~~it exists within a jurisdiction, ~~the Authorizing Entity should make available to Retail Customers~~ a list of Third Parties who have been authorized by the Applicable Regulatory Authority or the Data Custodian to use ESPI in accordance with and subject to the Governing Documents and any requirements of the Applicable Regulatory Authority should be made available by the Applicable Regulatory Authority or the Data Custodian, as applicable.

REQ.21.3.1.18 Subject to the Governing Documents and Applicable Regulatory Authority, EUI should be made available to Authorized Third Parties (as directed by the Retail Customer) in a reasonable and timely fashion. It is recognized that a Data Custodian providing EUI directly from the smart meter or before the data is validated for billing purposes can only provide the EUI as that data is registered by or recorded in the smart meter. Retail Customers and the Third Parties to which such data is disclosed should acknowledge that there are inherent limitations in EUI disclosed before the Data Custodian has verified and validated it for billing purposes. Further, these Model Business Practices do not establish or recommend any intervals at or for which EUI will or should be provided or available.~~—~~

REQ.21.3.1.19 When the required Authorized relationship described in this recommendation for an Entity is revoked or otherwise terminated, access to EUI by such Entity via ESPI should not be granted.

REQ.21.3.1.20 Participants in ESPI and their relationships should be identified ~~with~~by globally unique identifiers.

REQ.21.3.1.21 ~~Procedures for the creation and dissolution of trusted relationships between any two parties should be preconditions for the use of ESPI. The standardization of these procedures, however, is outside the scope of this Model Business Practice.~~

~~REQ.21.3.1.22~~ ~~—~~Upon dissolution of any of the required trusted relationships for an Entity, any ESPI relationships should be terminated and parties notified via a defined method.

REQ.21.3.1.2~~3~~ If and when the relationships or criteria change, pursuant to these ~~m~~Model ~~b~~Business ~~p~~Practices and/or as agreed to among any two or more of the parties, ~~change,~~ all affected parties should be notified via a defined method.

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REQ.21.3.1.234 Interoperable and widely supported technologies should be used to help ensure adoption regardless of which development and deployment platforms are used.

REQ.21.3.1.245 The technologies chosen should be well specified, with active communities, tools, and/or frameworks available.

REQ.21.3.1.256 ~~Technologies chosen should be compatible and interoperable with technologies specified for access to HAN resources.~~

~~**REQ.21.3.1.27**~~ To the extent required by the Applicable Regulatory Authority, Authorized Third Parties and Data Custodians should follow privacy guidance recommended in NAESB REQ.22, "Third Party Access to Smart Meter-based Information", subject to Governing Documents and any requirements of the Applicable Regulatory Authority.

REQ.21.3.1.286 This Model ~~b~~Business ~~p~~Practice only ~~constrains~~applies to applications purporting to conform to it. It is not intended to be applicable for all customer information transfers to Authorized Third Parties, but rather, only those transfers between applications conforming to ESPI; provided not all data elements must be used in order to be ESPI conformant.

REQ.21.3.1.279 Future versions of ESPI, and extensions employed by Authorized Third Parties and Data Custodians to exchange Retail Customer's EUI at the Retail Customer's request where not specified by ESPI, should conform to NAESB REQ~~.~~.18, as EUI may be updated from time to time.

REQ.21.4 Models

REQ.21.4.1 Profile of REQ.18 Energy Usage Information Model

The following model represents the implementable profile for ESPI of NAESB PAP10 EUI model. Note that associations stereotyped <<link>> are marked as Non-navigable, since they are actually represented using atom:link.

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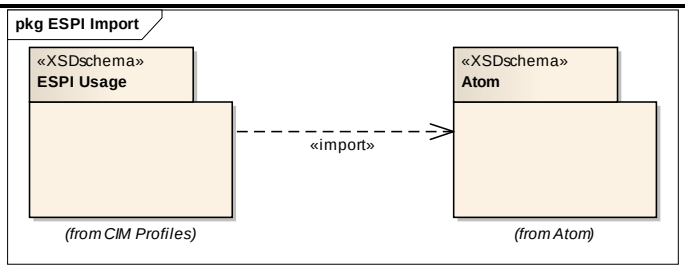

Figure 1: ESPI Import

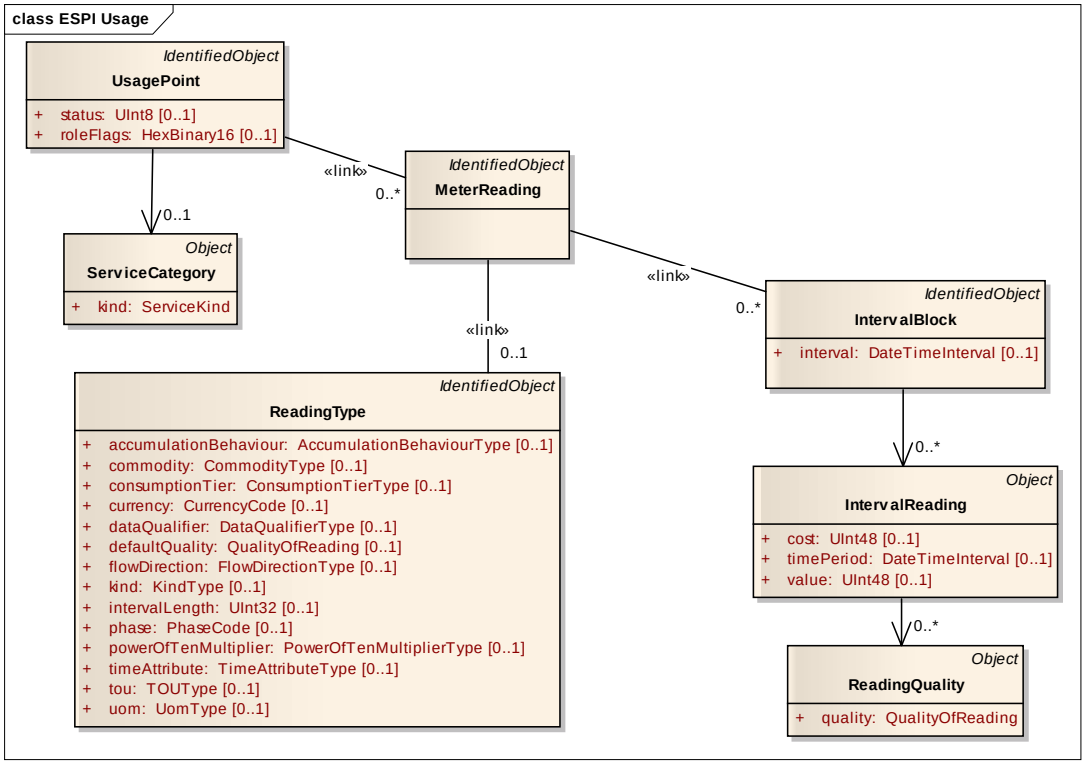

Figure 2: ESPI Usage

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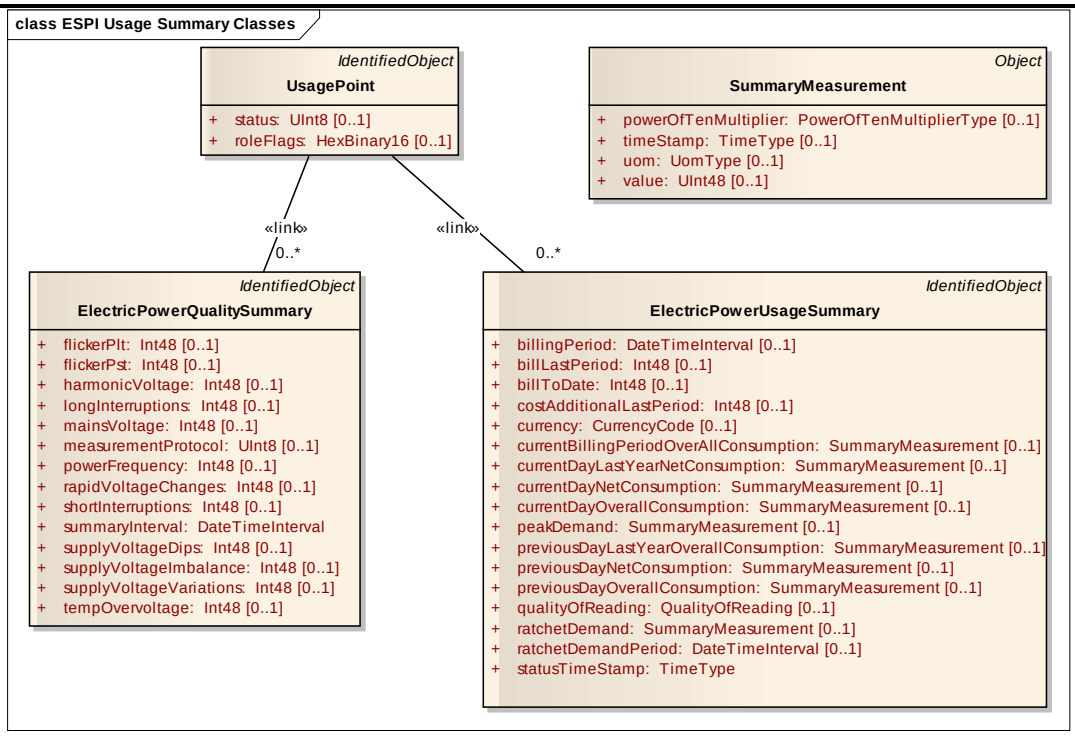

Figure 3: ESPI Usage Summary Classes

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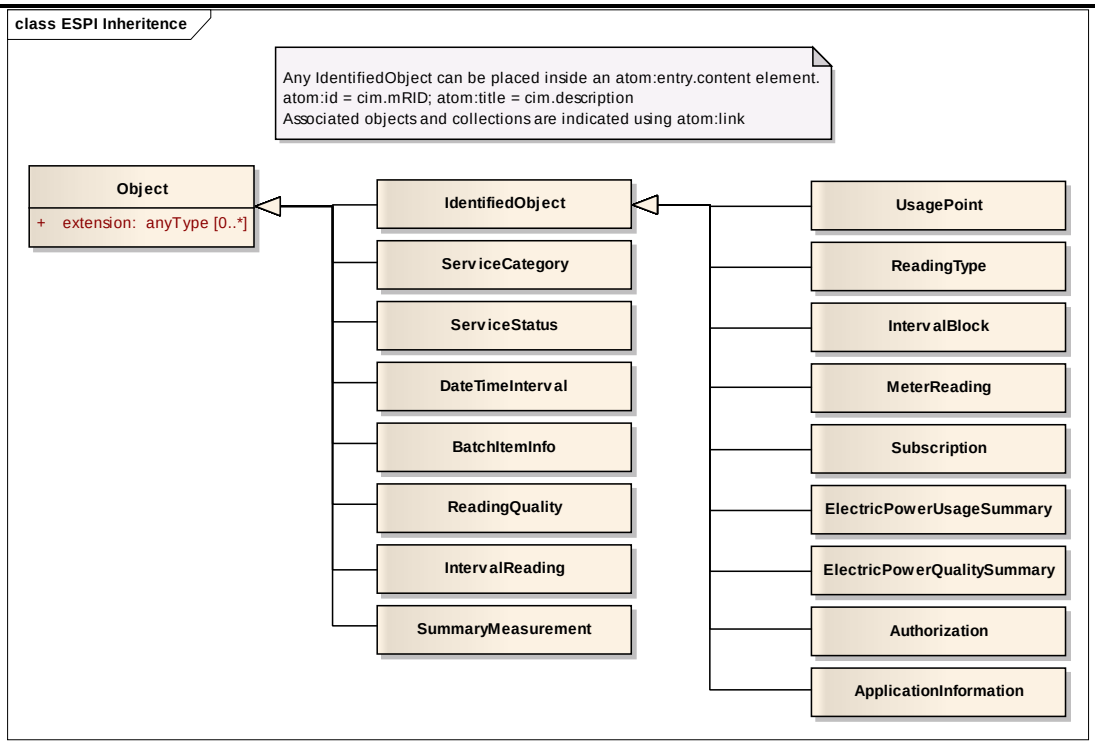

Figure 4: ESPI Inheritence

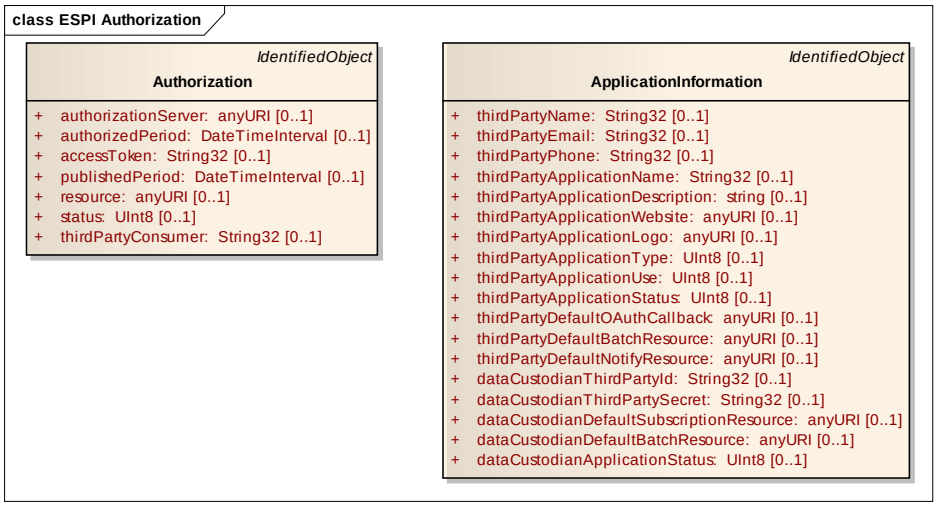

Figure 5: ESPI Authorization

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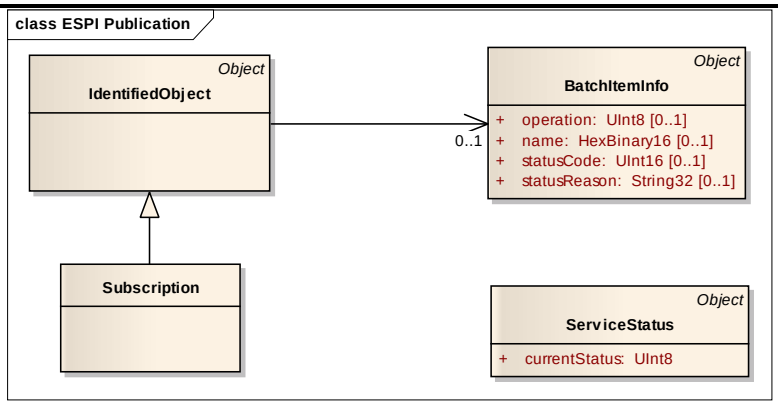

Figure 6: ESPI Publication

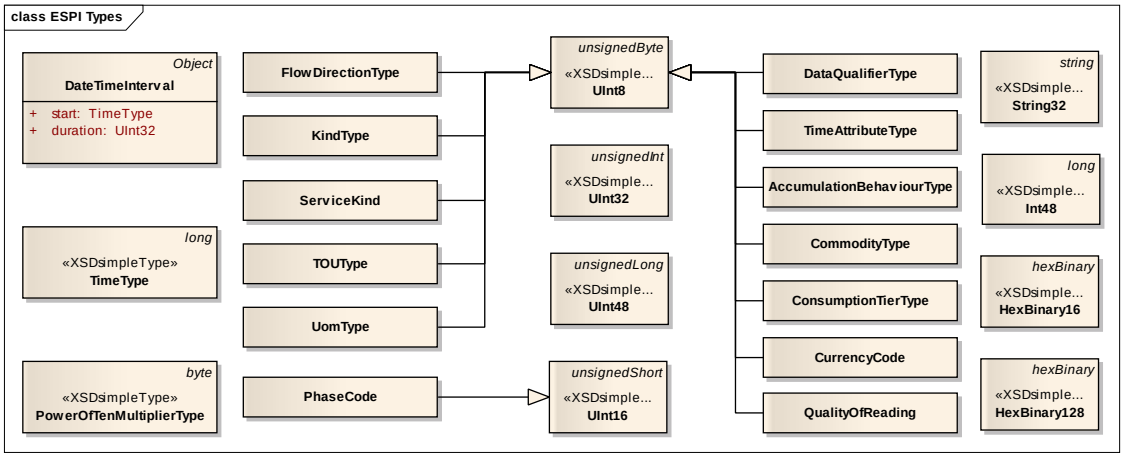

Figure 7: ESPI Types

BatchItemInfo

Includes elements that make it possible to include multiple transactions in a single (batch) request.

Name	Type	Description
operation	*UInt8*	Specifies the operation requested of this item. 0=Create 1=Read 2=Update 3=Delete
name	*HexBinary16*	An identifier for this object that is only unique within the containing collection.
statusCode	*UInt16*	Indicates the status code of the associated transaction.

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Name	Type	Description
		200 - Ok 201 - Created 204 - No Content 301 - Moved Permanently 302 - Redirect 304 - Not Modified 400 - Bad Request 401 - Unauthorized 403 - Forbidden 404 - Not Found 405 - Method Not Allowed 410 - Gone 500 - Internal Server Error
statusReason	*String32*	Indicates the reason for the indicated status code.

Object

Superclass of all object classes to allow extensions.

Name	Type	Description
extension	*anyType*	Contains an extension.

ServiceStatus

Contains the current status of the service.

Name	Type	Description
currentStatus	*UInt8*	The current status of the service. 0 = Unavailable 1 = Normal, operational

Subscription

Defines the parameters of a subscription between ~~t~~Third ~~p~~Party and ~~d~~Data ~~c~~Custodian.

ApplicationInformation

Contains information about a Third Party Application requesting access to the DataCustodian services. Information requested may include items such as Organization Name, Website, Contact Info, Application Name, Description, Icon, Type, default Notification and Callback endpoints, and may also include agreement with terms of service.

Name	Type	Description
thirdPartyName	*String32*	The name of the organization to which access will be granted.

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Name	Type	Description
thirdPartyEmail	*String32*	The e-mail address of the organization to which access will be granted. (For debugging - not to be shared with customers)
thirdPartyPhone	*String32*	The phone number of the organization to which access will be granted. (For debugging - not to be shared with customers)
thirdPartyApplicationName	*String32*	The name of the application to which access will be granted.
thirdPartyApplicationDescription	*string*	A description of the application.
thirdPartyApplicationWebsite	*anyURI*	The link to the main page of the application.
thirdPartyApplicationLogo	*anyURI*	The link to the logo image for the application. Size greater than 180 x 150 may be cropped or reduced.
thirdPartyApplicationType	*UInt8*	A code indicating the type of the application. Defined types are: 1 - Web Application 2 - Desktop Application 3 - Mobile Application
thirdPartyApplicationUse	*UInt8*	A code indicating the expected use of the application. Defined uses are: 1 - Energy management 2 - Comparisons 3 - Government
thirdPartyApplicationStatus	*UInt8*	A code indicating the current status of the application. Defined statuses are: 1 - Development 2 - Production (Live) 3 - Retired (Remove)
thirdPartyDefaultOAuthCallback	*anyURI*	The default redirect back to the application after authorization grant.
thirdPartyDefaultBatchResource	*anyURI*	The default endpoint for asynchronous delivery of Batch data using push.
thirdPartyDefaultNotifyResource	*anyURI*	The default endpoint for third party notification of Batch data availability, that is then requested from the ~~d~~Data ~~c~~Custodian via the Batch resource.
dataCustodianThirdPartyId	*String32*	A key to be associated with this application, to be provided in OAuth requests. (Provided

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Name	Type	Description
		by dataCustodian, cannot be modified)
dataCustodianThirdPartySecret	*String32*	A secret to be associated with this application, used to sign OAuth requests. (Provided by dataCustodian, cannot be modified)
dataCustodianDefaultSubscriptionResource	*anyURI*	The default endpoint for Subscription requests. (Provided by dataCustodian, updated in approved applications objects, cannot be modified by third party)
dataCustodianDefaultBatchResource	*anyURI*	The default endpoint for Batch requests. (Provided by dataCustodian, updated in approved applications objects, cannot be modified by third party)
dataCustodianApplicationStatus	*UInt8*	A code indicating the current status of the application. (Provided by dataCustodian, cannot be modified) Defined statuses are: 1 - Review 2 - Production (Live) 3 - On hold 4 - Revoked

Authorization

Represents a permission granted by an owner for access to a resource.

Name	Type	Description
authorizationServer	*anyURI*	Contains the URI link to the authorization endpoint associated with this authorization.
authorizedPeriod	*DateTimeInterval*	Restricts access to requests or subscriptions within this date time interval.
accessToken	*String32*	Contains the access token associated with this authorization.
publishedPeriod	*DateTimeInterval*	Restricts access to only the objects within the associated resource that were published within this date time interval.
resource	*anyURI*	Contains the identifier of the resource, same as was specified in OAuth "scope". **[Please confirm CSWG has reviewed and approved.]**
status	*UInt8*	The status of this authorization. 0 - Revoked 1 - Active
thirdPartyConsumer	*String32*	Contains the identifier for the Third Party.

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IdentifiedObject

This is a root class to provide common naming attributes for all classes needing naming attributes.

ElectricPowerQualitySummary

A summary of power quality events. This information represents a summary of power quality information typically required by customer facility energy management systems. It is not intended to satisfy the detailed requirements of power quality monitoring. All values are as defined by measurement Protocol during the period. The standards typically also give ranges of allowed values; the information attributes are the raw measurements, not the "yes/no" determination by the various standards. See referenced standards for definition, measurement protocol- and period.

Name	Type	Description
flickerPlt	*Int48*	A measurement of long term Rapid Voltage Change in hundredths. flickerPlt is derived from 2 hours of Pst values (12 values combined in cubic relationship).
flickerPst	*Int48*	flickerPst is a value measured over 10 minutes that characterizes the likelihood that the voltage fluctuations would result in perceptible light flicker. A value of 1.0 is designed to represent the level that 50% of people would perceive flicker in a 60 watt incandescent bulb. The value reported is represented as an integer in hundredths.
harmonicVoltage	*Int48*	A measurement of the Harmonic Voltage during the period. For DC, distortion is with respect to a signal of zero Hz.
longInterruptions	*Int48*	A count of Long Interruption events (as defined by measurementProtocol) during the summary interval period.
mainsVoltage	*Int48*	A measurement of the Mains [Signaling] Voltage during the summary interval period in uV.
measurementProtocol	*UInt8*	A reference to the source standard used as the measurement protocol definition. Examples are: 0 = "IEEE1519-2009" 1 = "EN50160"
powerFrequency	*Int48*	A measurement of the power frequency during the summary interval period in uHz.

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Name	Type	Description
rapidVoltageChanges	*Int48*	A count of Rapid Voltage Change events during the summary interval period
shortInterruptions	*Int48*	A count of Short Interruption events during the summary interval period
summaryInterval	*DateTimeInterval*	Interval of summary period
supplyVoltageDips	*Int48*	A count of Supply Voltage Dip events during the summary interval period
supplyVoltageImbalance	*Int48*	A count of Supply Voltage Imbalance events during the summary interval period
supplyVoltageVariations	*Int48*	A count of Supply Voltage Variations during the summary interval period
tempOvervoltage	*Int48*	A count of Temporary Overvoltage events (as defined by measurementProtocol) during the summary interval period

ElectricPowerUsageSummary

Summary of usage for a billing period [We assume monthly billing period, however, many of the data elements in this section indicate daily or incremental information. Accordingly, these data elements need clarification/revision for consistency.]

Name	Type	Description
billingPeriod [It appears these items are related to Monthly usage: billingPeriod, billLastPeriod, billtodate, costAdditionalLastPeriod, currency, currentBillingPeriodOverAllConsumption, peakDemand, ratchetDemand, ratchedDemandPeriod However, these values appear to be net daily usage: currentDaylastyearNetConsumption, currentDayNetConsumption,	*DateTimeInterval*	The billing period to which the included measurements apply

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Name	Type	Description
currentDayOverallConsumption, previousDatLastyearOverallConsumption, previousDaynetConsumption, previousDayOverallConsumption]		
billLastPeriod	*Int48*	The amount of the bill for the previous period , in millionths of the currency specified in the ReadingType for this reading (e.g. 840 = USD, US dollar).
billToDate [running total$ is typically not calculated until end of BillCycle due to step rates which can be associated with peak usage or aggregated usage.]	*Int48*	The bill amount related to the billing period as of the date received, in millionths of the currency specified in the ReadingType for this reading. (e.g. 840 = USD, US dollar).
costAdditionalLastPeriod	*Int48*	Additional charges from the last billing period, in millionths of the currency specified in the ReadingType for this reading. (e.g. 840 = USD, US dollar).
currency	*CurrencyCode*	The ISO 4217 code indicating the currency applicable to the bill amounts in the summary. See list at http://www.unece.org/cefact/recommendations/rec09/rec09_ecetrd203.pdf
currentBillingPeriodOverAllConsumption	*SummaryMeasurement*	The total consumption for the billing period
currentDayLastYearNetConsumption	*SummaryMeasurement*	The amount of energy consumed one year ago interpreted as same day of week same week of year (see ISO 8601). [This implies daily updates which are not easily reported with current designs. This comment also applies to any daily information or data element requiring daily accumulations.]
currentDayNetConsumption	*SummaryMeasurement*	Net consumption for the current day (delivered - received)
currentDayOverallConsumption	*SummaryMeasurement*	Overall energy consumption for the current day

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Name	Type	Description
peakDemand	*SummaryMeasurement*	Peak demand recorded for the current period [This is assumed to be monthly but peak demand may only to stored when it is used for billing.]
previousDayLastYearOverallConsumption	*SummaryMeasurement*	The amount of energy consumed on the previous day one year ago interpreted as same day of week same week of year (see ISO 8601).
previousDayNetConsumption	*SummaryMeasurement*	Net consumption for the previous day [Daily information on net amounts for net metering may not be available. In addition, the term net metering can have varying definitions.]
previousDayOverallConsumption	*SummaryMeasurement*	The total consumption for the previous day
qualityOfReading	*QualityOfReading*	Indication of the quality of the summary readings
ratchetDemand	*SummaryMeasurement*	The current ratchet demand value for the ratchet demand period [If an account is not billed on a ratchet demand, this value may not be available.]
ratchetDemandPeriod	*DateTimeInterval*	The period over which the ratchet demand applies
statusTimeStamp	*TimeType*	Date/Time status of this UsageSummary

ServiceCategory

Category of service provided to the customer.

Name	Type	Description
kind	*ServiceKind*	Service classification Examples are: 0 - electricity 1 - gas The list of specific valid values per the standard are itemized in ServiceKind.

UsagePoint

Logical point on a network at which consumption or production is either physically measured (e.g. metered) or estimated (e.g. unmetered street lights).

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Name	Type	Description
status	*UInt8*	Specifies the current status of this usage point. The only valid values are: 0 = off 1 = on
roleFlags	*HexBinary16*	Specifies the roles that this usage point has been assigned. Bit 1 - isMirror Bit 2 - isPremisesAggregationPoint Bit 3 - isPEV Bit 4 - isDER Bit 5 - isRevenueQuality Bit 6 - isDC Bit 7-16 - Reserved

HexBinary128 «XSDsimpleType»

A 128-bit field encoded as a hex string (32 characters / 16 octets)

HexBinary16 «XSDsimpleType»

A 16-bit field encoded as a hex string (4 characters / 2 octets)

Int48 «XSDsimpleType»

Signed integer, max inclusive 281474976710655 (2^48-1), restriction of xs:long

String32 «XSDsimpleType»

Character string of max length 32

UInt16 «XSDsimpleType»

Unsigned integer, max inclusive 65535 (2^16-1), same as xs:unsignedShort

UInt32 «XSDsimpleType»

Unsigned integer, max inclusive 4294967295 (2^32-1), same as xs:unsignedInt

UInt48 «XSDsimpleType»

Unsigned integer, max inclusive 281474976710655 (2^48-1), restriction of xs:unsignedLong

UInt8 «XSDsimpleType»

Unsigned integer, max inclusive 255 (2^8-1), same as xs:unsignedByte

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AccumulationBehaviourType

The only valid values are:

0 = Not Applicable
1 = BulkQuantity
3 = Cumulative
4 = DeltaData
6 = Indicating
9 = Summation
12 = Instantaneous

CommodityType

The only valid values are:

0 = Not Applicable
1 = Electricity secondary metered value (a premise meter is typically a secondary meter)
2 = Electricity primary metered value
4 = Air
7 = NaturalGas
8 = Propane
9 = PotableWater
10 = Steam
11 = WasteWater
12 = HeatingFluid
13 = CoolingFluid

ConsumptionTierType

The only valid values are:

0 = Not Applicable
1 = Block Tier 1
2 = Block Tier 2
3 = Block Tier 3
4 = Block Tier 4
5 = Block Tier 5
6 = Block Tier 6
7 = Block Tier 7
8 = Block Tier 8
9 = Block Tier 9
10 = Block Tier 10
11 = Block Tier 11
12 = Block Tier 12
13 = Block Tier 13
14 = Block Tier 14
15 = Block Tier 15
16 = Block Tier 16

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CurrencyCode

Follows codes defined in ISO 4217. Full list at tiny.cc/4217.

0 - Not Applicable
36 - Australian Dollar
124 - Canadian Dollar
840 - US Dollar
978 - Euro

DataQualifierType

The only valid values are:

0 = Not Applicable
2 = Average
8 = Maximum
9 = Minimum
12 = Normal

DateTimeInterval

Interval of date and time. End is not included because it can be derived from the start and the duration.

Name	Type	Description
start	*TimeType*	Date and time that this interval started.
duration	*UInt32*	Duration of the interval, in seconds.

FlowDirectionType

The only valid values are:

0 = Not Applicable
1 = Forward
19 = Reverse

KindType

The only valid values are:

0 = Not Applicable
3 = Currency
8 = Demand
12 = Energy
37 = Power

PhaseCode

The only valid values are:

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0 = Not Applicable
129 = Phase AN
128 = Phase A
132 = Phase AB
64 = Phase BN
64 = Phase B
32 = Phase CN
32 = Phase C
224 = Phase ABC
66 = Phase BC
40 = Phase CA
512 = Phase S1
256 = Phase S2
768 = Phase S1S2
513 = Phase S1N
257 = Phase S2N
769 = Phase S1S2N

PowerOfTenMultiplierType «XSDsimpleType»

The only valid values are:

0 = None
1 = deca=x10
2 = hecto=x100
-3 = mili=x10-3
3 = kilo=x1000
6 = Mega=x106
-6 = micro=x10-3
9 = Giga=x109

QualityOfReading

List of codes indicating the quality of the reading, using specification:

0 – valid (validated)
7 - manually edited
8 - estimated
10 - questionable
11 - derived
12 - projected (forecast)
13 - mixed
14 - raw
15 - normalized for weather
16 - other

ServiceKind

The only valid values are:

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0 - electricity
1 - gas
2 - water
4 - pressure
5 - heat
6 - cold
7 - communication
8 - time

SummaryMeasurement

An aggregated summary measurement reading.

Name	Type	Description
powerOfTenMultiplier	*PowerOfTenMultiplierType*	The multiplier part of the unit of measure, e.g. "kilo" (k)
timeStamp	*TimeType*	The date and time (if needed) of the summary measurement.
uom	*UomType*	The units of the reading, e.g. "Wh"
value	*UInt48*	The value of the summary measurement.

TOUType [TOU A, B, etc… represent any period. The Third Party should have a specific mapping as to what each Tier means. A mapping spec. needs to be defined.]

The only valid values are:

0 = NotApplicable
1 = TOU A
2 = TOU B
3 = TOU C
4 = TOU D
5 = TOU E
6 = TOU F
7 = TOU G
8 = TOU H
9 = TOU I
10 = TOU J
11 = TOU K
12 = TOU L
13 = TOU M
14 = TOU N
15 = TOU O

TimeAttributeType

The only valid values are:

0 = Not Applicable
1 = 10-minute
2 = 15-minute

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4 = 24-hour
5 = 30-minute
7 = 60-minute
11 = Daily
13 = Monthly
15 = Present
16 = Previous
24 = Weekly
32 = ForTheSpecifiedPeriod
79 = Daily30minuteFixedBlock

TimeType «XSDsimpleType»

Time is a signed 64 bit value representing the number of seconds since 0 hours, 0 minutes, 0 seconds, on the 1st of January, 1970.

UomType

The only valid values are:

0 = Not Applicable
5 = A (Current)
29 = Voltage
31 = J (Energy joule)
33 = Hz (Frequency)
38 = Real power (Watts)
42 = m3 (Cubic Meter)
61 = VA (Apparent power)
63 = VAr (Reactive power)
65 = Cos? (Power factor)
67 = V² (Volts squared)
69 = A² (Amp squared)
71 = VAh (Apparent energy)
72 = Real energy (Watt-hours) [Include kWh or kVAh.]
73 = VArh (Reactive energy)
106 = Ah (Ampere-hours / Available Charge)
119 = ft3 (Cubic Feet)
122 = ft3/h (Cubic Feet per Hour)
125 = m3/h (Cubic Meter per Hour)
128 = US gl (US Gallons)
129 = US gl/h (US Gallons per Hour)
130 = IMP gl (Imperial Gallons)
131 = IMP gl/h (Imperial Gallons per Hour)
132 = BTU
133 = BTU/h
134 = Liter
137 = L/h (Liters per Hour)
140 = PA(gauge)
155 = PA(absolute)
169 = Therm

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IntervalBlock

Time sequence of Readings of the same ReadingType.

Name	Type	Description
interval	*DateTimeInterval*	Specifies the time period during which the contained readings were taken.

IntervalReading

Specific value measured by a meter or other asset. Each Reading is associated with a specific ReadingType.

Name	Type	Description
cost [This must be optional as it is difficult today to derive.]	*UInt48*	Specifies a cost associated with this reading, in millionths of the currency specified in the ReadingType for this reading. (e.g. 840 = USD, US dollar)
timePeriod	*DateTimeInterval*	The date time and duration of a reading. If not specified, readings for each "intervalLength" in ReadingType are present.
value	*UInt48*	Value in units specified by ReadingType

MeterReading

Set of values obtained from the meter.

ReadingQuality

Quality of a specific reading value or interval reading value. Note that more than one Quality may be applicable to a given Reading. Typically not used unless problems or unusual conditions occur (i.e., quality for each Reading is assumed to be 'Good' (valid) unless stated otherwise in associated ReadingQuality).

Name	Type	Description
quality	*QualityOfReading*	Quality, to be specified if different than ReadingType.defaultQuality. The specific format is specified per the standard is defined in QualityOfReading.

ReadingType

Characteristics associated with all Readings included in a MeterReading.

Name	Type	Description
accumulationBehaviour	*AccumulationBehaviourType*	Code indicating how value is accumulated over time for Readings of ReadingType. The list of valid values per the standard are defined in AccumulationBehaviorType.

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Name	Type	Description
		Examples are: 0 = Not Applicable 1 = BulkQuantity 3 = Cumulative
commodity	*CommodityType*	Code for commodity classification of Readings of ReadingType. The valid values per the standard are defined in CommodityType. Examples are: 0 = Not Applicable 1 = Electricity secondary metered value (a premise meter is typically a secondary meter) 2 = Electricity primary metered value 4 = Air 7 = NaturalGas
consumptionTier	*ConsumptionTierType*	Code for consumption tier associated with a Reading of ReadingType. The valid values are define in ConsumptionTierType. Examples are: 0 = Not Applicable 1 = Block Tier 1 2 = Block Tier 2
currency	*CurrencyCode*	Code for the currency for costs associated with this ReadingType. The valid values per the standard are defined in CurrencyCode. Examples are: 0 - Not Applicable 36 - Australian Dollar 124 - Canadian Dollar 840 - US Dollar 978 - Euro
dataQualifier	*DataQualifierType*	Code describing a salient attribute of Readings of ReadingType. Valid values per the standard are defined in DataQualifierType. Examples are: 0 = Not Applicable 2 = Average
defaultQuality	*QualityOfReading*	Default value to be used if no value of ReadingQuality.quality is provided.

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Name	Type	Description
		Specific format and valid values per the standard are specified in QualityOfReading.
flowDirection	*FlowDirectionType*	Direction associated with current related Readings. valid values per the standard are defined in FlowDirectionType. Examples are: 0 = Not Applicable 1 = Forward 19 = Reverse
kind	*KindType*	Code for general classification of a Reading of ReadingType. Valid values per the standard are defined in KindType. Examples are: 0 = Not Applicable 3 = Currency 8 = Demand
intervalLength	*UInt32*	Default interval length specified in seconds for Readings of ReadingType.
phase	*PhaseCode*	Code for phase information associated with Readings of ReadingType. Valid values per the standard are defined in PhaseCode. Examples are: 0 = Not Applicable 129 = Phase AN 128 = Phase A 132 = Phase AB
powerOfTenMultiplier	*PowerOfTenMultiplierType*	Code for the power of ten multiplier which, when used in combination with the uom, specifies the actual unit of measure for Readings of ReadingType. Valid values per the standard are defined in PowerOfTenMultiplierType. Examples are: 0 = None 1 = deca=x10 2 = hecto=x100 -3 = mili=x10-3
timeAttribute	*TimeAttributeType*	Code used to specify a particular type of time interval method for Readings of ReadingType. Valid values per the standard

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Name	Type	Description
		are defined in TimeAttributeType. Examplesare: 0 = Not Applicable 1 = 10-minute 2 = 15-minute
tou	*TOUType*	Code for the TOU type of Readings of ReadingType. valid values per the standard are defined in TOUType. Examples are: 0 = NotApplicable 1 = TOU A 2 = TOU B
uom	*UomType*	Code for the base unit of measure for Readings of ReadingType. Used in combination with the powerOfTenMultiplier to specify the actual unit of measure. Valid values per the standard are defined in UomType. Examples are: 0 = Not Applicable 5 = A (Current) 29 = Voltage

REQ.21.4.2 Additional Models in Support of Services

REQ.21.4.2.2 Authorization

An ~~A~~authorization is a Customer grant of Authorized Third Party access to specific resources. The attributes of this object are listed below. The structure and format of these fields ~~is~~are defined by OAuth.

- Information consumer (Third Party) identifier (Consumer Key)
- Resource subject (Scope)
  Specifies the resource to which access from the information provider is granted by the customer to the information consumer
- Authentication Token (Access Token)
  One or more token / secret pairs proving the identity of the requester to be the Customer associated with the resource. Different methods may be defined against which token / secret pairs are created and verified.
- Authorized period
- Status (requested, valid, invalid, error, unavailable)

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REQ.21.5 Related Model Business Practices

REQ.21.5.1 Conformance to REQ.18 Energy Usage Information Model

ESPI services conform to REQ.18 Energy Usage Information Model (PAP10), due to the ability to directly transform between the models without loss of precision, and without external inputs. The ESPI model uses the same concept names and structures as NAESB PAP10 EUI.

REQ.21.6 Technical Implementation

REQ.21.6.1 Protocol Specifications

ESPI endpoints implement the following protocol aspects.

REQ.21.6.1.1 Security

Providers of ESPI services, including both ~~d~~Data ~~c~~Custodian and ~~t~~Third ~~p~~Party, protect their systems, networks, and interface endpoints against threats, as recommended in NIST-IR and Security Profile For Third Party Data Access.

REQ.21.6.1.1.1 Encryption

Establishment of mutually-authenticated encrypted channels is performed using HTTP/S [HTTPS over WS rest Only using syndication? What about SFTP? If we do WS, this results in large data flowing. We will need to include SLAs.], as documented in IETF RFC 2818, over which ~~data~~EUI may be securely transferred between Data Custodian and Authorized Third Party.

REQ.21.6.1.1.2 User Authorization

OAuth, as documented in IETF RFC 5849, is used for authorization grant and access by Retail Customers and Authorized Third Parties to shared Data Custodian resources. This protocol results in access tokens that are used to subscribe to specific user ~~data~~EUI, or to request it immediately, if supported.

REQ.21.6.2 Communication Specifications

This section defines the expected behavior of implementations using the ESPI RESTful style. This style uses HTTP methods as verbs and URIs as nouns.

During initial configuration, the ~~d~~Data ~~c~~Custodian issues the Authorized Third Party an ID~~d~~ (key) and secret required by RFC 5849. If supported, ESPI service providers may make available an "ApplicationInformation" feed and allow applications to be created, updated, and deleted using AtomPub methods. They may require trusted credentials for access.

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ESPI endpoints expose resources as described by Atom, IETF RFC 4287.

- Representations are identified as media type "`application/atom+xml`"
- ESPI namespace and types ("`http://naesb.org/espi`") are used for objects in `<content>` element
- `espi:mRID` is implemented by `atom:id`
  - UUIDs are used, as specified in IETF RFC 4122
- `espi:description` is implemented by `atom:title`
- `atom:published` and `atom:updated` are used
- Associated objects use `atom:link` (`rel="related"`)

The following addressable objects (specializations of IdentifiedObject) are defined by the ESPI schema, and can be made available using AtomPub feeds. [ATOMPub is an HTTP syndication protocol. It would be better to simply leverage basic schemas.]

- UsagePoint
- ReadingType
- IntervalBlock
- MeterReading
- Subscription
- ElectricPowerUsageSummary
- ElectricPowerQualitySummary
- Authorization
- ApplicationInformation

Links shall use the following tags and values to convey link types.

Association	**rel**	**type**
UsagePoint → MeterReading	`related`	`application/atom+xml`
UsagePoint → ElectricPowerQualitySummary	`related`	`application/atom+xml`
UsagePoint → ElectricPowerUsageSummary	`related`	`application/atom+xml`
MeterReading → IntervalBlock	`related`	`application/atom+xml`
MeterReading → ReadingType	`related`	`application/atom+xml`

ESPI endpoints use HTTP and/or HTTPS, IETF RFC 2616 and 2818, to expose ESPI resources using the method conventions in Atom Publishing Protocol, IETF RFC 5023.

URIs are kept as short as possible, and do not exceed 255 bytes.

Relative URIs may be used when resources are on the same host. Additional definition regarding URIs and HTTP/S follow the IETF specifications.

A URI example is provided below.

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- `https://espi.datacustodian.com/{third_party_id}/Batch`

Since all URIs are opaque references, there is no mandated form. However, it may be useful to organize them hierarchically, in order to define URIs for the appropriate containers (feeds), and to manage permissions. URIs should be as persistent as possible, but they may change. `atom:id`, however, does not change, even if the resource is moved or replicated. Clients accessing out-of-date URIs may be redirected, but if they are not, may need to request the current preferred resource location.

The following query parameters are used to filter the resources returned by a feed. These use typical "`?name=value[&…]`" syntax.

- `published-max, published-min`
- `updated-max, updated-min`
- `max-results`
- `start-index`

Date and time values for the above parameters use RFC 3339 format.

REQ.21.6.3 Examples

The following examples show the creation, retrieval, update, and deletion of an object within a feed.

Upon authorization of a resource, the OAuth "scope" attribute contains the URI of the resource. With it, the client can request a subscription to it as in the example below. Note that this URI is a reference to the target resource of the subscription. (i.e., The resource being subscribed to). The Subscription object identifier is not specified, since it is assigned by the Data Custodian. Note also that signed OAuth parameters are included in the header to prove authorization.

```
POST /Subscription HTTP/1.1
Host: espi.datacustodian.com
Content-Type: application/atom+xml
Content-Length: 163

<?xml version="1.0" encoding="UTF-8"?>
<entry xmlns="http://www.w3.org/2005/Atom"
    xsi:schemaLocation="http://naesb.org/espi espi.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <link rel="related" href="/User/9b6c7063"/>
  <content>
    <Subscription xmlns="http://naesb.org/espi"/>
  </content>
</entry>
```

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The server may refuse this request, if valid authorization was not provided, in which case result "`401 Not Authorized`" or similar, is returned.

If the request is accepted, the server responds with the full resource representation, as in the response example below.

```
HTTP/1.1 200 OK
Content-Type: application/atom+xml
Content-Length: 335

<?xml version="1.0" encoding="UTF-8"?>
<entry xmlns="http://www.w3.org/2005/Atom"
    xsi:schemaLocation="http://naesb.org/espi espi.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <id>urn:uuid:e69c4c25-2885-4de0-a3d8-d29b5f823b79</id>
  <link rel="self" href="/Subscription/7f23"/>
  <link rel="related" href="/User/9b6c7063"/>
  <content>
    <Subscription xmlns="http://naesb.org/espi"/>
  </content>
  <published>2012-01-23T05:11:38Z</published>
  <updated>2012-01-23T05:11:38Z</updated>
</entry>
```

Retrieval of the object is performed using GET. The example below shows the request – the response is the same as the response to POST above.

```
GET /Subscription/7f23 HTTP/1.1
Host: espi.datacustodian.com
```

Deletion uses DELETE, as in the example below. Again, authorization parameters are included.

```
DELETE /Subscription/7f23 HTTP/1.1
Host: espi.datacustodian.com
```

Response is simply the status of the request, as below.

```
HTTP/1.1 200 OK
```

Batch processing involves inclusion of the "`Batch`" attributes with regular objects in a list, as in the example below. This example shows delivery of new objects.

```
<?xml version="1.0" encoding="UTF-8"?>
<feed
    xmlns="http://www.w3.org/2005/Atom"
    xsi:schemaLocation="http://naesb.org/espi espi.xsd"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <id>urn:uuid:046638c0-8701-11e0-9d78-0800200c9a66</id>
  <title>ThirdPartyX Batch Feed</title>
  <updated>2012-05-21T18:01:00Z</updated>
```

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE

For Quadrant: **Retail Electric Quadrant**

Requesters: **Open ADE Task Force**
Request No.: **R10008**
Request Title: **Energy Services Provider Interface Standard**

```
  <link rel="self" href="/83e269c1"/>
  <entry>
    <id>urn:uuid:c990b150-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/ThirdParty/83e269c1/Batch"/>
  <entry>
    <id>urn:uuid:c990b150-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/User/9b6c7063/UsagePoint/01"/>
    <link rel="up" href="/User/9b6c7063/UsagePoint"/>
    <link rel="related" href="/User/9b6c7063/UsagePoint/01/MeterReading"/>
    <title>Elm St.</title>
    <content>
      <UsagePoint xmlns="http://naesb.org/espi">
        <ServiceCategory>
          <kind>0</kind>
        </ServiceCategory>
      </UsagePoint>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
  <entry>
    <id>urn:uuid:f2034e91-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/User/9b6c7063/UsagePoint/01/MeterReading/01"/>
    <link rel="up" href="/User/9b6c7063/UsagePoint/01/MeterReading"/>
    <link rel="related" href="/User/9b6c7063/UsagePoint/01/MeterReading/01/IntervalBlock"/>
    <link rel="related" href="/ReadingType/07"/>
    <title>Hourly Energy Consumption</title>
    <content>
      <MeterReading xmlns="http://naesb.org/espi"/>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
  <entry>
    <id>urn:uuid:f2034e93-8320-11e0-9d78-0800200c9a66</id>
    <link rel="self"
href="/User/9b6c7063/UsagePoint/01/MeterReading/01/IntervalBlock/0173"/>
    <link rel="up" href="/User/9b6c7063/UsagePoint/01/MeterReading/01/IntervalBlock"/>
    <title/>
    <content>
      <IntervalBlock xmlns="http://naesb.org/espi">
        <interval>
          <duration>86400</duration>
          <start>1325397600</start>
        </interval>
        <IntervalReading>
          <cost>3000000</cost>
          <timePeriod>
            <duration>3600</duration>
            <start>1325397600</start>
          </timePeriod>
          <value>383</value>
        </IntervalReading>
        <IntervalReading>
          <cost>3000000</cost>
          <timePeriod>
            <duration>3600</duration>
            <start>1325401200</start>
          </timePeriod>
          <value>427</value>
        </IntervalReading>
      </IntervalBlock>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
  <entry>
    <id>urn:uuid:2557def0-8321-11e0-9d78-0800200c9a66</id>
    <link rel="self" href="/ReadingType/07"/>
    <link rel="up" href="/ReadingType"/>
    <title>Energy Delivered (kWh)</title>
    <content>
      <ReadingType xmlns="http://naesb.org/espi">
        <accumulationBehaviour>4</accumulationBehaviour><!--DeltaData-->
        <commodity>1</commodity><!--Electricity-->
        <consumptionTier>0</consumptionTier><!--N/A-->
```

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
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```
        <currency>0</currency><!--N/A-->
        <dataQualifier>12</dataQualifier><!--Normal-->
        <flowDirection>1</flowDirection><!--Forward-->
        <kind>12</kind><!--Energy-->
        <phase>0</phase><!--N/A-->
        <powerOfTenMultiplier>3</powerOfTenMultiplier><!--kilo-->
        <timeAttribute>0</timeAttribute><!--N/A-->
        <tou>0</tou><!--N/A-->
        <uom>72</uom><!--Watt hours-->
      </ReadingType>
    </content>
    <published>2012-05-21T18:01:00Z</published>
    <updated>2012-05-21T18:01:00Z</updated>
  </entry>
</feed>
```

REQ.21.6.4 Conformance

Conformant Data Custodian implementations include the following:

- Subscriptions
  - Accept POST to Subscription, Batch resource
  - Allow subscriptions to authorized resources
- Delivery
  - Accept GET to Batch resource, specific to each Authorized Third Party. [Please better explain the options for delivery by defining conformance in terms of the Use Cases and tie the abstract services to the Use Cases.]
  - Optionally support POST to Authorized Third Party Notification resource
  - Optionally support POST to Authorized Third Party Batch resource
  - Optionally support GET of resources directly

Conformant Third Party implementations include the following:

- Security
  - Server certificates and mutually authenticated HTTPS
  - Make requests to OAuth endpoints
- Subscriptions
  - Submit POST requests to Subscription, Batch resource
  - Sign requests with access tokens
- Delivery
  - Submit GET request to Batch resource
  - Optionally accept POST to Authorized Third Party Notification resource
  - Optionally accept POST to Authorized Third Party Batch resource
  - Optionally GET resources directly

All conformant implementations include the following:

- Security
  - Server certificates and mutually authenticated HTTPS
  - Accept requests to OAuth endpoints

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

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Request No.: R10008
Request Title: Energy Services Provider Interface Standard

- Content
  - Information elements with the meaning defined herein use the format and structure defined herein.
  - Additional information elements not defined herein are placed in extension elements as defined by the ESPI schema herein, use a namespace different from the ESPI schema herein, and are optional.
  - It is recommended that any additional information elements included in an implementation be submitted for consideration in future versions of ESPI.

REQ.21.6.5 XML Schema

The following is the XML Schema (espi.xsd) definition used to declare the format of the ESPI types. This is the official normative version of these definitions. A separate version of this file, in plain text, appropriate for machine reading, can be obtained through the NAESB office.

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns="http://naesb.org/espi"
targetNamespace="http://naesb.org/espi" elementFormDefault="qualified"
attributeFormDefault="unqualified" version="0.03">
  <xs:import namespace="http://www.w3.org/2005/Atom" schemaLocation="atom.xsd"/>
  <xs:complexType name="ApplicationInformation">
    <xs:annotation>
      <xs:documentation>Contains information about an Authorized Third Party Application
requesting access to the DataCustodian services. Information requested may include items such
as Organization Name, Website, Contact Info, Application Name, Description, Icon, Type,
default Notification and Callback endpoints, and may also include agreement with terms of
service.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="dataCustodianApplicationStatus" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the current status of the application.
(Provided by dataCustodian, cannot be modified)
Defined statuses are:
1 - Review
2 - Production (Live)
3 - On hold
4 - Revoked</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianDefaultBatchResource" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for Batch requests. (Provided by
dataCustodian, updated in approved applications objects, cannot be modified by authorized
third party)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianDefaultSubscriptionResource" type="xs:anyURI"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for Subscription requests. (Provided by
dataCustodian, updated in approved applications objects, cannot be modified by authorized
third party)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianThirdPartyId" type="String32" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A key to be associated with this application, to be provided
in OAuth requests. (Provided by dataCustodian, cannot be modified)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataCustodianThirdPartySecret" type="String32" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A secret to be associated with this application, used to sign
OAuth requests. (Provided by dataCustodian, cannot be modified)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationDescription" type="xs:string" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A description of the application.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationLogo" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The link to the logo image for the application. Size greater
than 180 x 150 may be cropped or reduced.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationName" type="String32" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The name of the application to which access will be
granted.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationStatus" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the current status of the application.
Defined statuses are:
1 - Development
2 - Production (Live)
3 - Retired (Remove)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationType" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the type of the application.
Defined types are:
1 - Web Application
2 - Desktop Application
3 - Mobile Application</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationUse" type="UInt8" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A code indicating the expected use of the application.
Defined uses are:
1 - Energy management
2 - Comparisons
3 - Government</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyApplicationWebsite" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The link to the main page of the
application.</xs:documentation>
            </xs:annotation>
```

```
          </xs:element>
          <xs:element name="thirdPartyDefaultBatchResource" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for asynchronous delivery of Batch data
using push.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyDefaultNotifyResource" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default endpoint for authorized third party notification
of Batch data availability, that is then requested from the data custodian via the Batch
resource.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyDefaultOAuthCallback" type="xs:anyURI" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The default redirect back to the application after
authorization grant.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyEmail" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The e-mail address of the organization to which access will be
granted. (For debugging - not to be shared with customers)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyName" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The name of the organization to which access will be
granted.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyPhone" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The phone number of the organization to which access will be
granted. (For debugging - not to be shared with customers)</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="Authorization">
    <xs:annotation>
      <xs:documentation>Represents a permission granted by an owner for access to a
resource.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="accessToken" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the access token associated with this
authorization.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="authorizationServer" type="xs:anyURI" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the URI link to the authorization endpoint associated
with this authorization.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="authorizedPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Restricts access to requests or subscriptions within this date
time interval.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="publishedPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Restricts access to only the objects within the associated
resource that were published within this date time interval.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="resource" type="xs:anyURI" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the identifier of the resource, same as was specified
in OAuth "scope".</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="status" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The status of this authorization.
0 - Revoked
1 - Active</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="thirdPartyConsumer" type="String32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Contains the identifier for the Authorized Third
Party.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IntervalBlock">
    <xs:annotation>
      <xs:documentation>Time sequence of Readings of the same ReadingType.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="interval" type="DateTimeInterval" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the time period during which the contained readings
were taken.</xs:documentation>
            </xs:annotation>
```

```
          </xs:element>
          <xs:element name="IntervalReading" type="IntervalReading" minOccurs="0"
maxOccurs="unbounded"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IntervalReading">
    <xs:annotation>
      <xs:documentation>Specific value measured by a meter or other asset. Each Reading is
associated with a specific ReadingType.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="cost" type="UInt48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies a cost associated with this reading, in millionths
of the currency specified in the ReadingType for this reading.  (e.g. 840 = USD, US
dollar)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ReadingQuality" type="ReadingQuality" minOccurs="0"
maxOccurs="unbounded"/>
          <xs:element name="timePeriod" type="DateTimeInterval" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The date time and duration of a reading. If not specified,
readings for each "intervalLength" in ReadingType are present.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="value" type="UInt48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Value in units specified by ReadingType</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="MeterReading">
    <xs:annotation>
      <xs:documentation>Set of values obtained from the meter.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReadingQuality">
    <xs:annotation>
      <xs:documentation>Quality of a specific reading value or interval reading value. Note
that more than one Quality may be applicable to a given Reading. Typically not used unless
problems or unusual conditions occur (i.e., quality for each Reading is assumed to be 'Good'
(valid) unless stated otherwise in associated ReadingQuality).</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="quality" type="QualityOfReading" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Quality, to be specified if different
thanReadingType.defaultQuality.

The specific format  is specified per the standard is defined in
QualityOfReading.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ReadingType">
    <xs:annotation>
      <xs:documentation>Characteristics associated with all Readings included in a
MeterReading.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="accumulationBehaviour" type="AccumulationBehaviourType"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code indicating how value is accumulated over time for
Readings of ReadingType. The list of valid values per the standard are defined in
AccumulationBehaviorType.

Examples are:
0 = Not Applicable
1 = BulkQuantity
3 = Cumulative</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="commodity" type="CommodityType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for commodity classification of Readings of ReadingType.
The valid values per the standard are defined in CommodityType.

Examples are:
0 = Not Applicable
1 = Electricity secondary metered value (a premise meter is typically a secondary meter)
2 = Electricity primary metered value
4 = Air
7 = NaturalGas</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="consumptionTier" type="ConsumptionTierType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for consumption tier associated with a Reading of
ReadingType. The valid values are define in ConsumptionTierType.

Examples are:
0 = Not Applicable
1 = Block Tier 1
2 = Block Tier 2</xs:documentation>
```

```
            </xs:annotation>
          </xs:element>
          <xs:element name="currency" type="CurrencyCode" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the currency for costs associated with this
ReadingType.  The valid values per the standard are defined in CurrencyCode.

Examples are:
0 - Not Applicable
36 - Australian Dollar
124 - Canadian Dollar
840 - US Dollar
978 - Euro</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="dataQualifier" type="DataQualifierType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code describing a salient attribute of Readings of
ReadingType. Valid values per the standard are defined in DataQualifierType.

Examples are:
0 = Not Applicable
2 = Average</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="defaultQuality" type="QualityOfReading" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Default value to be used if no value of ReadingQuality.quality
is provided.

Specific format and valid values per the standard are specified in
QualityOfReading.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="flowDirection" type="FlowDirectionType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Direction associated with current related Readings. valid
values per the standard are defined in FlowDirectionType.

Examples are:
0 = Not Applicable
1 = Forward
19 = Reverse</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="intervalLength" type="UInt32" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Default interval length specified in seconds for Readings of
ReadingType.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="kind" type="KindType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for general classification of a Reading of ReadingType.
Valid values per the standard are defined in KindType.

Examples are:

0 = Not Applicable
3 = Currency
8 = Demand</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="phase" type="PhaseCode" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for phase information associated with Readings of
ReadingType. Valid values per the standard are defined in PhaseCode.

Examples are:
0 = Not Applicable
129 = Phase AN
128 = Phase A
132 = Phase AB</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="powerOfTenMultiplier" type="PowerOfTenMultiplierType"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the power of ten multiplier which, when used in
combination with the uom, specifies the actual unit of measure for Readings of ReadingType.
Valid values per the standard are defined in PowerOfTenMultiplierType.

Examples are:
0 = None
1 = deca=x10
2 = hecto=x100
-3 = mili=x10-3</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="timeAttribute" type="TimeAttributeType" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code used to specify a particular type of time interval method
for Readings of ReadingType. Valid values per the standard are defined in TimeAttributeType.

Examplesare:
0 = Not Applicable
1 = 10-minute
2 = 15-minute</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="tou" type="TOUType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the TOU type of Readings of ReadingType. valid values
per the standard are defined in TOUType.
Examples are:
0 = NotApplicable
1 = TOU A
2 = TOU B</xs:documentation>
            </xs:annotation>
```

```
          </xs:element>
          <xs:element name="uom" type="UomType" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Code for the base unit of measure for Readings of ReadingType.
Used in combination with the powerOfTenMultiplier to specify the actual unit of measure. Valid
values per the standard are defined in UomType.

Examples are:
0 = Not Applicable
5 = A (Current)
29 = Voltage</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="IdentifiedObject">
    <xs:annotation>
      <xs:documentation>This is a root class to provide common naming attributes for all
classes needing naming attributes</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="BatchItemInfo" type="BatchItemInfo" minOccurs="0" maxOccurs="1"/>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ServiceCategory">
    <xs:annotation>
      <xs:documentation>Category of service provided to the customer.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="kind" type="ServiceKind" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Service classification
Examples are:
0 - electricity
1 - gas

The list of specific valid values per the standard are itemized in
ServiceKind.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="UsagePoint">
    <xs:annotation>
      <xs:documentation>Logical point on a network at which consumption or production is
either physically measured (e.g. metered) or estimated (e.g. unmetered street
lights).</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="roleFlags" type="HexBinary16" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the roles that this usage point has been assigned.
Bit 1 - isMirror
Bit 2 - isPremisesAggregationPoint
Bit 3 - isPEV
Bit 4 - isDER
Bit 5 - isRevenueQuality
Bit 6 - isDC
Bit 7-16 - Reserved</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ServiceCategory" type="ServiceCategory" minOccurs="0"
maxOccurs="1"/>
          <xs:element name="status" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Specifies the current status of this usage point.

The only valid values are:

0 = off
1 = on</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ElectricPowerQualitySummary">
    <xs:annotation>
      <xs:documentation>A summary of power quality events. This information represents a
summary of power quality information typically required by customer facility energy management
systems. It is not intended to satisfy the detailed requirements of power quality monitoring.
All values are as defined by measurementProtocol during the period. The standards typically
also give ranges of allowed values; the information attributes are the raw measurements, not
the "yes/no" determination by the various standards. See referenced standards for definition,
measurement protocol  and period.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="flickerPlt" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of long term Rapid Voltage Change in hundredths.

flickerPlt is derived from 2 hours of Pst values (12 values combined in cubic
relationship).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="flickerPst" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>flickerPst is a value measured over 10 minutes that
characterizes the likelihood that the voltage fluctuations would result in perceptible light
```

```
flicker. A value of 1.0 is designed to represent the level that 50% of people would perceive
flicker in a 60 watt incandescent bulb.

The value reported is represented as an integer in hundredths.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="harmonicVoltage" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of the Harmonic Voltage during the period. For
DC, distortion is with respect to a signal of zero Hz.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="longInterruptions" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Long Interruption events (as defined by
measurementProtocol) during the summary interval period.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="mainsVoltage" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of the Mains [Signaling] Voltage during the
summary interval period in uV.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="measurementProtocol" type="UInt8" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A reference to the source standard used as the measurement
protocol definition.

Examples are:
0 = "IEEE1519-2009"
1 = "EN50160"</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="powerFrequency" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A measurement of the power frequency during the summary
interval period in uHz.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="rapidVoltageChanges" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Rapid Voltage Change events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="shortInterruptions" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Short Interruption events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="summaryInterval" type="DateTimeInterval" minOccurs="1"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Interval of summary period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="supplyVoltageDips" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Supply Voltage Dip events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="supplyVoltageImbalance" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Supply Voltage Imbalance events during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="supplyVoltageVariations" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Supply Voltage Variations during the summary
interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="tempOvervoltage" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>A count of Temporary Overvoltage events (as defined by
measurementProtocol) during the summary interval period</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="ElectricPowerUsageSummary">
    <xs:annotation>
      <xs:documentation>Summary of usage for a billing period</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject">
        <xs:sequence>
          <xs:element name="billingPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The billing period to which the included measurements
apply</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="billLastPeriod" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The amount of the bill for the previous period , in millionths
of the currency specified in the ReadingType for this reading (e.g. 840 = USD, US
dollar).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="billToDate" type="Int48" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The bill amount related to the billing period as of the date
received, in millionths of the currency specified in the ReadingType for this reading. (e.g.
840 = USD, US dollar).</xs:documentation>
            </xs:annotation>
          </xs:element>
```

```
          <xs:element name="costAdditionalLastPeriod" type="Int48" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Additional charges from the last billing period, in millionths
of the currency specified in the ReadingType for this reading.  (e.g. 840 = USD, US
dollar).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currency" type="CurrencyCode" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The ISO 4217 code indicating the currency applicable to the
bill amounts in the summary. See list at
http://www.unece.org/cefact/recommendations/rec09/rec09_ecetrd203.pdf</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentBillingPeriodOverAllConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The total consumption for the billing
period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentDayLastYearNetConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The amount of energy consumed one year ago interpreted as same
day of week same week of year (see ISO 8601).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentDayNetConsumption" type="SummaryMeasurement" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Net consumption for the current day (delivered -
received)</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="currentDayOverallConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Overall energy consumption for the current
day</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="peakDemand" type="SummaryMeasurement" minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Peak demand recorded for the current period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="previousDayLastYearOverallConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The amount of energy consumed on the previous day one year ago
interpreted as same day of week same week of year  (see ISO 8601).</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="previousDayNetConsumption" type="SummaryMeasurement" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Net consumption for the previous day</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="previousDayOverallConsumption" type="SummaryMeasurement"
minOccurs="0" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The total consumption for the previous day</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="qualityOfReading" type="QualityOfReading" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Indication of the quality of the summary
readings</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ratchetDemand" type="SummaryMeasurement" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The current ratchet demand value for the ratchet demand
period</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="ratchetDemandPeriod" type="DateTimeInterval" minOccurs="0"
maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The period over which the ratchet demand
applies</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="statusTimeStamp" type="TimeType" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Date/Time status of this UsageSummary</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:simpleType name="HexBinary128">
    <xs:annotation>
      <xs:documentation>A 128-bit field encoded as a hex string (32 characters / 16
octets)</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:hexBinary">
      <xs:maxLength value="16"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="HexBinary16">
    <xs:annotation>
      <xs:documentation>A 16-bit field encoded as a hex string (4 characters / 2
octets)</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:hexBinary">
      <xs:maxLength value="2"/>
    </xs:restriction>
```

```
  </xs:simpleType>
  <xs:simpleType name="String32">
    <xs:annotation>
      <xs:documentation>Character string of max length 32</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:string">
      <xs:maxLength value="32"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="UInt16">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 65535 (2^16-1), same as
xs:unsignedShort</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedShort"/>
  </xs:simpleType>
  <xs:simpleType name="UInt32">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 4294967295 (2^32-1), same as
xs:unsignedInt</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedInt"/>
  </xs:simpleType>
  <xs:simpleType name="UInt48">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 281474976710655 (2^48-1), restriction
of xs:unsignedLong</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedLong">
      <xs:maxInclusive value="281474976710655"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="UInt8">
    <xs:annotation>
      <xs:documentation>Unsigned integer, max inclusive 255 (2^8-1), same as
xs:unsignedByte</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:unsignedByte"/>
  </xs:simpleType>
  <xs:simpleType name="Int48">
    <xs:annotation>
      <xs:documentation>Signed integer, max inclusive 281474976710655 (2^48-1), restriction of
xs:long</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:long">
      <xs:maxInclusive value="281474976710655"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="AccumulationBehaviourType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = BulkQuantity
3 = Cumulative
4 = DeltaData
6 = Indicating
9 = Summation
12 = Instantaneous</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="CommodityType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = Electricity secondary metered value (a premise meter is typically a secondary meter)
2 = Electricity primary metered value
4 = Air
7 = NaturalGas
8 = Propane
9 = PotableWater
10 = Steam
11 = WasteWater
12 = HeatingFluid
13 = CoolingFluid</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="ConsumptionTierType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = Block Tier 1
2 = Block Tier 2
3 = Block Tier 3
4 = Block Tier 4
5 = Block Tier 5
6 = Block Tier 6
7 = Block Tier 7
8 = Block Tier 8
9 = Block Tier 9
10 = Block Tier 10
11 = Block Tier 11
12 = Block Tier 12
13 = Block Tier 13
14 = Block Tier 14
15 = Block Tier 15
16 = Block Tier 16</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="CurrencyCode">
    <xs:annotation>
      <xs:documentation>Follows codes defined in ISO 4217. Full list at tiny.cc/4217.
```

```
0 - Not Applicable
36 - Australian Dollar
124 - Canadian Dollar
840 - US Dollar
978 - Euro</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="DataQualifierType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
2 = Average
8 = Maximum
9 = Minimum
12 = Normal</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="DateTimeInterval">
    <xs:annotation>
      <xs:documentation>Interval of date and time. End is not included because it can be
derived from the start and the duration.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="duration" type="UInt32" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Duration of the interval, in seconds.</xs:documentation>
            </xs:annotation>
          </xs:element>
          <xs:element name="start" type="TimeType" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>Date and time that this interval started.</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="FlowDirectionType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = Forward
19 = Reverse</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="KindType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
3 = Currency
8 = Demand
12 = Energy
37 = Power</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="PhaseCode">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
129 = Phase AN
128 = Phase A
132 = Phase AB
64 = Phase BN
64 = Phase B
32 = Phase CN
32 = Phase C
224 = Phase ABC
66 = Phase BC
40 = Phase CA
512 = Phase S1
256 = Phase S2
768 = Phase S1S2
513 = Phase S1N
257 = Phase S2N
769 = Phase S1S2N</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt16"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:simpleType name="PowerOfTenMultiplierType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = None
1 = deca=x10
2 = hecto=x100
-3 = mili=x10-3
3 = kilo=x1000
6 = Mega=x106
-6 = micro=x10-3
9 = Giga=x109</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:byte"/>
  </xs:simpleType>
  <xs:complexType name="QualityOfReading">
```

```
    <xs:annotation>
      <xs:documentation>List of codes indicating the quality of the reading, using
specification:

0 – valid (validated)
7 - manually edited
8 - estimated
10 - questionable
11 - derived
12 – projected (forecasted)
13 - mixed
14 - raw
15 - normalized for weather
16 - other </xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="ServiceKind">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 - electricity
1 - gas
2 - water
4 - pressure
5 - heat
6 - cold
7 - communication
8 - time</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="TimeAttributeType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
1 = 10-minute
2 = 15-minute
4 = 24-hour
5 = 30-minute
7 = 60-minute
11 = Daily
13 = Monthly
15 = Present
16 = Previous
24 = Weekly
32 = ForTheSpecifiedPeriod
79 = Daily30minuteFixedBlock</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:simpleType name="TimeType">
    <xs:annotation>
      <xs:documentation>Time is a signed 64 bit value representing the number of seconds since
0 hours, 0 minutes, 0 seconds, on the 1st of January, 1970.</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:long"/>
  </xs:simpleType>
  <xs:complexType name="TOUType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = NotApplicable
1 = TOU A
2 = TOU B
3 = TOU C
4 = TOU D
5 = TOU E
6 = TOU F
7 = TOU G
8 = TOU H
9 = TOU I
10 = TOU J
11 = TOU K
12 = TOU L
13 = TOU M
14 = TOU N
15 = TOU O</xs:documentation>
    </xs:annotation>
    <xs:simpleContent>
      <xs:extension base="UInt8"/>
    </xs:simpleContent>
  </xs:complexType>
  <xs:complexType name="UomType">
    <xs:annotation>
      <xs:documentation>The only valid values are:

0 = Not Applicable
5 = A (Current)
29 = Voltage
31 = J (Energy joule)
33 = Hz (Frequency)
38 = Real power (Watts)
42 = m3 (Cubic Meter)
61 = VA (Apparent power)
63 = VAr (Reactive power)
65 = Cos? (Power factor)
67 = V² (Volts squared)
69 = A² (Amp squared)
71 = VAh (Apparent energy)
72 = Real energy (Watt-hours)
73 = VArh (Reactive energy)
106 = Ah (Ampere-hours / Available Charge)
119 = ft3 (Cubic Feet)
122 = ft3/h (Cubic Feet per Hour)
125 = m3/h (Cubic Meter per Hour)
128 = US gl (US Gallons)
```

```
  129 = US gl/h (US Gallons per Hour)
  130 = IMP gl (Imperial Gallons)
  131 = IMP gl/h (Imperial Gallons per Hour)
  132 = BTU
  133 = BTU/h
  134 = Liter
  137 = L/h (Liters per Hour)
  140 = PA(gauge)
  155 = PA(absolute)
  169 = Therm</xs:documentation>
      </xs:annotation>
      <xs:simpleContent>
        <xs:extension base="UInt8"/>
      </xs:simpleContent>
    </xs:complexType>
    <xs:complexType name="SummaryMeasurement">
      <xs:annotation>
        <xs:documentation>An aggregated summary measurement reading.</xs:documentation>
      </xs:annotation>
      <xs:complexContent>
        <xs:extension base="Object">
          <xs:sequence>
            <xs:element name="powerOfTenMultiplier" type="PowerOfTenMultiplierType"
minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>The multiplier part of the unit of measure, e.g. "kilo"
(k)</xs:documentation>
              </xs:annotation>
            </xs:element>
            <xs:element name="timeStamp" type="TimeType" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>The date and time (if needed) of the summary
measurement.</xs:documentation>
              </xs:annotation>
            </xs:element>
            <xs:element name="uom" type="UomType" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>The units of the reading, e.g. "Wh"</xs:documentation>
              </xs:annotation>
            </xs:element>
            <xs:element name="value" type="UInt48" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>The value of the summary measurement.</xs:documentation>
              </xs:annotation>
            </xs:element>
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="BatchItemInfo">
      <xs:annotation>
        <xs:documentation>Includes elements that make it possible to include multiple
transactions in a single (batch) request.</xs:documentation>
      </xs:annotation>
      <xs:complexContent>
        <xs:extension base="Object">
          <xs:sequence>
            <xs:element name="name" type="HexBinary16" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>An identifier for this object that is only unique within the
containing collection.</xs:documentation>
              </xs:annotation>
            </xs:element>
            <xs:element name="operation" type="UInt8" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>Specifies the operation requested of this item.

0=Create
1=Read
2=Update
3=Delete</xs:documentation>
              </xs:annotation>
            </xs:element>
            <xs:element name="statusCode" type="UInt16" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>Indicates the status code of the associated transaction.

200 - Ok
201 - Created
204 - No Content
301 - Moved Permanently
302 - Redirect
304 - Not Modified
400 - Bad Request
401 - Unauthorized
403 - Forbidden
404 - Not Found
405 - Method Not Allowed
410 - Gone
500 - Internal Server Error</xs:documentation>
              </xs:annotation>
            </xs:element>
            <xs:element name="statusReason" type="String32" minOccurs="0" maxOccurs="1">
              <xs:annotation>
                <xs:documentation>Indicates the reason for the indicated status
code.</xs:documentation>
              </xs:annotation>
            </xs:element>
          </xs:sequence>
        </xs:extension>
      </xs:complexContent>
    </xs:complexType>
    <xs:complexType name="Object">
      <xs:annotation>
        <xs:documentation>Superclass of all object classes to allow
extensions.</xs:documentation>
      </xs:annotation>
      <xs:sequence>
        <xs:element name="extension" type="xs:anyType" minOccurs="0" maxOccurs="unbounded">
          <xs:annotation>
            <xs:documentation>Contains an extension.</xs:documentation>
          </xs:annotation>
        </xs:element>
      </xs:sequence>
```

```
  </xs:complexType>
  <xs:complexType name="ServiceStatus">
    <xs:annotation>
      <xs:documentation>Contains the current status of the service.</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="Object">
        <xs:sequence>
          <xs:element name="currentStatus" type="UInt8" minOccurs="1" maxOccurs="1">
            <xs:annotation>
              <xs:documentation>The current status of the service.

0 = Unavailable
1 = Normal, operational</xs:documentation>
            </xs:annotation>
          </xs:element>
        </xs:sequence>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <xs:complexType name="Subscription">
    <xs:annotation>
      <xs:documentation>Defines the parameters of a subscription between authorized third
party and data custodian</xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="IdentifiedObject"/>
    </xs:complexContent>
  </xs:complexType>
  <xs:element name="ApplicationInformation" type="ApplicationInformation"/>
  <xs:element name="Authorization" type="Authorization"/>
  <xs:element name="IntervalBlock" type="IntervalBlock"/>
  <xs:element name="IntervalReading" type="IntervalReading"/>
  <xs:element name="MeterReading" type="MeterReading"/>
  <xs:element name="ReadingQuality" type="ReadingQuality"/>
  <xs:element name="ReadingType" type="ReadingType"/>
  <xs:element name="IdentifiedObject" type="IdentifiedObject"/>
  <xs:element name="ServiceCategory" type="ServiceCategory"/>
  <xs:element name="UsagePoint" type="UsagePoint"/>
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  <xs:element name="ElectricPowerUsageSummary" type="ElectricPowerUsageSummary"/>
  <xs:element name="AccumulationBehaviourType" type="AccumulationBehaviourType"/>
  <xs:element name="CommodityType" type="CommodityType"/>
  <xs:element name="ConsumptionTierType" type="ConsumptionTierType"/>
  <xs:element name="CurrencyCode" type="CurrencyCode"/>
  <xs:element name="DataQualifierType" type="DataQualifierType"/>
  <xs:element name="DateTimeInterval" type="DateTimeInterval"/>
  <xs:element name="FlowDirectionType" type="FlowDirectionType"/>
  <xs:element name="KindType" type="KindType"/>
  <xs:element name="PhaseCode" type="PhaseCode"/>
  <xs:element name="QualityOfReading" type="QualityOfReading"/>
  <xs:element name="ServiceKind" type="ServiceKind"/>
  <xs:element name="TimeAttributeType" type="TimeAttributeType"/>
  <xs:element name="TOUType" type="TOUType"/>
  <xs:element name="UomType" type="UomType"/>
  <xs:element name="SummaryMeasurement" type="SummaryMeasurement"/>
  <xs:element name="BatchItemInfo" type="BatchItemInfo"/>
  <xs:element name="Object" type="Object"/>
  <xs:element name="ServiceStatus" type="ServiceStatus"/>
  <xs:element name="Subscription" type="Subscription"/>
</xs:schema>
```

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Appendices

This section contains informative descriptions, use cases and diagrams used by the committee in developing the Model Business Practices. These Appendices are not normative.

A. Overview

The scope of these Model Business Practices includes authorization by the Retail Customer and the Automatic Data Exchange of the EUI to the Authorized Third Party in accordance with parameters (e.g., term of access, type of data, quantity of data, etc.) determined by the Retail Customer subject to the Governing Documents and Applicable Regulatory Authority. The diagram below shows the logical components involved in this authorization and data exchange process. Note that while the authorization process shown in this figure is made using a web browser, the services provided by the Authorized Third Party are not required to use a web browser to deliver such services.

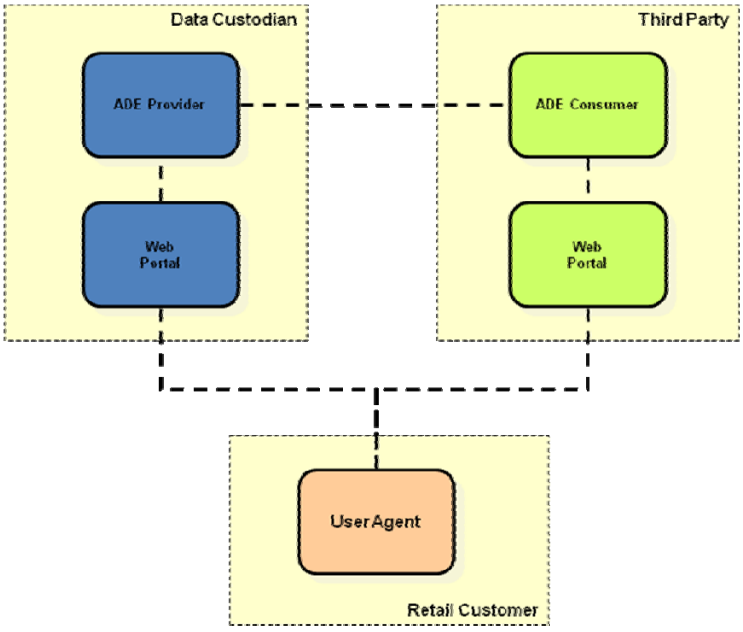

Figure 8: Overview of Logical Components [Change reference to "Third Party" in chart above to "Authorized Third Party".]

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B. Use Cases

This section presents a superset of the use cases that are informative of the ~~third party data~~EUI access relationship between Data Custodians and Authorized Third Parties. Alternative use cases are presented for certain activities that can be achieved in different ways, such as the delivery of shared resource information by push or by pull.

The concept of a Shared Resource Key is used throughout these use cases. A Shared Resource Key is a token used to uniquely identify an instance of a Third Party ~~data~~EUI access relationship (i.e., each Retail Customer-Data Custodian-Third Party combination for a particular resource will have a unique Shared Resource Key). A Shared Resource Key, in and of itself, contains no PII regarding the Retail Customer and so can be freely shared among all three roles without unnecessary disclosure of sensitive information. Once the relationship is established, inclusion of a Shared Resource Key in an interaction is sufficient to identify a specific Third Party ~~data~~EUI access relationship.

These Use Cases are illustrative, do not impose any obligations and are subject to the Governing Documents and the requirements of the Applicable Regulatory Authority. All statements of steps and preconditions should be interpreted to follow this constraint.

Each use case contains the following sections:

- Use Case Description: This is a summary of the use case, describing the overall purpose.
- Pre-Conditions: These are conditions that must be true for the use case to be successfully executed.
- Invariant Conditions: These are properties that will be true any time the use case is initiated, regardless of whether it terminates successfully.
- Post-Conditions: These are properties that will be true only if the use case terminates successfully. This requires that all preconditions and all condition checks (e.g., for validity of a request) be satisfied during execution of the use case.
- Basic Path Scenario: This defines the series of steps undertaken by each role during successful execution of the use case. The scenario is depicted graphically in a Unified Modeling Language (UML) sequence diagram and each step is summarized in text.

The following use cases are informative and not normative.

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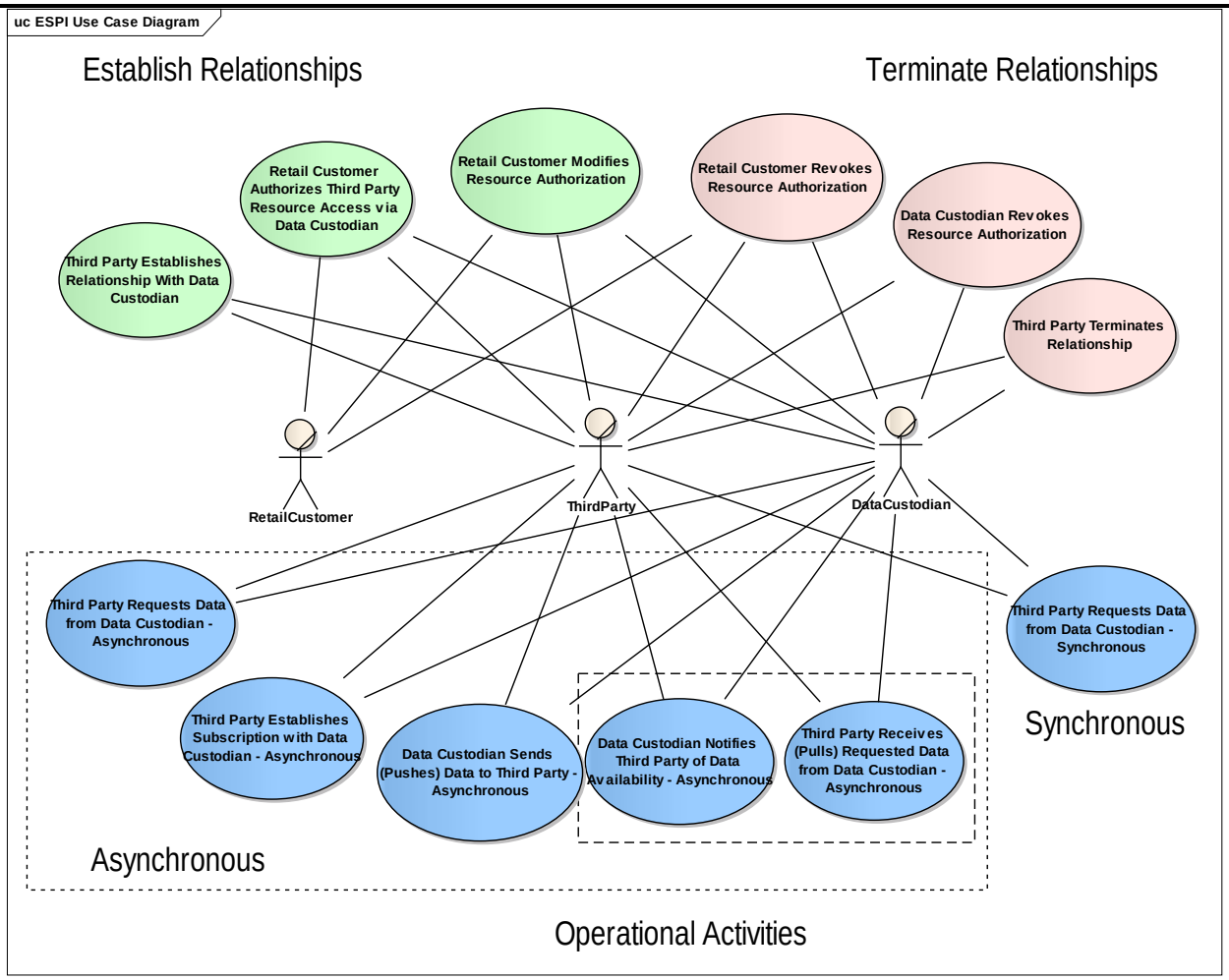

Figure 9**:** ESPI Use Case Diagram [Change reference to "Data" in chart above to "EUI".] [Change reference to "Third Party" in chart above to "Authorized Third Party".]

1: Authorized Third Party Establishes Relationship With Data Custodian

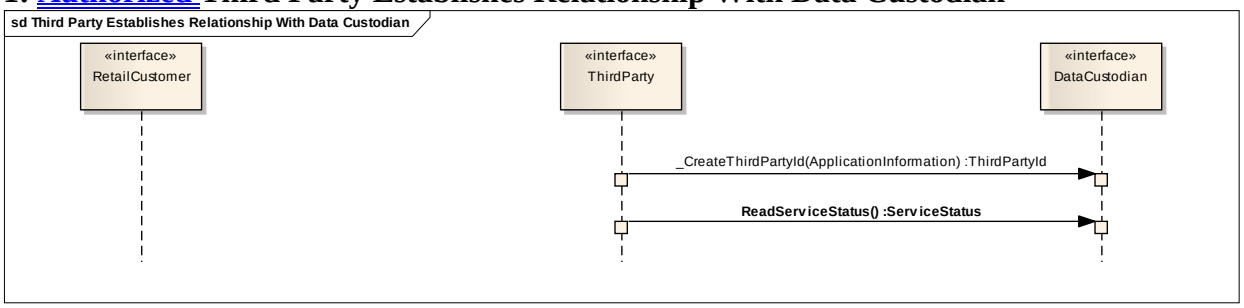

Figure 10**:** Authorized Third Party Establishes Relationship With Data Custodian [Change references to "Third Party" in chart above to "Authorized Third Party".]

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Description

An Authorized Third Party service provider wants to register with a Data Custodian to provide services to Retail Customers with ~~data~~EUI stored ~~at~~by the Data Custodian.

Pre-Condition: Authorized Third Party had demonstrated that it meets eligibility, security and privacy requirements.

Invariant Constraint: No ~~resource data~~EUI or ~~personal data~~other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.

Post-Condition: A Shared Identity Key is generated to allow the Authorized Third Party to identify its identity to Data Custodian.

Post-Condition: The Authorized Third Party has permission to get specified ~~resource data~~EUI from the Data Custodian with permission of a Retail Customer.

Scenario: Basic Path

1. The Authorized Third Party wishes to provide value added services to Retail Customers with ~~data~~EUI stored by the Data Custodian.
2. Authorized Third Party requests that the Data Custodian establish relationship.
3. Authorized Third Party provides proof that they meet the applicable requirements for eligibility, data security and privacy protection. **[What proof will there be?]**
4. Authorized Third Party provides description of the services it wishes provide for Retail Customers.
5. The Data Custodian generates an Identity Key for the Authorized Third Party. Authorized Third Party will use this key to identify itself during Use Cases 2 through 12.
6. The Data Custodian adds the Authorized Third Party to its list of available services it presents to Retail Customers in Use Case 2.
7. Authorized Third Party adds Data Custodian to its list of Data Custodians it presents in Use Case 2.
8. Authorized Third Party persists the Identity Key.
9. As needed, Authorized Third Party checks their ability to connect to the service, and obtains the current status of the service.

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2: Retail Customer Authorizes Third Party Resource Access via Data Custodian

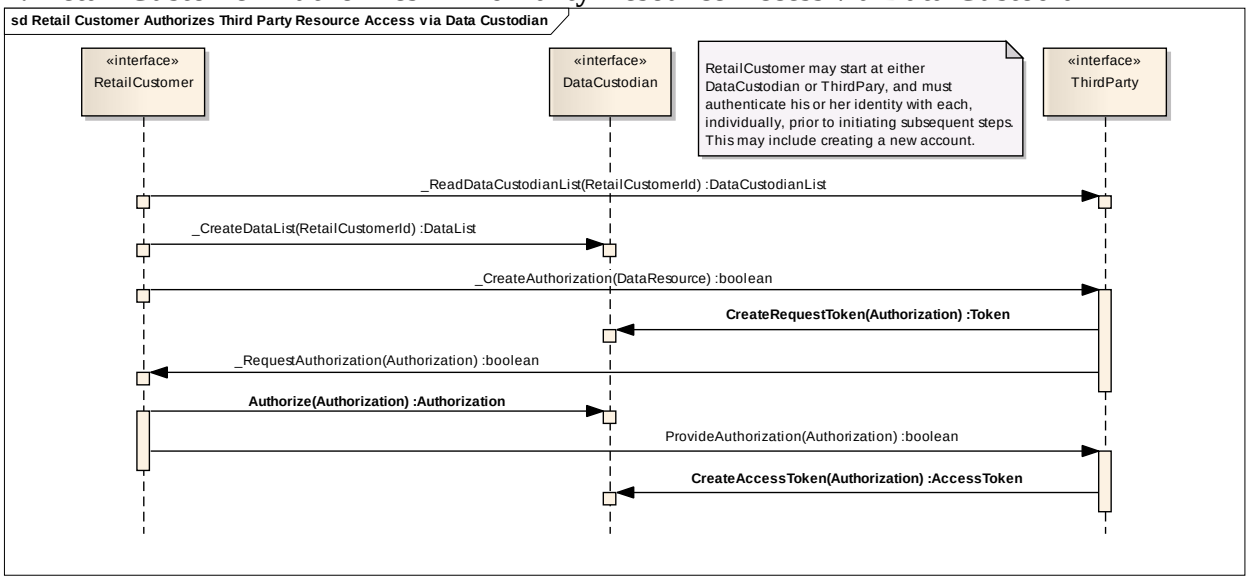

Figure 11**:** Retail Customer Authorizes Third Party Resource Access via Data Custodian [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

A Retail Customer wants to grant permission for a Data Custodian to share a particular ~~data~~EUI resource with an Authorized Third Party. The Retail Customer initiates the process through the Data Custodian.

Pre-Condition: Retail Customer has established accounts with Data Custodian and Authorized Third Party.
Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Data Custodian and Authorized Third Party have published and made Retail Customer aware of their privacy policy related to collection and handling of customer information.
Invariant Constraint: No ~~resource data~~EUI or ~~personal data~~other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.
Post-Condition: A Shared Resource Key is generated to allow all three roles to refer to the same shared resource without disclosing PII. This key is known to all three roles.
Post-Condition: The Authorized Third Party has the Retail Customer's permission to get the specified resource ~~data~~EUI from the Data Custodian.
Post-Condition: The Data Custodian sends the Retail Customer confirmation of establishment of the Authorized Third Party ~~data~~EUI access relationship.

Scenario: Basic Path

1. The Retail Customer decides to grant permission for the Data Custodian to share their resource ~~data~~EUI with the Authorized Third Party.
2. (Optional) Retail Customer finds their appropriate Data Custodian from Authorized Third Party, and navigates to the appropriate place to begin establishment of sharing relationship.
3. Retail Customer requests that the Data Custodian establish a new ~~data~~EUI access relationship.
4. Data Custodian presents the Retail Customer with a list of resources that can be shared with Third Parties. Any additional attributes (e.g., duration for which permission should be granted) that can be selected are also

presented.

5. Retail Customer selects a resource to share, sets any available attributes for the relationship, and specifies an Authorized Third Party ~~that is known to the Data Custodian~~. Selecting these parameters and completing the interaction indicates permission for the Data Custodian to grant the specified Authorized Third Party access to the specified shared resource.
6. The relationship will only be created if the Data Custodian accepts the selections for the Authorized Third Party (e.g., a Data Custodian may constrain access to certain resource attributes depending on resource sensitivity).
7. Data Custodian generates a Shared Resource Key (Request Token) to begin creation of this relationship and provides it to the Authorized Third Party. Each Shared Resource Key is unique to the relationship between a Retail Customer, Data Custodian, Authorized Third Party, and specific ~~data~~EUI resource.
8. Authorized Third Party requests authorization of the token by the Retail Customer, via the Data Custodian.
9. Retail Customer authenticates with Data Custodian and authorizes the Request Token.
10. Authorized Third Party exchanges the authorized Request Token for an Access Token from the Data Custodian.
11. Authorized Third Party and Data Custodian persist the ~~A~~authorization, associating it with its identity of the Retail Customer.

3: Retail Customer Modifies Resource Authorization

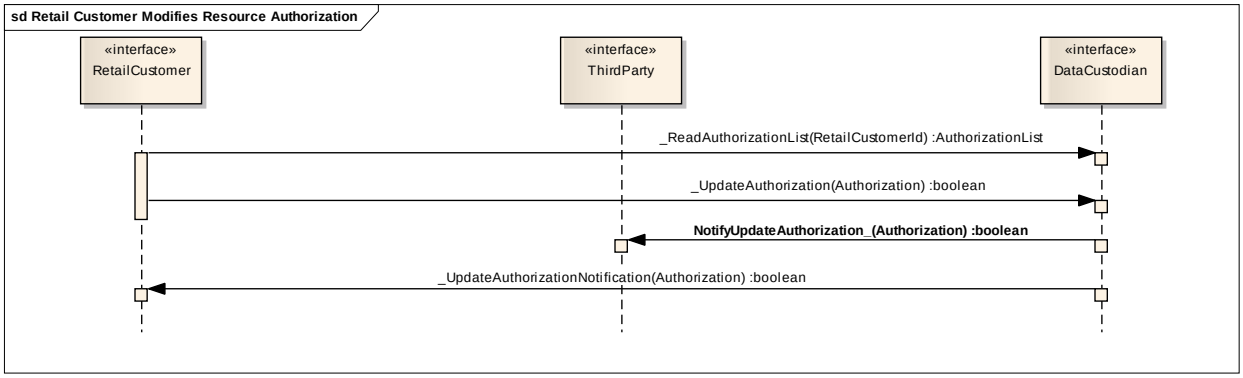

Figure 12**:** Retail Customer Modifies Resource Authorization [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party and wants to either extend or restrict the permissions associated with that relationship.

Pre-Condition: Retail Customer has established a Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No ~~resource data~~EUI or ~~personal data~~other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.
Post-Condition: Future interactions between the Data Custodian and the Authorized Third Party with respect to the specified resource are constrained by the modified permissions.

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Post-Condition: The Authorized Third Party handles any ~~data~~EUI not allowed by the termination of the relationship in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the ~~data~~EUI in control of the Authorized Third Party are deleted).
Post-Condition: The Data Custodian sends the Retail Customer confirmation of modification of the permissions of the Authorized Third Party ~~data~~EUI access relationship.

Scenario: Basic Path
1. Retail Customer chooses to modify relationship permissions with the Data Custodian.
2. Data Custodian presents the Retail Customer with a list of resources that are shared with Third Parties. If the Retail Customer may only grant access to one resource, S2 and S3 may be skipped.
3. Retail Customer chooses particular resource whose permissions he/she wishes to modify.
4. Data Custodian provides available resource attributes and current settings to Retail Customer.
5. Retail Customer chooses new settings.
6. The new permissions governing the relationship will apply only if the Data Custodian accepts the selections for the Authorized Third Party (e.g., a Data Custodian may constrain access to certain resource attributes depending on resource sensitivity).
7. Data Custodian persists the new permissions, which will be used from this point forward to constrain the relationship (until further changed or the relationship is terminated).
8. Data Custodian notifies Authorized Third Party that permissions have changed (identifying the resource by its Shared Resource Key). This notification may be immediate or deferred (e.g., as part of a resource push from Use Case 8, perhaps as part of a header).
9. Data Custodian notifies Retail Customer that permissions have been changed.
10. The Authorized Third Party handles any ~~data~~EUI not allowed by the modification of the resource authorization in the manner specified in any service agreements among the parties in the relationship.

4: Retail Customer Revokes Resource Authorization

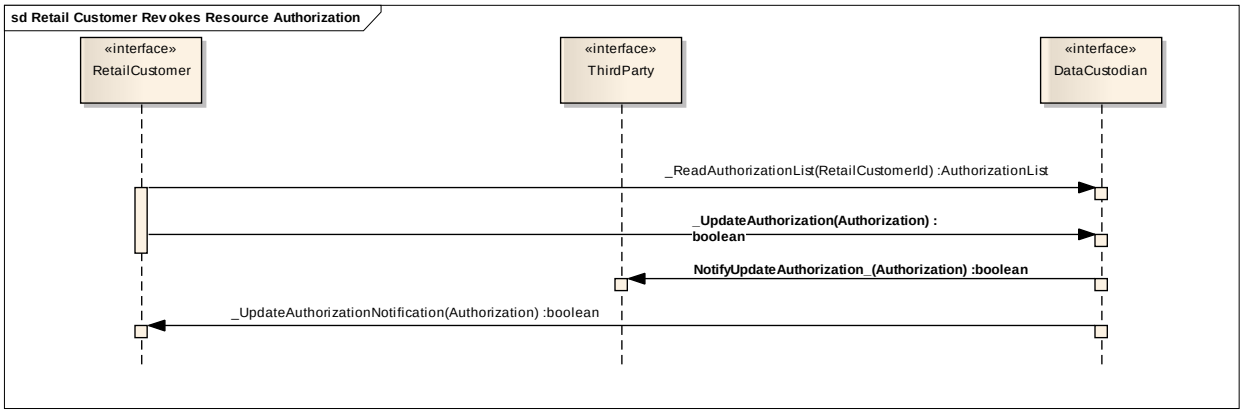

Figure 13**:** Retail Customer Revokes Resource Authorization [Wouldn't this occur on the utility's customer portal and then leverage ESPI to the third party?] [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party and wants to terminate that relationship.

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Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No ~~resource data or personal data~~EUI or other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.
Post-Condition: Both the Authorized Third Party and the Data Custodian delete the Shared Resource Key for the relationship and no future interactions are permitted for that relationship.
Post-Condition: The Authorized Third Party handles any ~~data~~EUI not allowed by the termination of the relationship in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the ~~data~~EUI in control of the Authorized Third Party are deleted)
Post-Condition: The Data Custodian sends the Retail Customer confirmation of termination of the Authorized Third Party ~~data~~EUI access relationship.

Scenario: Basic Path
1. Retail Customer requests that Data Custodian terminate the ~~data~~EUI access relationship.
2. Data Custodian presents the Retail Customer with a list of resources for which there are valid relationships with Third Parties. If the Retail Customer only has one valid relationship, S2 and S3 may be skipped.
3. Retail Customer chooses a resource whose relationship is to be terminated.
4. Data Custodian terminates the relationship, deleting the appropriate Shared Resource Key from its list of valid relationships.
5. Data Custodian notifies Authorized Third Party that the relationship has been terminated (identifying the relationship by its Shared Resource Key).
6. Data Custodian notifies Retail Customer that the relationship has been terminated.
7. The Authorized Third Party handles any ~~data~~EUI not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship.

5: Data Custodian Revokes Resource Authorization

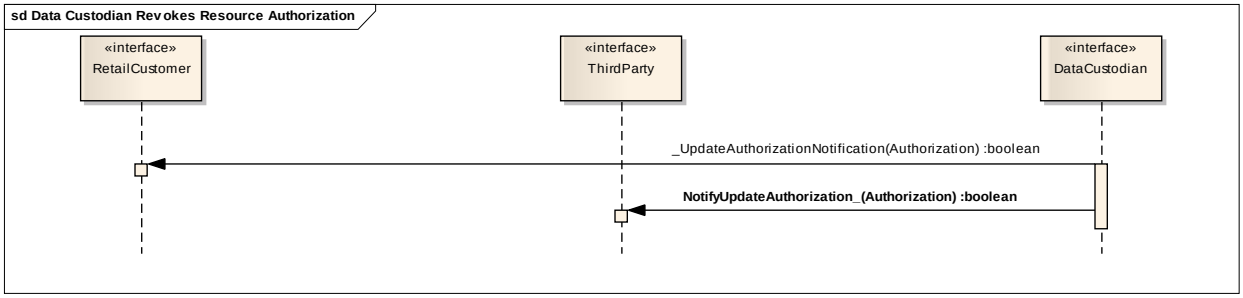

Figure 14: Data Custodian Revokes Resource Authorization [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~ EUI access relationship with a particular Data Custodian and Authorized Third Party. The Data Custodian wants to terminate the relationship (for whatever reason).

Pre-Condition: Authorized Third Party has an established account with Data Custodian.

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Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No ~~resource data or personal data~~ EUI or other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.
Post-Condition: Both the Authorized Third Party and the Data Custodian delete the Shared Resource Key for the relationship and no future interactions are permitted for that relationship.
Post-Condition: The Authorized Third Party handles any ~~data~~EUI or any other PII provided to the Authorized Third Party during the relationship not allowed by the termination of the relationship in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the ~~data~~EUI in control of the Authorized Third Party are deleted).
Post-Condition: The Data Custodian sends the Retail Customer notification of termination of the Authorized Third Party ~~data~~EUI access relationship.

Scenario: Basic Path
1. Data Custodian decides to terminate relationship with Authorized Third Party.
2. Data Custodian notifies Retail Customer of termination decision; no acknowledgement or confirmation is required.
3. Data Custodian notifies Authorized Third Party of termination of the relationship, identifying the relationship by a Shared Resource Key.
4. The Authorized Third Party handles any ~~data~~EUI or any other PII provided to the Authorized Third Party during the relationship not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship.

6: Authorized Third Party Terminates Relationship

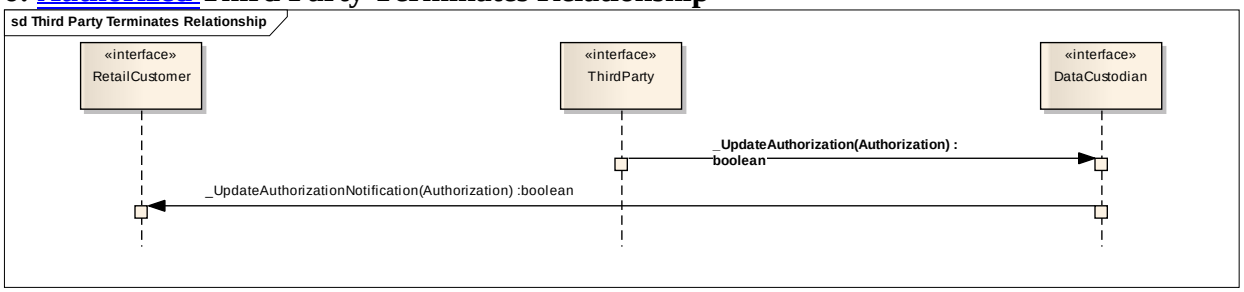

Figure 15**:** Authorized Third Party Terminates Relationship [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party determines that it no longer wants to provide services to the Retail Customer and terminates the relationship.

Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established a Authorized Third Party ~~data~~ EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.

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Invariant Constraint: No ~~resource data or personal data~~EUI or other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.
Post-Condition: Both the Authorized Third Party and the Data Custodian delete the Shared Resource Key for the relationship and no future interactions are permitted for that relationship.
Post-Condition: The Authorized Third Party handles any ~~data~~EUI or any other PII provided to the Authorized Third Party during the relationship not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship (e.g., all instances of the ~~data~~EUI in control of the Authorized Third Party are deleted within
Post-Condition: The Data Custodian sends the Retail Customer notification of termination of the Authorized Third Party ~~data~~EUI access relationship.

Scenario: Basic Path
1. Authorized Third Party decides to terminate an Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship.
2. Authorized Third Party notifies Data Custodian of termination of relationship, identifying the relationship by the Shared Resource Key.
3. An invalid request (e.g., specification of a Shared Resource Key not associated with the Authorized Third Party) will not be accepted.
4. Data Custodian deletes Shared Resource Key, terminating the relationship.
5. Data Custodian notifies the Retail Customer of termination of the relationship. No acknowledgement or confirmation is required.
6. The Authorized Third Party handles any ~~data~~EUI or any other PII provided to the Authorized Third Party during the relationship not allowed by the termination of the relationship, in the manner specified in any service agreements among the parties in the relationship.

7: Authorized Third Party Establishes Subscription with Data Custodian - Asynchronous

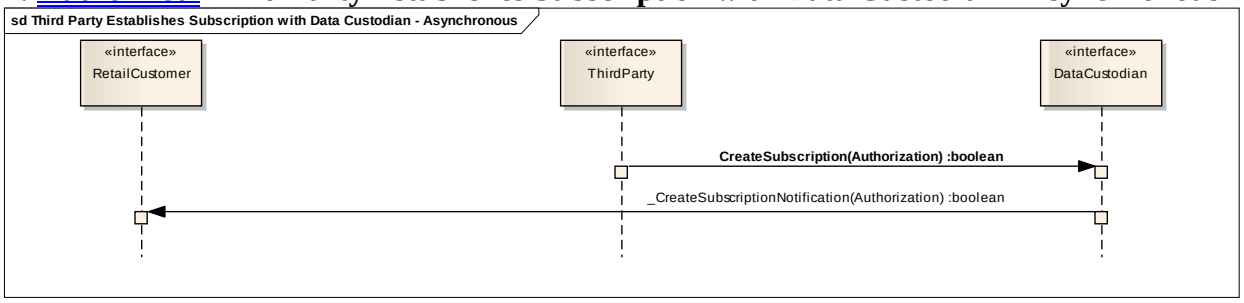

Figure 16**:** Authorized Third Party Establishes Subscription with Data Custodian - Asynchronous [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~ EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party establishes a *subscription* indicating the circumstances (i.e., an agreed-upon schedule and/or specification of special events) under which the Data Custodian should provide the Authorized Third Party with the relevant resource ~~data~~ EUI.
Depending on the services offered by a Data Custodian, the subscription may indicate the circumstances under which the Data Custodian will send ~~resource data~~EUI or only notification that ~~resource data~~ EUI is available (i.e., whether the Data Custodian supports a push or pull model). Subscriptions may be parameterized, if supported by the Data Custodian, to define preferred delivery criteria (e.g., new ~~data~~EUI whenever available or only once per day).

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Request Title: Energy Services Provider Interface Standard

Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Invariant Constraint: No ~~resource data~~EUI or ~~personal data~~other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.
Post-Condition: The Data Custodian records a valid subscription on behalf of the Authorized Third Party. Future ~~data~~EUI availability triggers satisfying the subscription will result in the appropriate information being sent to the Authorized Third Party.
Post-Condition: Data Custodian sends the Authorized Third Party confirmation of its subscription request
Post-Condition: Data Custodian sends the Retail Customer notification of the Authorized Third Party's subscription request

Scenario: Basic Path
1. Authorized Third Party requests that the Data Custodian establish a new subscription.
2. Authorized Third Party provides Data Custodian with information defining the subscription request. At a minimum, this information includes a Shared Resource Key identifying the resource whose ~~data~~EUI is to be shared. The information may include additional subscription parameters, as supported by the Data Custodian.
3. The subscription will not be accepted if the Shared Resource Key is invalid.
4. The Data Custodian saves the subscription information, associating the subscription with the Shared Resource Key and the Authorized Third Party.
5. The Data Custodian notifies the Authorized Third Party that the subscription request was successful. No acknowledgement or confirmation is required.
6. The Data Custodian notifies the Retail Customer that the Authorized Third Party has completed a subscription for their ~~resource data~~EUI. No confirmation is required, as the Authorized Third Party already has permissions as indicated by the valid Shared Resource Key. If the subscription is not acceptable to the Retail Customer, Use Case 3 can be exercised to modify permissions for the Authorized Third Party.

8: Authorized Third Party Requests Data from Data Custodian - Asynchronous

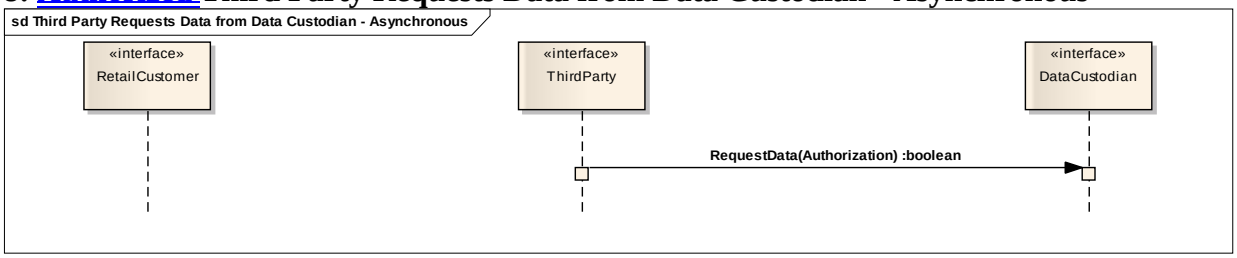

Figure 17: Authorized Third Party Requests ~~Data~~EUI from Data Custodian - Asynchronous [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party requests specific ~~resource data~~EUI to be delivered with next transfer.

Pre-Condition: Authorized Third Party has an established account with Data Custodian.

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Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship

Invariant Constraint: No ~~resource data~~EUI or ~~personal data~~other PII is provided to the Authorized Third Party by the Data Custodian as part of this interaction.

Post-Condition: The Data Custodian records the request on behalf of the Authorized Third Party. Future ~~data~~EUI availability triggers will result in the appropriate information being sent to the Authorized Third Party. **[What auditing requirements?]**

Post-Condition: Data Custodian sends the Authorized Third Party confirmation of its ~~data~~EUI request.

Scenario: Basic Path

1. Authorized Third Party decides to request ~~resource data~~EUI from the Data Custodian. [The third party should be limited in the number of times it can ask for data within the same period. A Subscription to data is preferred rather than adhoc requests. It is assumed that multiple retail customer usage data can be sent in a batch packet that meets the subscription request?]
2. Data Custodian ~~C~~checks validity of request.
3. Data Custodian queues request for next asynchronous transfer.
4. Data Custodian sends confirmation to Authorized Third Party.

9: Data Custodian Sends (Pushes) ~~Data~~EUI to Authorized Third Party - Asynchronous

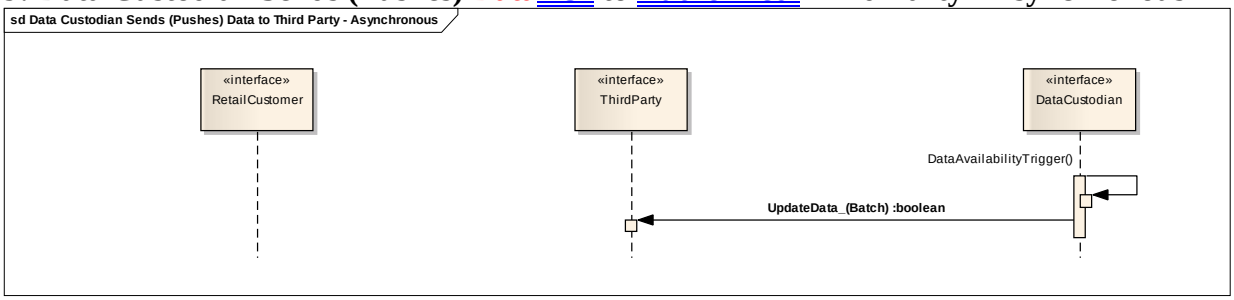

Figure 18: Data Custodian Sends (Pushes) ~~Data~~EUI to Authorized Third Party - Asynchronous [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party has established a subscription for receiving the relevant ~~resource data~~EUI from the Data Custodian. This ~~resource data~~EUI is sent (pushed) to the subscribed Authorized Third Party by the Data Custodian when an event triggers indicates a need to push new ~~resource data~~EUI.

Conditions observable to the Data Custodian change, causing an ~~data~~EUI availability trigger to be checked to see if there is a need to push ~~resource data~~EUI to the Authorized Third Party. Such triggers can be caused by any of the following observable changes

- New ~~resource data~~EUI is received by the Data Custodian
- A new subscription is received by the Data Custodian
- A pre-defined interval has elapsed
- A request for ~~resource data~~EUI has been received from a Authorized Third Party

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Requesters: Open ADE Task Force
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Request Title: Energy Services Provider Interface Standard

Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Pre-Condition: A subscription by the Authorized Third Party to receive ~~resource data~~EUI from the Data Custodian has been established.
Invariant Constraint: No ~~personal information~~PII other than EUI is provided to the Authorized Third Party by the Data Custodian.
Post-Condition: The Data Custodian sends ~~resource data~~EUI to the subscribed Authorized Third Party.
Post-Condition: Only ~~data~~EUI specifically requested or modified and in a subscription is sent to the Authorized Third Party.

Scenario: Basic Path
1. An ~~data~~EUI availability trigger is received by the Data Custodian.
2. Data Custodian determines the Shared Resource Keys associated with the ~~data~~EUI availability trigger. It then determines if there are any subscriptions associated with the Shared Resource Key and whether the conditions of the subscription are satisfied (i.e., if it is time to send out ~~resource data~~EUI). If so, it proceeds to S3.
3. Data Custodian determines the Authorized Third Party associated with the subscriptions. This includes a check that the Authorized Third Party is still in a valid relationship with the Data Custodian and any other relevant checks prior to releasing ~~resource data~~EUI to that Authorized Third Party.
4. Data Custodian provides ~~data resources~~EUI to Authorized Third Party.
5. Authorized Third party ~~persists~~retains ~~data~~EUI for the period specified by ~~data~~ EUI retention requirements.

10: Data Custodian Notifies Authorized Third Party of Data Availability - Asynchronous

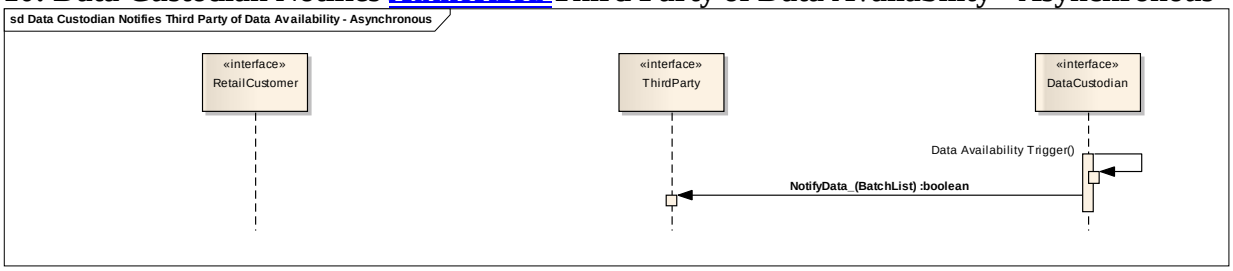

Figure 19**:** Data Custodian Notifies Authorized Third Party of ~~Data~~EUI Availability - Asynchronous [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party has established a subscription for receiving the relevant ~~resource data~~EUI from the Data Custodian. An Authorized Third Party is notified when new ~~data~~EUI satisfying its subscription parameters is available.
Conditions observable to the Data Custodian change, causing an ~~data~~EUI availability trigger to be checked to see if there is a need to notify an Authorized Third Party of ~~resource data~~EUI availability. Such triggers can be caused by any of the following observable changes:

- New ~~resource data~~EUI is received by the Data Custodian

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- A new subscription is received by the Data Custodian
- A pre-defined interval has elapsed
- A request for ~~resource data~~EUI has been received from an Authorized Third Party

Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established an Authorized Third Party EUI~~data~~ access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Pre-Condition: Data Custodian has ~~resource data~~EUI relevant to the Authorized Third Party
Invariant Constraint: No ~~personal information~~PII other than EUI is provided to the Authorized Third Party by the Data Custodian
Post-Condition: The Data Custodian has ~~resource data~~EUI (e.g., electricity usage data) that is available for access by the Authorized Third Party
Post-Condition: The Data Custodian sends the Authorized Third Party notification of availability of EUI~~resource data~~.

Scenario: Basic Path
1. An ~~data~~EUI availability trigger event is received by the Data Custodian.
2. Data Custodian determines the Shared Resource Keys associated with the ~~data~~EUI availability trigger. The Data Custodian then determines if there are any subscriptions associated with the Shared Resource Key and whether the conditions of the subscription are satisfied (i.e., if it is time to notify a Authorized Third Party). If so, it proceeds to S3.
3. Data Custodian determines the Authorized Third Party associated with subscriptions. This includes a check that the Authorized Third Party is still in a valid relationship with the Data Custodian and any other relevant checks prior to determining that it is appropriate to send ~~resource data~~EUI to that Authorized Third Party
4. Data Custodian notifies the Authorized Third Party of the availability of ~~resource data~~EUI associated with the Shared Resource Key. Note that notification can take different forms. Notification could be sent asynchronously as soon as the trigger is evaluated. Notification for several resources could be bundled for delivery to a common Authorized Third Party. Notification could be queued, awaiting the next scheduled interaction with the Authorized Third Party (e.g., as part of a response to a regular pull from the Authorized Third Party). No mechanism or timing is specified.

11: Authorized Third Party Receives (Pulls) Requested ~~Data~~EUI from Data Custodian - Asynchronous

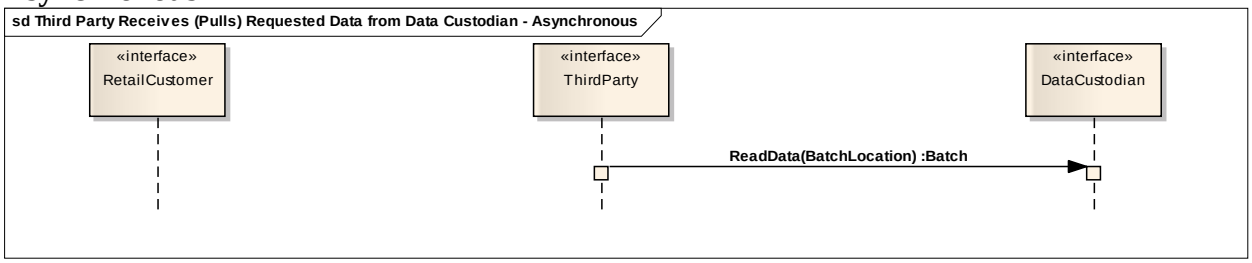

Figure 20**:** Authorized Third Party Receives (Pulls) Requested ~~Data~~EUI from Data Custodian - Asynchronous
[Change reference to "Third Party" in chart above to "Authorized Third Party".]

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Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party requests the relevant subscribed and requested ~~resource data~~EUI from the Data Custodian, who replies with the ~~data~~EUI if the request is valid.

Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Pre-Condition: Data Custodian has ~~resource data~~EUI relevant to the Authorized Third Party.
Invariant Constraint: No ~~personal data~~PII other than EUI is provided to Third Parties by the Data Custodian.
Post-Condition: The Data Custodian replies with the requested ~~data~~EUI.
Post-Condition: Only the requested ~~resource data~~EUI is provided by the Data Custodian.

Scenario: Basic Path
1. Authorized Third Party receives notification or periodically attempts to pull ~~resource data~~EUI from the Data Custodian.
2. Data Custodian checks validity of request.
3. Data Custodian replies with requested and subscribed ~~resource data~~EUI to Authorized Third Party.
4. Authorized Third Party persists ~~resource data~~EUI for use in performing services for Retail Customer.

12: Authorized Third Party Requests ~~Data~~EUI from Data Custodian - Synchronous

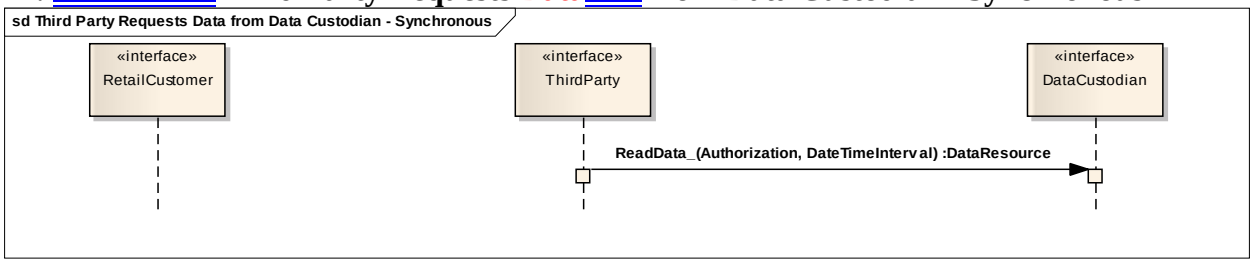

Figure 21: Authorized Third Party Requests ~~Data~~EUI from Data Custodian - Synchronous [Change reference to "Third Party" in chart above to "Authorized Third Party".]

Description

The Retail Customer has an existing Authorized ~~t~~Third ~~p~~Party ~~data~~EUI access relationship with a particular Data Custodian and Authorized Third Party. The Authorized Third Party directly requests specific resource ~~data~~EUI from the Data Custodian, who replies with the requested ~~data~~EUI synchronously if the request is valid.

Pre-Condition: Authorized Third Party has an established account with Data Custodian.
Pre-Condition: Retail Customer has established an Authorized Third Party ~~data~~EUI access relationship with the Data Custodian and the Authorized Third Party with respect to a particular resource, resulting in a unique Shared Resource Key identifying the relationship.
Pre-Condition: Authorized Third Party requests authorized ~~resource data~~EUI.
Invariant Constraint: No ~~personal data~~PII other than EUI is provided to Third Parties by the Data Custodian.
Post-Condition: The Data Custodian replies with the requested ~~data~~EUI.

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Post-Condition: Only the requested ~~resource data~~EUI is provided by the Data Custodian.

Scenario: Basic Path

1. Authorized Third Party decides to pull ~~resource data~~EUI from the Data Custodian.
2. Authorized Third Party specifies the ~~resource data~~EUI being requested. The request must contain the Shared Resource Key. It may also contain parameters (e.g., the period over which the specified ~~data~~EUI is requested), if permitted by Data Custodian.
3. Data Custodian checks validity of request (e.g., Shared Resource Key is still valid and registered with this Authorized Third Party or validity of any additional parameters).
4. Data Custodian sends requested ~~resource data~~EUI to Authorized Third Party.
5. Authorized Third Party persists ~~resource data~~EUI for use in performing services for Retail Customer.

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C. ESPI Abstract Services

This section provides definition of the abstract services used in the use cases. These are the services that will be specified fully for the ESPI ~~m~~Model ~~b~~Business ~~p~~Practice specification. The services are named using the following conventions, since not all are intended to be fully standardized.

- Underscore before the method name means "to be done, but not standardized"
- Underscore after the method name means "optional"

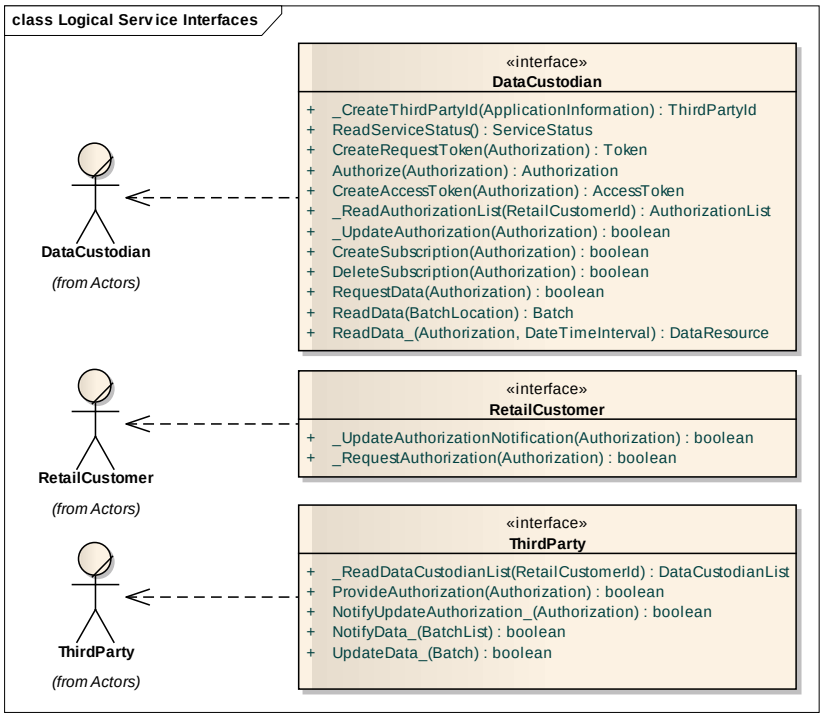

Figure: 22 - Logical Service Interfaces [Change reference to "Third Party" in chart above to "Authorized Third Party".]

DataCustodian

The DataCustodian service interface contains methods to be called by Authorized Third Party in order to authorize and receive ~~data~~EUI.

Operations

Method	Notes	Parameters
_CreateThirdPartyId() ThirdPartyId	Allows Data Custodian to obtain agreement to terms of service, contact information and application details about a Authorized Third Party application. Provides Authorized Third Party with service key and consumer secret.	**ApplicationInformation** [in] ApplicationInformation
ReadServiceStatus() ServiceStatus	Allows Authorized Third Parties to check their ability to access the Data Custodian service,	

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Method	Notes	Parameters
	and its current status.	
CreateRequestToken() Token	Allows Authorized Third Party to request an unauthorized request token.	**Authorization** [in] authRequest
Authorize() Authorization	Provides ability for Retail Customer to authenticate and verify desire to authorize an Authorized Third Party request token. This results in a verifier to be used with CreateAccessToken.	**Authorization** [in] authorization
CreateAccessToken() AccessToken	Allows Authorized Third Party to exchange an authorized request token for an access token.	**Authorization** [in] authRequest
_ReadAuthorizationList() AuthorizationList	Allows Retail Customer to choose an existing Authorization. Is not standardized, since the method involves user input.	**RetailCustomerId** [in] customerID
_UpdateAuthorization() boolean	Provides ability to update an existing Authorization.	**Authorization** [in] authorization
CreateSubscription() boolean	Allows Authorized Third Party to request ongoing updates to the ~~data resources~~ EUI associated with the specified Authorization, to be delivered asynchronously.	**Authorization** [in] authorization
DeleteSubscription() boolean	Removes the ~~data resources~~EUI associated with the specified Authorization from the subscriptions.	**Authorization** [in] authorization
RequestData() boolean	Allows Third Parties to request initial transfer of existing authorized ~~data~~EUI, or re-transfer of same. Results are delivered asynchronously.	**Authorization** [in] authorization
ReadData() Batch	Allows Authorized Third Party request ("pull") of asynchronously requested and subscribed data.	**BatchLocation** [in] batch
ReadData_() DataResource	Allows "on demand" (synchronous) access to authorized ~~data~~EUI. Some providers may choose not to make this method available. [Not suggested.]	**Authorization** [in] authorization **DateTimeInterval** [in] requestedInterval

RetailCustomer

The Retail Customer service interface represents methods used to make requests of the Retail Customer.

Operations

Method	Notes	Parameters
_UpdateAuthorizationNotification() boolean	This method is not standardized, but provides notification to the Retail Customer that an Authorization was updated. May be optional, based on policies of Data Custodian.	**Authorization** [in] authorization
_RequestAuthorization() boolean	This method represents the delivery of the request to authorize an access grant. The normal flow implements this using a URL redirect, but other methods may be possible.	**Authorization** [in] authorization

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Authorized ThirdParty
The Authorized Third Party service interface contains methods to be called by the Data Custodian.

Operations

Method	Notes	Parameters
_ReadDataCustodianList() DataCustodianList	This is a non-standardized method to allow the Retail Customer to find their Data Custodian.	**RetailCustomerId** [in] reatilCustomerID
ProvideAuthorization() boolean	This method represents the callback after authorization of a request token.	**Authorization** [in] authorization
NotifyUpdateAuthorization_() boolean	This method allows for a Data Custodian to notify an Authorized Third Party when an authorization has been modified, so that timely requests to extend authorizations can be provided to Retail Customer, and so that the Authorized Third Party can differentiate between problems and lack of authorization.	**Authorization** [in] authorization
NotifyData_() boolean	This optional method can be implemented in order to avoid having to poll for new ~~data~~EUI. It is called by the Data Custodian to indicate that requested authorized ~~data~~EUI is available via ReadData.	**BatchList** [in] batchList
UpdateData_() boolean	This method can be implemented by the Authorized Third Party to allow asynchronous transfers to use the "push" model for delivery. If used, notify is not used, and polling is avoided.	**Batch** [in] data

The following table contains a listing of these Logical Interface Operations, along with the expected Physical Operation for informative purposes. Physical operation names in parentheses are passed programmatically

Actor	Description	Logical	Physical
Data Custodian	Ability to get service status	ReadServiceStatus	ServiceStatus
Data Custodian	Initiate signed request_token request per RFC 5849	CreateRequestToken	request_token
Data Custodian	Initiate signed authorize request per RFC 5849	Authorize	authorize
Data Custodian	Initiate signed access_token request per RFC 5849	CreateAccessToken	access_token
Data Custodian	Update existing authorization	NotifyUpdateAuthorization_	Authorization
Data Custodian	Revoke existing authorization (Retail Customer)	NotifyUpdateAuthorization_	Authorization
Data Custodian	Terminate existing authorization via service	UpdateAuthorization	Authorization
Data Custodian	Request subscription to authorized resource	CreateSubscription	Subscription (from config)
Data Custodian	Request authorized data resource(s)	RequestData	(request_token scope)

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Actor	Description	Logical	Physical
Data Custodian	Receive requested and subscribed ~~data resources~~ EUI	ReadData	(dataCustodianDefaultBatchResource)
Data Custodian	Request and receive authorized ~~data resource(s)~~EUI	ReadData_	(request_token scope)
Third Party	Initiate callback specified in request_token per RFC 5849	ProvideAuthorization	(request_token callback)
Third Party	Revoke existing authorization (Data Custodian)	NotifyUpdateAuthorization_	Authorization
Third Party	Send requested and subscribed ~~data resources~~ EUI	UpdateData_	(thirdPartyDefaultBatchResource)
Third Party	Notify requested and subscribed ~~data~~EUI is available	NotifyData_	(thirdPartyDefaultNotifyResource)

Logical Information Model

This section contains descriptions of the data elements used in the abstract services.

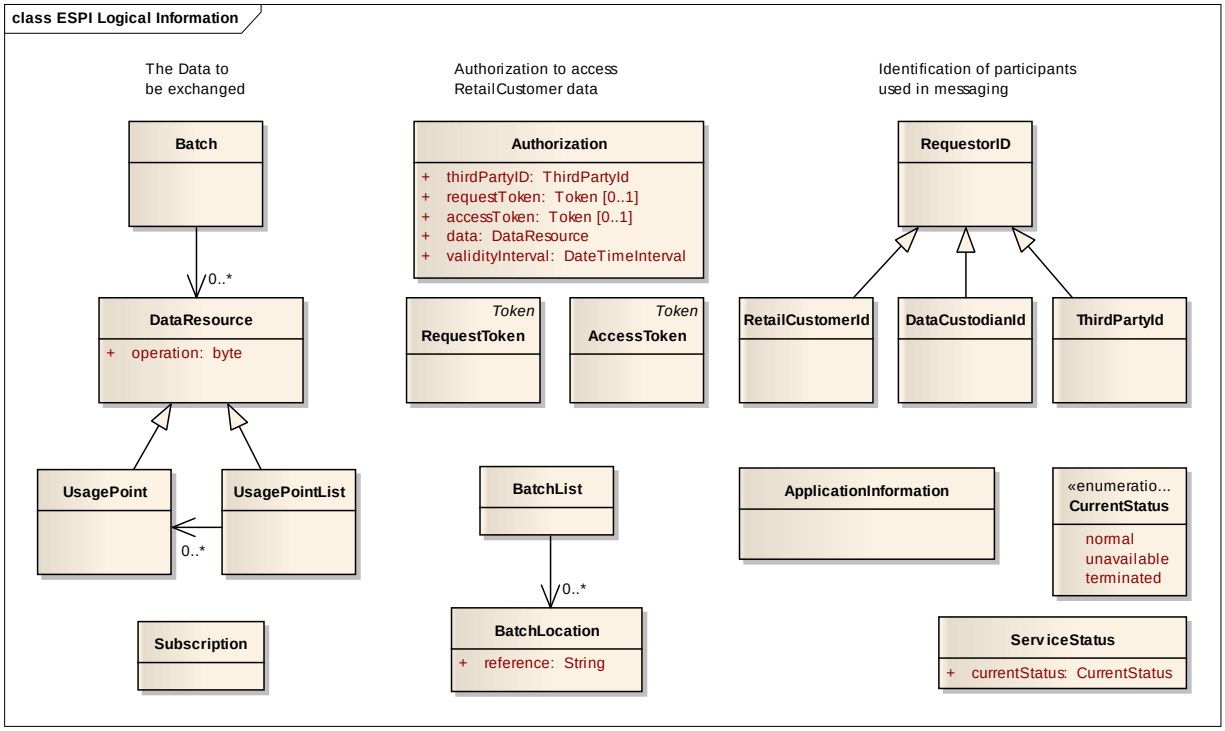

Figure 23: ESPI Logical Information Model

AccessToken

AccessToken is a shared key representing the relationship between a RetailCustomer, DataCustodian, and Authorized ThirdParty for ~~a~~ particular ~~data resource~~EUI.

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ApplicationInformation

Includes (non-standardized) information about the Authorized Third Party Application requesting access to the DataCustodian services. Information requested may include items such as Organization Name, Website, Contact Info, Application Name, Description, Icon, Type, default Notification and Callback endpoints, and may also include agreement with terms of service.

Authorization

Description of an authorization. Includes the information constraining and defining access to the ~~Data~~EUI. May include additional security elements, such as signature, timestamp, nonce, etc. as well as callback to allow redirection of the user agent.

Name	Type	Description
thirdPartyID	*ThirdPartyId*	The identifier issued to the Authorized Third Party by the Data Custodian.
requestToken	*Token*	An unauthorized token, issued by Data Custodian.
accessToken	*Token*	An access token that has been authorized by the user at the Data Custodian.
data	*DataResource*	The data resource to which the authorization was granted.
validityInterval	*DateTimeInterval*	The date time interval during which this access is authorized.

Batch

This object is simply a container to hold a number of data resources.

BatchList

BatchList is a container to refer to a multiple batches of data.

BatchLocation

Specifies the location of a specific batch of data.

Name	Type	Description
reference	*String*	

CurrentStatus «enumeration»

Valid values for current status.

Name	Type	Description
normal		
unavailable		
terminated		

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DataCustodianId

An identifier for the Data Custodian.

DataResource

Generalization of any ~~data~~EUI object that can be exchanged.

Name	Type	Description
operation	*byte*	Create, Update, Delete

RequestToken

RequestToken is the first step toward obtaining an authorized AccessToken.

RequestorID

Generic superclass for identifiers.

RetailCustomerId

An identifier for the Retail Customer.

ServiceStatus

Contains the current status of the service.

Name	Type	Description
currentStatus	*CurrentStatus*	

Subscription

Defines the parameters of a subscription between Authorized ~~t~~Third ~~p~~Party and ~~d~~Data ~~c~~Custodian

ThirdPartyId

An identifier for the Authorized Third Party.

Token

A Token is a key associated with a secret used for securing exchanges.

UsagePointList

Container to hold multiple UsagePoint objects.

D. Model Conformance Information

The following table provides information about the elements included in ESPI and their relation to the NAESB PAP10 Energy Usage Information Model as well as the IEC TC57 CIM Model. Harmonization across these models

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is a goal of this recommendation, as is aligning with other usage information interfaces, including Smart Energy Profile 2.0.

PAP10 EUI Model Element	Type	ESPI Model Element	Type	CIM Notes
CustomerAuthorisation.name	String	(OAuth) access_token		N/A
CustomerAuthorisation.validityInterval	DateTimeInterval	(OAuth 2.0) expires_in		N/A
UsagePoint.name	String	UsagePoint.mRID	HexBinary128	Same
UsagePoint.description	String	UsagePoint.description	String32	Same
		UsagePoint.status	UInt8	connectionState
ServiceCategory.kind	ServiceKind	ServiceCategory.kind	ServiceKind	Same
ServiceKind.electricity		ServiceKind 0		(encoded)
ServiceKind.gas		ServiceKind 1		(encoded)
ServiceKind.water		ServiceKind 2		(encoded)
MeterReading.name	String	MeterReading.mRID	HexBinary128	Same
		MeterReading.description	String32	Same
ReadingType.name	String	ReadingType.mRID	HexBinary128	Same
		ReadingType.description	String32	Same
ReadingType.defaultQuality	QualityOfReading	ReadingType.defaultQuality	QualityOfReading	Recommended extension
ReadingType.direction	ReadingDirection	ReadingType.flowDirection	FlowDirectionType	Same
ReadingType.intervalLength	Duration	ReadingType.intervalLength	UInt32	Recommended extension
ReadingType.kind	ReadingKind	ReadingType.kind	KindType	measurementKind
ReadingType.multiplier	UnitMultiplier	ReadingType.powerOfTenMultiplier	PowerOfTenMultiplierType	Recommended extension
ReadingType.unit	UnitSymbol	ReadingType.uom	UomType	unit
		ReadingType.accumulationBehaviour	AccumulationBehaviourType	accumulation
		ReadingType.dataQualifier	DataQualifierType	Recommended extension
		ReadingType.tou	TOUType	Same
		ReadingType.currency	CurrencyCode	Same
		ReadingType.commodity	CommodityType	Same
		ReadingType.consumptionTier	ConsumptionTierType	Same
		ReadingType.phase	PhaseCode	phases
		IntervalBlock.mRID	HexBinary128	Recommended extension
		IntervalBlock.description	String32	Recommended extension
		IntervalBlock.interval	DateTimeInterval	Recommended extension
Reading.cost	Float	Reading.cost	UInt48	Recommended extension
Reading.timeStamp	AbsoluteDateTime	Reading.timePeriod	DateTimeInterval	Same
Reading.value	Float	Reading.value	UInt48	Same
ReadingQuality.quality	QualityOfReading	ReadingQuality.quality	QualityOfReading	Recommended extension
DateTimeInterval.start	AbsoluteDateTime	DateTimeInterval.start	TimeType	Same
DateTimeInterval.duration	Duration	DateTimeInterval.duration	UInt32	Uses "end" instead of "duration"
QualityOfReading.estimated		QualityOfReading *.8.0		(encoded)
QualityOfReading.raw		QualityOfReading 1.*		(encoded)
QualityOfReading.validated		QualityOfReading *.0.1		(encoded)

RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant

Requesters: Open ADE Task Force
Request No.: R10008
Request Title: Energy Services Provider Interface Standard

PAP10 EUI Model Element	Type	ESPI Model Element	Type	CIM Notes
ReadingDirection.forward		FlowDirectionType 1		(encoded)
ReadingDirection.reverse		FlowDirectionType 19		(encoded)
ReadingKind.energy		FlowDirectionType 12		(encoded)
ReadingKind.power		FlowDirectionType 37		(encoded)
ReadingKind.demand		FlowDirectionType 8		(encoded)
UnitMultiplier.micro		PowerOfTenMultiplierType -6		(encoded)
UnitMultiplier.m		PowerOfTenMultiplierType -3		(encoded)
UnitMultiplier.c		PowerOfTenMultiplierType -2		(encoded)
UnitMultiplier.d		PowerOfTenMultiplierType -1		(encoded)
UnitMultiplier.k		PowerOfTenMultiplierType 3		(encoded)
UnitMultiplier.M		PowerOfTenMultiplierType 6		(encoded)
UnitMultiplier.G		PowerOfTenMultiplierType 9		(encoded)
UnitMultiplier.T		PowerOfTenMultiplierType 12		(encoded)
UnitMultiplier.none		PowerOfTenMultiplierType 0		(encoded)

4. SUPPORTING DOCUMENTATION

a. Description of Request:

b. Description of Recommendation:

c. Business Purpose:

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

Please see the ESPI Minutes posted on the ESPI web page: http://www.naesb.org/espi_task_force.asp

North American Energy Standards Board Membership List
As of July 12, 2011

NAESB Membership Statistics – Changes by Quadrant for 2011 as of July 12, 2011

NAESB Membership Report - Quadrant/Segment Membership Analysis		Number of Members
WGQ Segments	**TOTAL**	**119**
	End Users	17
	Distributors	16
	Pipelines	42
	Producers	12
	Services	32
REQ Segments	**TOTAL**	**24**
	End Users/Public Agencies	9
	Utilities	7
	Service Providers/Suppliers	8
RGQ Segments	**TOTAL**	**19**
	End Users/Public Agencies	1
	Distributors	6
	Service Providers/Suppliers	12
WEQ Segments	**TOTAL**	**134**
	End Users	8
	Distributors	20
	Transmission	46
	Generation	21
	Marketers	24
	None Specified	1
	Independent Grid Operators/Planners	9
	Technology /Services	5

North American Energy Standards Board Membership List
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WEQ	New Members: 1-Nalcor Energy (Marketers/Brokers, Fed/State/Prov), 2- Vermont Public Service Board (End Users/Regulator)	**2**
	Member Resignations: 1-Modesto Irrigation District (Transmission, Muni/Coop); 2-American Wind Energy Association (Generation, Muni/Coop); 3-Electric Power Supply Association (Marketers/Brokers, At Large); 4-Southern California Edison Company (Generation, IOU); 5-Brookfield Energy Marketing, Inc. (Marketers/Brokers, NIOU); 6-BP America Inc. (End Users, LIND)	6
WGQ	New Members: 1-PAA Natural Gas Storage, LLC (Services); 2-Caerus Energy, LLC (Services); 3-QEP Resources, Inc. (Producer); 4-Energy Solutions International Inc. (Services); 5-Marathon Petroleum Company LP (End Users)	**5**
	Member Resignations: 1-National Fuel Gas Distribution (LDC); 2-HighMount Exploration & Production, LLC (Producer); 3-Southern Natural Gas Co. (Pipeline), 4-Reliance Gas Transportation Infrastructure Limited (Pipeline); 5-Laclede Gas Co. (LDC); 6-National Grid Gas Distribution Companies (LDC); 7-Ballard Natural Gas, LLC (Services); 8-SolArc, Inc. (Services)	8
REQ	New Members: 1-Honeywell International Inc. (End Users/Public Agencies), 2-Vermont Public Service Board (End Users/Public Agencies)	**2**
	Member Resignations:	0
RGQ	New Members:	**0**
	Member Resignations:	0
TOTAL	New Members:	**9**
	Member Resignations:	14

North American Energy Standards Board Membership List
As of July 12, 2011

	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	Brandon Stites	
8	Electric Reliability Council of Texas (ERCOT)	s	Susan Munson	
9	Exelon Energy Delivery	u	David Geraghty	
10	Honeywell International, Inc.	e	Steve Gabel	
11	ista	s	Judy Bailey, J. Cade Burks, Jennifer Teel	
12	Maryland Public Service Commission	e	Dan Norfolk	
13	National Association of Regulatory Utility Commissioners	e	James Bradford Ramsay	
14	Navigant Consulting, Inc.	e	Kevin Cooney	
15	Oncor	u	Larry Williford, Debbie McKeever	
16	Pennsylvania Office Of Consumer Advocate	e	Tanya J. McCloskey, Sonny A. Popowsky	
17	Pennsylvania Public Utility Commission	e	Robert F. Wilson, Annunciata E. Marino	
18	PPL Solutions, LLC	s	James M. Minneman, Kim Wall	
19	Public Utilities Commission of Ohio	e	Christopher Kotting	
20	Southern Company Services	s	Barbara Hingst	
21	SunGard Consulting Services, LLC	s	Austin Morris	
22	Ventyx, Inc.	s	Nathan Chang	
23	Vermont Public Service Board	e	Pam Stonier	
24	Wisconsin Public Service Corporation	u	Dennis Derricks, Ken Thiry	
Wholesale Gas Quadrant Members:				
1	8760, Inc.	s	Jim Buccigross	
2	Accenture, LLP	s	Jeff Miers	
3	AGL Resources Inc	l	Ralph Cleveland	
4	Alliance Pipeline LP	pl	Cathie Legge, Brian Troicuk	
5	Ameren Corporation	l	Scott Glaeser, Ken Dothage, Jim Massmann	
6	American Midstream Partners, LP	s	Marty Patterson	

[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

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	Organization	Seg[1]	Contact	Sub-Seg[2]
7	ANR Pipeline Company	s	Sandy Meyers, Joseph E. Polland, Rene Staeb, Debbie Forth, Carol Wehlmann, Radha Raman	
8	Arizona Public Service Company	e	Tom Carlson, Kelly Daly	
9	Atmos Energy	pl	Steve Easley	
10	Baltimore Gas & Electric Co.	l	Phil Precht	
11	Barclays Bank PLC	s	Guy Kern-Martin	
12	Bentek Energy, LLC	s	E. Russell Braziel	
13	BG Energy Merchants, LLC	s	Martha Braddy, Susan Bailey, David Buckley, Victoria Versen	
14	Boardwalk Pipelines, LP	pl	Randy Young	
15	Boeing Co., The	e	Tina Burnett	
16	BP Energy	pr	Mark Stultz, Rhonda Denton	
17	Caerus Energy, LLC	s	Doug Deaton	
18	Calpine Energy Services, LP	e	Shonnie Daniel, Jay Dibble	
19	Cargill Incorporated	s	Lester Welch	
20	Carolina Gas Transmission Corporation	pl	Rae Davis, Dana B. Randall	
21	Cenovus Energy, Inc.	s	Paul Kahler	
22	CenterPoint Energy Gas Services, Inc.	s	James G. Beste, Larry Kunkle	
23	CenterPoint Energy Gas Transmission Company	pl	Cindy Suarez, Larry Thomas	
24	CenterPoint Energy Mississippi River Transmission Corporation	pl	Cindy Suarez, Robert Trost	
25	Cheniere Pipeline Company	pl	Whit Scott	
26	Chevron Natural Gas	pr	Charles (Chuck) Cook	
27	Chevron Pipe Line Company	pl	Mary Anne Collins, Deborah Plattsmier, Jeff Kirk	
28	Cimarex Energy Co.	pr	Charlotte Baker	
29	Citigroup Energy Inc.	s	Carrie Southard, Angela Davis	
30	Colorado Springs Utilities	l	Joe M. Holmes	
31	Columbia Gas Transmission	pl	Claire Burum	
32	Comprehensive Energy Services	e	Jim Templeton	
33	ConocoPhillips Gas and Power	pr	Catherine R. Abercrombie	
34	Consolidated Edison Company of NY	l	Scott Butler, Paul Olmsted	
35	Constellation Energy Commodities Group Inc.	s	Lisa Simpkins, Joseph Kirwan, Andrea Kullman, Jennifer Scott, Stephen C. Knapp	
36	Dauphin Island Gathering Partners	pl	Katie Rice	
37	DB Energy Trading	s	William Donnelly, Travis McCullough	
38	Defense Logistics Agency Energy	e	Veronica Jones, Kevin Ahern	
39	Department of Energy	e	Christopher Freitas	
40	Devon Energy Corporation	pr	Bill Green, Dianne Dunbar	
41	Dominion Resources	l	Craig Columbo	
42	Dominion Transmission, Inc.	pl	Gary Sypolt, Ron Tomlinson	
43	DTE Energy Trading, Inc.	s	Gregory V. Staton, James Buck, Dena Crawford, Marcia L. Hissong, Ann Marie Jambor, Cynthia Klots, Shelley Greene	
44	Eastern Shore Natural Gas Company	pl	Elaine B. Bittner	

North American Energy Standards Board Membership List
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	Organization	Seg[1]	Contact	Sub-Seg[2]
45	El Paso Exploration & Production Company	pr	Stephanie Karm	
46	El Paso Natural Gas	pl	William Griffith	
47	Enbridge (U.S.) Inc.	pl	Brad Petzold	
48	Encana Marketing (USA) Inc.	s	Keith Sappenfield, Jeff Jarvis	
49	Encana Oil & Gas (USA) Inc.	pr	Keith Sappenfield, Jeff Jarvis	
50	Energy Solutions International Inc.	s	Chuck McClure	
51	Energy Transfer Partners, L.P.	pl	Josie Castrejana, Miki Kolobara	
52	Entergy Services, Inc.	e	Laura Berryman, Terry Shields	
53	Enterprise Products Partners L.P.	pl	Jeff Molinaro	
54	Equitrans, LP	pl	Paul W. Diehl	
55	ExxonMobil Gas & Power Marketing Company a division of Exxon Mobil Corporation	pr	Randy E. Parker, John W. Poe	
56	Florida Power & Light Company	e	Tim Gerrish, Art Morris	
57	Gas Transmission Northwest Corp.	pl	Joseph Pollard	
58	Golden Pass Pipeline, LLC	pl	Vickie Long	
59	Great Lakes Gas Transmission	pl	Joseph Pollard	
60	Iberdrola USA Management Corporation	l	Mark Marini	
61	Imperial Irrigation District	e	Susie Carrillo	
62	Integrys Energy Group, Inc.	l	David E. Wear	
63	Iroquois Gas Transmission System	pl	Tom Gwilliam	
64	JP Morgan Ventures Energy Corp	S	Paul Tramonte	
65	Kern River Gas Transmission Co	pl	Brenda Horton	
66	Latitude Technologies	s	Leigh Spangler	
67	Louis Dreyfus Energy Services	s	Tara Liscombe, 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	Marathon Petroleum Company LP	e	Laddie Weems	
72	Mewbourne Oil Company	pr	Michael F. Shepard	
73	National Fuel Gas Supply Corp.	pl	Deborah Kupczyk	
74	Natural Gas Pipeline Co of America	pl	Paul Love, Stan Thomas, Mike Schisler, Paul Haas	
75	Nexen Marketing	s	Deb Strang, Sharron Roberts	
76	NextEra Energy Power Marketing, LLC	e	Marty Jo Rogers	
77	NiSource, Inc.	l	George Simmons, Michael D. Watson	
78	Noble Americas Corp	pl	Joseph Limone	
79	Noble Energy, Inc.	pr	Richard Smith, Tammy M. Stevens	
80	Northern Border Pipeline Company	pl	Joseph Pollard	
81	Northern Natural Gas	pl	Nancy A. Hetrick	
82	Northwest Natural Gas Company	l	Randolph Friedman	
83	NOVA Gas Transmission Ltd.	pl	Bob Jones	
84	OGE Energy Resources, Inc.	s	Cary Metz	
85	ONEOK	l	Richard Tangeman	

North American Energy Standards Board Membership List
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	Organization	Seg[1]	Contact	Sub-Seg[2]
86	ONEOK Partners GP, LLC	pl	Teri Tingler, Lisa Nishimuta	
87	PAA Natural Gas Storage, LLC	s	Eileen W. Kisluk	
88	Panhandle Eastern Pipe Line	pl	William Grygar, Kim Van Pelt	
89	PECO Energy Co.	l	Carlos Thillet	
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	Portland Natural Gas Transmission System	pl	David Haag	
93	PPL EnergyPlus, LLC	e	Anne Lovett	
94	QEP Resources, Inc.	pr	Steve Stanton	
95	Questar Pipeline Co.	pl	Jerry H. Gross	
96	Quorum Business Solutions Inc.	s	Anne Golenternek, Michael Lewis	
97	Salt River Project Agricultural Improvement & Power District	e	Lori-Lynn C. Pennock	
98	Sempra Energy - Southern California Gas Co.	l	Lee Stewart, Rodger Schwecke	
99	Sempra Pipelines & Storage Corp.	pl	Martine Blair	
100	Sequent Energy Management, L.P.	s	Pat Metteauer	
101	Shell Energy North America (US), L.P.	s	Eric Gillaspie	
102	SNL Financial	s	Katrina Sumey	
103	Southern California Edison Company	e	Roman Bakke, Rob Grimm	
104	Southern Company Services, Inc.	e	Alan Kilpatrick, Bronco Kilgore	
105	Southern Star Central Gas Pipeline	pl	Philip Rullman, Tim L. Thompson	
106	Southwest Gas Corporation	l	Larry Black, Mark Anderson, Mark Litwin, John Olenick	
107	Spectra Energy Transmission	pl	Richard Kruse, Kathryn Burch	
108	SunGard	s	Sylvia Munson	
109	Tennessee Gas Pipeline Company	pl	Sue Barry, Mark Gracey	
110	Tennessee Valley Authority	e	Valerie Crockett	
111	Tiger Natural Gas	s	Tracy Phillips	
112	TransCanada Pipelines	pl	Bob Jones	
113	Transwestern Pipeline Company, LLC	pl	Blair V. Lichtenwalter, Mary Draemer, David Mendoza	
114	Vector Pipeline L.P.	pl	Amy Bruhn	
115	Vega Energy Partners, Ltd	s	Julie Pincus, Lori Leeder	
116	Washington Gas Light Co.	l	Mark Lowe	
117	Williams Gas Marketing, Inc.	s	Rich Ficken	
118	Williams Gas Pipeline	pl	Dale Davis, Christopher Burden	
119	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

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	Organization	Seg[1]	Contact	Sub-Seg[2]
4	Alberta Electric System Operator	i	Diana Pommen	
5	American Electric Power Service Corp.	d	Joanne Goza, 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
8	Arizona Public Service Company	t	Robert Bean	iou
9	Arkansas Electric Cooperative Corporation	g	Ricky Bittle	muni
10	Avista Corporation	t	Jeff Schlect, Kenneth Dillon	iou
11	Basin Electric Power Cooperative	t	Dan Klempel	muni
12	Basin Electric Power Cooperative	m	David Raatz	muni
13	Basin Electric Power Cooperative	g	Jason Doerr	muni
14	BC Hydro	t	Al Woodruff, Brenda Ambrosi	fed
15	Black Hills Corporation	t	Larry D. Williamson, Kenna Hagan	iou
16	Bonneville Power Administration	d	Sydney D. Berwager	other
17	Bonneville Power Administration	g	Francis Halpin, Erika Doot	fed
18	Bonneville Power Administration	m	Brenda Anderson, Ann Shintani	fed
19	Bonneville Power Administration	t	Abbey J. Nulph	fed
20	California Department of Water Resources	g	Glenn Solberg, Chi Doan	fed
21	California ISO	i	Brian Jacobsen	
22	Central Electric Power Cooperative	d	Arthur Fusco	muni
23	Cleco Power, LLC	t	Cindy Guillot	iou
24	Comprehensive Energy Services	e	Jim Templeton	enduse
25	Consolidated Edison Company of New York, Inc.	t	Scott Butler, Chris Fan	iou
26	Consumers Energy Company	d	Andrew C. Dotterweich, Rufus Gladney	iou
27	Dairyland Power Cooperative	t	Chuck Callies	muni
28	Deseret Power Electric Co-op	g	Curt Winterfeld	muni
29	Dominion Energy Marketing, Inc.	g	Lou Oberski	iou
30	Duke Energy Americas, LLC (DEA)	g	Walt Yeager	iou
31	Duke Energy Corp.	d	Alan Pritchard	iou
32	Dynegy Power Marketing, Inc.	g	Ben Trammell	merc
33	Edison Electric Institute	n	David Owens, Dave Dworzak, James P. Fama	n
34	Electric Reliability Council of Texas (ERCOT)	i	Bill Blevins, Paul Wattles, Joel Mickey	
35	Empire District Electric Company, The	t	Bary K. Warren	iou
36	Energy Curtailment Specialists, Inc. (ECS)	e	Marie Pieniazek	enduse
37	EnerNOC, Inc.	e	Aaron Breidenbaugh	enduse
38	Entergy Services, Inc.	t	Edward J. Davis, Narinder Saini	iou
39	Exelon Generation - Power Team	m	Jack Crowley	iou
40	First Energy Service Company	d	Robert M. Martinko, Thomas C. Burgess	iou
41	FirstEnergy Solutions Corp.	m	Mark Travaglianti	iou
42	Florida Municipal Power Agency	g	Frank Gaffney, Dan O'Hagan	muni
43	Florida Municipal Power Agency	d	Frank Gaffney, Dan O'Hagan	muni
44	Florida Power & Light Company	m	Jim Drake, Tom Hartman	iou

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	Organization	Seg[1]	Contact	Sub-Seg[2]
45	Florida Power & Light Company	t	Marty Mennes, Bob Birch	iou
46	Georgia Transmission Corporation	t	Patrick McGovern	muni
47	Hydro – Quebec Transenergie	t	Glenn Sylvain	fed
48	Iberdrola USA Management Corporation	t	Mark Marini	iou
49	Idaho Power Company	t	Kathy Anderson	iou
50	Independent Electricity System Operator (IESO)	i	Cristian Dragnea, Biju Gopi	
51	Indiana Municipal Power Agency	g	Scott Berry	muni
52	ISO New England, Inc.	i	Matthew F. Goldberg	
53	LG&E and KU Services Company	t	Derek A. Rahn, Larry Monday	IOU
54	Lincoln Electric System	g	Douglas Bantam	muni
55	Los Angeles Department of Water and Power	t	Mohammed Johar Beshir	muni
56	Los Angeles Department of Water and Power	m	Bradford L. Packer, Joel F. Cordero	muni
57	Manitoba Hydro	t	Tyler Young	fed
58	Manitoba Hydro	m	Shannon Jones	fed
59	Michigan Public Power Agency	d	James R. Nickel, Peter J. Schimpke	muni
60	MidAmerican Energy Company	m	Dennis Kimm	iou
61	Midwest Independent Transmission System Operator	i	William (Bill) Phillips, Ed Skiba	
62	Midwest Reliability Organization	t	Dan Schoenecker	at large
63	Missouri River Energy Services	d	Brian Zavesky	muni
64	Nalcor Energy	m	Brad Coady	fed
65	National Association of Regulatory Utility Commissioners	e	Lou Ann Westerfield	reg
66	National Grid	t	Edward M. Kremzier	iou
67	National Institute of Standards and Technology	ts	David A. Wollman	
68	National Rural Electric Cooperative Assoc.	d	Paul McCurley	muni
69	Nebraska Public Power District	t	Don Schmit	muni
70	New York Independent System Operator (NYISO)	i	Rana Mukerji, Donna Pratt	
71	New York State Reliability Council	d	P. Donald Raymond	at large
72	North American Electric Reliability Corporation	d	David Taylor, Andy Rodriquez	at large
73	North Carolina Electric Membership Corporation	d	David Beam, Diane Huis	muni
74	Northeast Utilities Service Company	t	David Boguslawski, Calvin A. Bowie	iou
75	Northwestern Corporation	t	Mike Cashell	iou
76	NRG Energy, Inc.	g	Alan Johnson, Jennifer J. Vosburg, Elizabeth Killinger	merc
77	NV Energy	m	Sheryl Torrey	iou
78	NV Energy, Inc.	t	Patricia Englin	iou
79	Open Access Technology International, Inc.	e	Michehl Gent	at large
80	Open Access Technology International, Inc.	t	Paul R. Sorenson	at large
81	Organization for the Advancement of Structured Information Standards (OASIS)	ts	Laurent M. Liscia	
82	PacifiCorp	m	John Apperson	iou
83	PacifiCorp	t	Sarah E. Edmonds	iou

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	Organization	Seg[1]	Contact	Sub-Seg[2]
84	PHI Power Delivery	t	Scott Razze	iou
85	PJM Interconnection	i	Patrick Brown, Cathy Wesley	
86	Portland General Electric	t	Frank Afranji, John Walker. Johnny Useldinger	iou
87	Powerex Corp	m	Michael L McWilliams, Sharole Tylor	fed
88	PowerSouth Energy Cooperative	d	William Ronald Graham	muni
89	PPL Electric Utilities Corporation	t	Randy Kreider	iou
90	Progress Energy	m	John Sturgeon	iou
91	Progress Energy	t	Phillip W. Lewis, Michael Anthony, Lee Schuster	iou
92	Public Service Company of New Mexico	m	Steven Maestas, Darren Wilkins, Patricia Merville, Roger Vaughn	iou
93	Public Utilities Commission of Ohio	e	Christopher Kotting	reg
94	Puget Sound Energy, Inc.	t	George Marshall, Bob Harshbarger	iou
95	RRI Energy Services, Inc.	g	Trent Carlson	merc
96	Sacramento Municipal Utility District	d	Steve Sorey	muni
97	Salt River Project Agricultural Improvement and Power District	t	Luke O'Dwyer, Michael J. Pfeister	fed
98	Salt River Project Agricultural improvement and Power District	m	Richard Lehman	fed
99	San Diego Gas & Electric Company	t	Patricia vanMidde	iou
100	Santee Cooper	t	Tom Abrams	fed
101	Seattle City Light	d	Cathy Leone-Woods	muni
102	Seminole Electric Cooperative, Inc.	m	Steve Wallace	muni
103	Shell Energy America (US), L.P.	m	Robert Reilley, Paul Kerr	niou
104	Shift Research, LLC	e	Jesse D. Hurley	at large
105	South Carolina Electric & Gas Company	t	S. Porcher Stoney, James T. Starling, Jr. , Sonya Green-Sumpter	iou
106	South Carolina Electric & Gas Company	m	Kevin Spitzform	iou
107	Southern California Edison	t	Weston Williams	iou
108	Southern Company Services, Inc.	g	John Ciza	iou
109	Southern Company Services, Inc.	m	Joel Dison	iou
110	Southern Company Services, Inc.	t	Joshua Jenkins, Terry Coggins, JT Wood, James Y. Busbin, Corey Sellers, Antonio Grayson	iou
111	Southwest Power Pool	i	Carl Monroe, Michael Desselle, Charles Yeung	
112	Southwest Transmission Cooperative, Inc.	t	James Burson	muni
113	Southwestern Power Administration	t	Tracey Stewart	fed
114	SunGard	ts	Andrew Tritch, Rick Lentz	
115	Tenaska, Inc.	g	Scott Helyer, William Simpson	merc
116	Tennessee Valley Authority	g	Kathy York	fed
117	Tennessee Valley Authority	m	Belinda Thornton, Valerie Crockett	fed
118	Tennessee Valley Authority	t	Chuck Feagans	fed
119	Tri-State Generation and Transmission Association, Inc.	t	Carla Javornik, Doug Reese	muni
120	Tri-State G&T Association, Inc.	g	Janelle Marriott	muni
121	Tucson Electric Power Company	t	Raquel Aguilar, Judy Fregoso, Ed Beck, Amy	iou

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	Organization	Seg[1]	Contact	Sub-Seg[2]
			Welander	
122	United Illuminating Company, The	t	Rose Pysh	iou
123	Utility Integration Solutions, Inc.	ts	Scott Coe	
124	Vermont Public Power Supply Authority	g	William J. Gallagher	muni
125	Vermont Public Service Board	e	Pam Stonier	reg
126	We Energies (Wisconsin Electric)	d	Linda Horn	iou
127	We Energies (Wisconsin Electric)	g	James R. Keller	iou
128	Westar Energy, Inc.	g	Shah Hossain, Grant Wilkerson	iou
129	Western Area Power Administration	t	JB Hite	fed
130	Western Area Power Administration	m	Jeffrey Ackerman	fed
131	Western Electricity Coordinating Council	t	Michelle Mizumori, Craig L. Williams	at large
132	Wisconsin Public Service Corporation	g	Christopher Plante, Charles W. Severance, Neal Balu	iou
133	WPPI Energy	d	Mike Stuart	muni
134	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	Dominion Retail, Inc.	s	Richard A. Zollars	
7	Duke Energy Corp	d	Dan Jones	
8	Exelon Energy	s	Sheree M. Petrone	
9	Integrys Energy Group, Inc.	d	Tom Aridas, Ken Thiry	
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	SouthStar Energy Corp	s	Michael Braswell, Joseph C. Monroe	
16	Sprague Energy Corp.	s	Paul Scoff	
17	Systrends USA	s	Dave Darnell	
18	UGI Utilities, Inc.	d	Paul Szykman	
19	Vectren Retail, LLC	s	Tami Wilson	

North American Energy Standards Board
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Home Page: www.naesb.org

July 25, 2011
Via email and posting

TO:	**NAESB Executive Committee (EC) Members, posting for interested parties**
FROM:	NAESB Office
cc:	EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below
RE:	NAESB Triage Actions Pending for Requests No. R11013 – R11015

Dear Triage Subcommittee and EC members,

We have three requests to triage –R11013 through R11015 -- provided below as hyperlinks. The NAESB office recommends the following assignments to the quadrants and subcommittees:

For R11013, submitted by Kelly Brooks on behalf of Williston Basin Interstate Pipeline Company:

> This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add data elements to NAESB WGQ Standard Nos. 1.4.1 (Nominations), 1.4.3 (Request for Confirmation), 1.4.4 (Confirmation Response), 1.4.5 (Scheduled Quantities), 1.4.6 (Scheduled Quantity for Operator), 2.4.3 (Allocation) and 3.4.1 (Invoice), which would allow the service requestor to designate it should be assigned the WGQ Business Practices Subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the subcommittee.

For R11014, submitted by Jesse Hurley on behalf of Shift Research

> This request is (1) found within scope; (2) to be assigned to the Wholesale Electric Quadrant (WEQ); and (3) because it is a request to add a authorized certification authority standard to the PKI WEQ-012 body of standards, it should be assigned the WEQ PKI standards development subcommittee. In discussions with the chair, who has the authority to create new subcommittees, she will create subcommittee to address PKI standard, and Jim Buccigross of the WEQ EC has graciously agreed to chair the newly created subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the newly created subcommittee. The work of the subcommittee should be coordinated with the Board Certification Committee.

For R11015, submitted by Jamshid Afnan on behalf of ISO New England, Midwest ISO and Tennessee Valley Authority:

> This request is (1) found within scope; (2) to be assigned the Wholesale Electric Quadrant (WEQ); and (3) because it is a request to review, and revise where needed, the PKI WEQ-012 body of standards, it should be assigned the WEQ PKI standards development subcommittee as noted above in the proposed disposition for R11014. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the newly created subcommittee. The work of the subcommittee should be coordinated with the Board Certification Committee.

If you have any questions on a specific request, please contact the requestor directly -- the email address is provided as a link with the request. If you have any concerns on the above actions, please respond via email with your concern stated, and we will convene a conference call for its resolution. Comments may certainly be provided and will be posted on the Triage Subcommittee page of the NAESB web site. If no concerns are raised, then on Monday, August 7, the dispositions as noted above will be considered approved.

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August 8, 2011
Via email and posting

TO:	**NAESB Executive Committee (EC) Members, posting for interested parties**
FROM:	NAESB Office
cc:	EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below
RE:	NAESB Triage Actions Taken for Request Nos. R11013 – R11015

Dear Triage Subcommittee and EC members,

Several requests were sent out for review and determination of disposition on July 25 – Request Nos. R11013, R11014, and R11015. There were no requests for conference call for discussion. The requests were all triaged with approval in August 7, as follows:

For R11013, submitted by Kelly Brooks on behalf of Williston Basin Interstate Pipeline Company:

> This request is (1) found within scope; (2) to be assigned to the Wholesale Gas Quadrant (WGQ); and (3) because it is a request to add data elements to NAESB WGQ Standard Nos. 1.4.1 (Nominations), 1.4.3 (Request for Confirmation), 1.4.4 (Confirmation Response), 1.4.5 (Scheduled Quantities), 1.4.6 (Scheduled Quantity for Operator), 2.4.3 (Allocation) and 3.4.1 (Invoice), which would allow the service requestor to designate it should be assigned the WGQ Business Practices Subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the subcommittee.

For R11014, submitted by Jesse Hurley on behalf of Shift Research

> This request is (1) found within scope; (2) to be assigned to the Wholesale Electric Quadrant (WEQ); and (3) because it is a request to add a authorized certification authority standard to the PKI WEQ-012 body of standards, it should be assigned the WEQ PKI standards development subcommittee. In discussions with the chair, who has the authority to create new subcommittees, she will create subcommittee to address PKI standard, and Jim Buccigross of the WEQ EC has graciously agreed to chair the newly created subcommittee. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the newly created subcommittee. The work of the subcommittee should be coordinated with the Board Certification Committee.

For R11015, submitted by Jamshid Afnan on behalf of ISO New England, Midwest ISO and Tennessee Valley Authority:

> This request is (1) found within scope; (2) to be assigned the Wholesale Electric Quadrant (WEQ); and (3) because it is a request to review, and revise where needed, the PKI WEQ-012 body of standards, it should be assigned the WEQ PKI standards development subcommittee as noted above in the proposed disposition for R11014. While there was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the newly created subcommittee. The work of the subcommittee should be coordinated with the Board Certification Committee.

If you have any questions on a specific request, please contact the requestor directly -- the email address is provided as a link with the request. The noted dispositions for the requests and the requests themselves were forwarded to the Triage Subcommittee and EC members on July 25. The review and comment period concluded on August 7 and as there were no dissents or comments requiring amendments, the requests were considered assigned as noted. As such, the requests are considered in scope and assigned to the indicated subcommittees for development.

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NAESB UPDATE: VERSION 2.1 – WHOLESALE GAS QUADRANT (WGQ)
JULY 26, 2011

ACTIONS TO BE APPLIED TO WGQ VERSION 2.0 TO CREATE WGQ VERSION 2.1:

Version 2.0 was published on November 30, 2010.

2011-12:

Final Actions:

R10009 - Add sender's option data element "Open Season ID" to Transactional Reporting – Firm Transportation – NAESB WGQ Standard No. 5.4.21 approved by the WGQ Executive Committee May 19, 2011.
Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r10009.doc - *Ratified July 1, 2011*

R10003 – This request proposes the addition of two new data elements "Discount Begin Date" and "Discount End Date" in the following Transaction Datasets: Transactional Reporting – Capacity Release, NAESB WGQ Standard No. 5.4.20 and Transactional Reporting – Firm Transportation, NAESB WGQ Standard No. 5.4.21. – approved by the WGQ EC via Notational Ballot on December 20, 2010
Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r10003.doc – *Ratified April 18, 2011*

R09016 – Add Rate Schedule data element to the Bid Upload and Bid Download datasets and change conditionality of Location data for Offer Upload/Download datasets or add code values to allow a dummy agenda – approved by the WGQ EC via Notational Ballot on December 20, 2010
Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_wgq_r09016.doc – *Ratified April 18, 2011*

R09018 - Add MA data element Path Rank in the Nominations data set and corresponding error message in the Nom QR as approved by the WGQ Executive Committee on February 3, 2011.
Final Action: http://www.naesb.org/member_login_check.asp?doc=fa_wgq_r09018.doc - *Ratified March 17, 2011*

R10007 - Change the Offer, Bid and Award downloads to have the ability to communicate multiple indexed rates for a given offer.
Final Action: (**no changes necessary**) http://www.naesb.org/pdf4/wgq_r10007_rec_123010.doc - Approved by the WGQ EC on February 3, 2011 ***(No further action needed)***

Recommendations:

C11002: Clarification or interpretation request: Clarify the effects of Bidder Lesser Quantity Indicator on the disclosure of minimum condition elements for EBB / EDI Download portion of NAESB Standard Number 5.4.25. Does the Offer's Disclose Indicator or Releasing Shipper Lesser Quantity Indicator have any effect on the disclosure of the minimum condition elements for Bids.
Recommendation: http://www.naesb.org/pdf4/c11002_rec.docx
Request for Comments: http://www.naesb.org/pdf4/wgq_072611_reqcom.doc - *Due August 26, 2011*
(*NOTE: The portion of clarification request C11002 determined to be a request for minor correction and transferred to the Information Requirements Subcommittee has been assigned minor correction number MC11022: http://www.naesb.org/pdf4/wgq_mc11022.doc.*)

C11003: Clarification or interpretation request: Clarify the effects of Disclosure Indicator, Minimum Rate Disclosure Indicator, Releasing Shipper Lesser Quantity Indicator, and Shorter Term Indicator on the disclosure of minimum condition elements for EBB / EDI Download portion of NAESB Standard Number 5.4.24.
Recommendation: http://www.naesb.org/pdf4/c11003_rec.docx
Request for Comments: http://www.naesb.org/pdf4/wgq_072611_reqcom.doc - *Due August 26, 2011*
(*NOTE: The portion of clarification request C11003 determined to be a request for minor correction and transferred to the Information Requirements Subcommittee has been assigned minor correction number MC11022: http://www.naesb.org/pdf4/wgq_mc11022.doc.*)

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NAESB UPDATE: VERSION 2.1 – WHOLESALE GAS QUADRANT (WGQ)
JULY 26, 2011

R11004 (MC11001-04) - For NAESB WGQ Version 2.1, add the code values 'Non-Renewal Charge' and 'AOS' for the data element "Rate Identification Code" in data sets: Transactional Reporting – Capacity Release (NAESB WGQ Standard No. 5.4.20), Transactional Reporting – Firm Transportation (NAESB WGQ Standard No. 5.4.21), Offer (NAESB WGQ Standard No. 5.4.24), Bid (NAESB WGQ Standard No. 5.4.25) and Award Download (NAESB WGQ Standard No. 5.4.26).
Recommendation: http://www.naesb.org/pdf4/wgq_mc11001-04_r11004_rec.doc
Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc - *Due August 11, 2011*

R10005- Modify 5.3.26 to eliminate possible disputes over consequences associated with Bid Basis' not selected by Releasing Shipper
Recommendation: http://www.naesb.org/pdf4/r10005_rec.doc
Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc - *Due August 11, 2011*

R09008 - Add two business conditional data elements to the Offer Upload, NAESB WGQ Standard 5.4.7 for (1) Responsibility for Out of Path Overrun and (2) Out of Path Location Changes. These data elements should be conditional in standards 5.4.1 and 5.4.3
Recommendation: http://www.naesb.org/pdf4/r09008_rec.doc
Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc - *Due August 11, 2011*

R09009 - Add four business conditional data elements to the imbalance trading NAESB WGQ data sets 2.4.11—2.4.16
Recommendation: http://www.naesb.org/pdf4/r09009_rec.doc
Request for Comments: http://www.naesb.org/pdf4/wgq_071111reqcom.doc - *Due August 11, 2011*

2011 WGQ Annual Plan Item 6 – **Decline** to implement any revisions or modification to 2006 NAESB Base Contract after industry input and discussion under Annual Plan Item 6. "Review typical industry Special Provisions to the NAESB Base Contract for consideration to be integrated into the NAESB Base Contract. Review is to include corresponding updates to other related documents (e.g. Canadian Addendum, ISDA Amendment and Model Credit Support Addendum and Frequently Asked Questions)"
Recommendation: http://www.naesb.org/pdf4/wgq_2011_ap_6_rec_070611.doc
Request for Comments: http://www.naesb.org/pdf4/wgq_070611reqcom.doc - *Due August 8, 2011*

C10001 - Clarification of the word Tariff under Informational Posting. NAESB WGQ Standard No. 4.3.23 does not specify if the category Tariff under Informational Posting includes negotiated rates, non-conforming agreements, Volume 2s, and X-rate schedules within the definition.
Recommendation: http://www.naesb.org/member_login_form.asp?doc=wgq_rat063011_c10001_rec.doc - Approved by the WGQ EC via Notational Ballot on May 19, 2011 *(Ratification period ends August 1, 2011)*

Minor Corrections:

MC10038 - For NAESB WGQ Version 2.1, additional code values for the data elements Transaction Type and Reduction Reason Code in the following data sets as appropriate: Nomination (1.4.1), Confirmation Response (1.4.4), Scheduled Quantity (1.4.5), Scheduled Quantity for Operators (1.4.6), and Confirmation Response data sets as needed to support these requirements. – approved by the WGQ EC via Notational Ballot on January 18, 2011.
Recommendation: http://www.naesb.org/pdf4/wgq_mc10038_rec_011811.doc *(Effective date April 25, 2011)*

MC10040 - For NAESB WGQ Version 2.1, NAESB WGQ Standard No. 0.4.2 – Operational Capacity, NAESB WGQ Standard No. 1.4.1 – Nomination, NAESB WGQ Standard No. 1.4.3 – Request for Confirmation, NAESB WGQ Standard No. 1.4.4 – Confirmation Response, NAESB WGQ Standard No. 1.4.5 – Scheduled Quantity, NAESB WGQ Standard No. 1.4.6 – Scheduled Quantity for Operator, NAESB WGQ Standard No. 5.4.20 – Transactional Reporting – Capacity Release, NAESB WGQ Standard No. 5.4.21 – Transactional Reporting – Firm

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Transportation, NAESB WGQ Standard No. 5.4.24 – Offer, NAESB WGQ Standard No. 5.4.25 – Bid, and NAESB WGQ Standard No. 5.4.26 – Award Download. – approved by the WGQ EC via Notational Ballot on January 18, 2011.
Recommendation: http://www.naesb.org/pdf4/wgq_mc10040_rec_011811.doc *(Effective date April 25, 2011)*

MC11005 – For NAESB WGQ Version 2.1, This request proposes the addition of 4 code values for the data element "Rate Identification Code" in the following datasets for the NAESB WGQ Version 2.0 release: NAESB WGQ Standard 5.4.20 – Transactional Reporting – Capacity Release and NAESB WGQ Standard 5.4.21 – Transactional Reporting – Firm Transportation. – approved by the WGQ EC via Notational Ballot on April 8, 2011.
Recommendation: http://www.naesb.org/pdf4/wgq_mc11005_rec_040811.doc *(Effective date May 13, 2011)*

MC10004/MC10013 – For NAESB WGQ Version 2.1, Add additional Charge Type and Service Requestor Level Charge/Allowance Amount Descriptor code values to NAESB WGQ Standard No. 3.4.1 as approved by the WGQ Executive Committee via Notational Ballot on April 29, 2011.
Recommendation: http://www.naesb.org/pdf4/wgq_mc10004_mc10013_rec_042911.doc *(Effective date June 16, 2011)*

MC11013 – For NAESB WGQ Versions 1.9 and 2.0, Minor Correction of usage for data element Special Terms and Miscellaneous Notes in the NAESB WGQ Standard No. 5.4.25 – Bid approved by the WGQ EC on May 5, 2011.
Recommendation: http://www.naesb.org/pdf4/wgq_mc11013_mc11014_rec_050511.doc *(Effective date June 3, 2011)*

MC11014 – Errata for miscellaneous corrections to NAESB WGQ Standards Versions 1.9 and 2.0 approved by the WGQ EC on May 5, 2011.
Recommendation: http://www.naesb.org/pdf4/wgq_mc11013_mc11014_rec_050511.doc *(Effective date June 3, 2011)*

MC11016 – For NAESB WGQ Version 2.0 and WEQ Version 002.1, Joint WEQ/WGQ Minor Correction to the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing to correspond to modifications made by FERC to its Implementation Guide for Electronic Filing of Parts 25, 154, 284, 300, and 241 Tariff Filings as noted in the FERC eTariff RSS Feed(s), dated April 18, 2011 approved by the WGQ EC on May 5, 2011 and WEQ EC via Notational Ballot on May 20, 2011.
Recommendation: http://www.naesb.org/pdf4/weq_wgq_mc11016.doc *(Effective date June 3, 2011)*

MC11017 – For NAESB WGQ Version 2.0, minor correction to correct the code values for the data element in 'Allowable Re-Release Indicator' in data set, Officer (NAESB WGQ Standard No. 5.4.24).
Recommendation: http://www.naesb.org/pdf4/wgq_mc11017_rec_060711.doc

MC11018 – For NAESB WGQ Version 2.1, minor correction to add one code value for the data element Reduction Reason the data sets, Confirmation Response (NAESB WGQ Standard No. 1.4.4), Scheduled Quantity (NAESB WGQ Standard No. 1.4.5) and Scheduled Quantity for Operator (NAESB WGQ Standard No. 1.4.6).
Recommendation: http://www.naesb.org/pdf4/wgq_mc11018_rec_060711.doc

MC11001-11004 (R11004) – For NAESB WGQ Version 2.1, add the code values 'Non-Renewal Charge' and 'AOS' for the data element "Rate Identification Code" in data sets: Transactional Reporting – Capacity Release (NAESB WGQ Standard No. 5.4.20), Transactional Reporting – Firm Transportation (NAESB WGQ Standard No. 5.4.21), Offer (NAESB WGQ Standard No. 5.4.24), Bid (NAESB WGQ Standard No. 5.4.25) and Award Download (NAESB WGQ Standard No. 5.4.26).

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Recommendation: http://www.naesb.org/pdf4/wgq_mc11001-04_r11004_rec.doc

MC11019 – For WGQ Version 2.1, Add the code values 'Swing Service Overtake' and 'Unauthorized Take' for the data element "Transaction Type" in the following data sets: NAESB WGQ Standard No. 2.4.3 – Allocation, NAESB WGQ Standard No. 2.4.4 – Shipper Imbalance and NAESB WGQ Standard No. 3.4.1 – Transportation/Sales Invoice.
Minor Correction Request: http://www.naesb.org/pdf4/wgq_mc11019.doc

MC11020 – For NAESB WGQ Version 2.0, Minor correction of inadvertent typographical error in published NAESB Standard 6.3.1 - NAESB Base Contract for Sale and Purchase of Natural Gas dated September 5, 2006.
Recommendation: http://www.naesb.org/pdf4/wgq_mc11020.doc

MC11021 – For NAESB WGQ Version 2.1, add the code value "Reservation/Enhanced Nomination Service" for data element "Transaction Type" in data set, Transportation/Sales Invoice (NAESB WGQ Standard No. 3.4.1).
Minor Correction Request: http://www.naesb.org/pdf4/wgq_mc11021.doc

MC11022 – For NAESB WGQ Version 2.0, minor correction to the conditions associated with the download of the Bid (NAESB WGQ Standard No. 5.4.25) for the following data elements: Bid Minimum Quantity - Contract and Bid Minimum Quantity – Location. Such review should consider the Bidder's selection in the Bidder Lesser Quantity Indicator data element. Minor correction to the conditions associated with the download of the Offer (NAESB WGQ Standard No. 5.4.24) for the following data elements: Minimum Offer Quantity – Contract, Minimum Offer Quantity – Location, Minimum Term, Minimum Acceptable Percentage of Maximum Tariff Rate, and Minimum Acceptable Rate. Such review should consider the Releaser's selection in the Disclose Indicator, Releasing Shipper Lesser Quantity Indicator, Shorter Term Indicator, and Minimum Rate Disclosure Indicator.
Minor Correction Request: http://www.naesb.org/pdf4/wgq_mc11022.doc

MC11023 – Errata for NAESB WGQ Version 2.0 - Correct the Data Element Cross Reference to ASCX12 for the N1 sub-detail usages for the data elements Upstream Identifier Code/Upstream Identifier Proprietary Code and Downstream Identifier Code/Downstream Identifier Proprietary Code in the column 'Usage with Nominator's Tracking ID P N T U' from 'nu nu nu nu' to 'M C nu C'
Recommendation: http://www.naesb.org/pdf4/wgq_mc11023.doc

MC11024 – For NAESB WGQ Version 2.0, minor correction to add the code value "Kansas Ad Valorum Tax Refund" for data element "Charge Type" in data set, Transportation/Sales Invoice (NAESB WGQ Standard No. 3.4.1).
Minor Correction Request: http://www.naesb.org/pdf4/wgq_mc11024.docx

MC11006 – For NAESB WGQ Version 2.1, minor correction to add a new Nomination Quick Response Validation Codes - To the Nomination Quick Response document (1.4.2), add new Nominations Quick Response Validation Codes (Sub-detail).
Minor Correction Request: http://www.naesb.org/pdf4/wgq_mc11006.doc

MC11007 – For NAESB WGQ Version 2.1, minor correction to NAESB WGQ Standard No. 5.4.21: Transactional Reporting - Firm, add a code value to the Sender's Option data element "Capacity Type Indicator" for capacity that is "Primary thru Storage".
Minor Correction Request: http://www.naesb.org/pdf4/wgq_mc11007.doc

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NAESB UPDATE: VERSION 2.1 – WHOLESALE GAS QUADRANT (WGQ)
JULY 26, 2011

TIMELINE:

- Version 2.1 is scheduled for publication in July 2012.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.

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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
AUGUST 9, 2011

ACTIONS TO BE APPLIED TO WEQ VERSION 002.1 TO CREATE WEQ VERSION 002.2:

Version 002.1 was published on March 11, 2009.

2009-10:

Final Actions:

2008 WEQ Annual Plan Item 5(a) – Review and develop business practice standards to support DR and DSM-EE programs – Ratified March 16, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2008_api5a.doc *(New WEQ-015)*

2009 WEQ Annual Plan Item 3(d) – Order 717, Standards of Conduct – Ratified June 15, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_api_3d.doc *(WEQ-001. WEQ-002, WEQ-003)*

2009 WEQ Annual Plan Item 2(a)(ii)(3) – Rollover Rights on Redirect on a Firm Basis – Ratified July 27, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_ap_2aii3.doc (*WEQ-001, WEQ-002, WEQ-003, WEQ-013)*

2009 WEQ Annual Plan Item 1(a), 3(a)(vii)/R05020 – Modifications to WEQ-004 Coordinate Interchange as approved by the WEQ EC on October 27, 2009 – Ratified December 14, 2009 - http://naesb.org/member_login_form.asp?doc=fa_weq_2009_api_1a_3avii_r05020.doc *(WEQ-001, WEQ-002, WEQ-003, WEQ-004, WEQ-013)*

Attachment: http://naesb.org/member_login_form.asp?doc=fa_weq_2009_api_1a_3avii_r05020_attach.doc

2009 WEQ Annual Plan Item 5(b) – Modify NAESB definition to address internal inconsistencies and inconsistencies with the NERC glossary – approved by the WEQ EC on February 2, 2010 – Ratified March 24, 2010 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_api5b.doc

2009 WEQ Annual Plan Items 5(a)(2), 5(i)/R08004/R09011 – Multiple Annual Plan Items affecting WEQ-011 Gas/Electric Coordination – Approved by the WEQ EC on June 11, 2010 via Notational Ballot. – Ratified July 15, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2009_api_5a2_5i_r08004_r09011.doc
Attachments:
http://www.naesb.org/member_login_form.asp?doc=fa_weq_2009_api_5a2_5i_r08004_r09011_attach1.doc

2009 WEQ Annual Plan Items 3(a)(ii)(1)/R07013 - Develop a Confidentiality Agreement - http://www.naesb.org/pdf4/weq_2009_api_3aii1_r07013_rec.doc - Approved by the WEQ EC on May 4, 2010 ***(No further action needed)***

2010 WEQ Annual Plan Item No. 6.a - Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03 as revised by the WEQ EC on July 7, 2010 – Ratified August 21, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_6a.doc

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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
AUGUST 9, 2011

2010 WEQ Annual Plan Item No. 6.b - Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04 as revised by the WEQ EC on July 7, 2010 – Ratified August 21, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_6b.doc

2010 WEQ Annual Plan Item No. 6.c - Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09 as revised by the WEQ EC on July 7, 2010 – Ratified August 21, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_6c.doc

2010 WEQ Annual Plan Item 6d – Business Practices and Information Models to Support Priority Action Plan 10 – Standardized Energy Usage Information as approved by the WEQ EC on October 29, 2010 – Ratified November 29, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_ap_6d.doc

2010 WEQ Annual Plan Item 1.a.i – Interim Solution for Parallel Flow Visualization as revised by the WEQ EC on October 26, 2010 and approved via notational ballot on November 3, 2010 – Ratified December 6, 2010 - http://www.naesb.org/member_login_form.asp?doc=fa_weq_2010_api_1ai.doc

2010 WEQ Annual Plan Item 6 (a-c) – Master Data Requirements List for Standards associated with NIST PAP03 and PAP09 as reviewed, revised and subsequently approved via notational ballot on February 18, 2011 by the WEQ EC – Ratified March 21, 2011: http://www.naesb.org/member_login_form.asp?doc=fa_2010_weq_api_6_a-c.doc

2010 WEQ Annual Plan Item 6a(ii) – Phase 2: Requirements Specifications for Common Electricity Product and Pricing Definition for NIST PAP03 as reviewed, revised and subsequently approved via notational ballot on February 18, 2011 by the WEQ EC – Ratified March 21, 2011: http://www.naesb.org/member_login_form.asp?doc=fa_2010_weq_api_6_a_ii.doc

2010 WEQ Annual Plan Item 6b – Phase 2: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions for NIST PAP04 as reviewed, revised and subsequently approved via notational ballot on February 18, 2011 by the WEQ EC – Ratified March 21, 2011: http://www.naesb.org/member_login_form.asp?doc=fa_2010_weq_api_6_b_ii.doc

2010 WEQ Annual Plan Item 6c – Phase 2: Requirements Specifications for Wholesale Standard DR Signals for NIST PAP09 as reviewed, revised and subsequently approved via notational ballot on February 18, 2011 by the WEQ EC – Ratified March 21, 2011: http://www.naesb.org/member_login_form.asp?doc=fa_2010_weq_api_6_c_ii.doc

2010 WEQ Annual Plan Items 4a and 4b - Review and develop business practice standards to support DR and DSM-EE programs (DR Phase 2) as reviewed, revised and subsequently approved via notational ballot on February 18, 2011 by the WEQ EC – Ratified March 21, 2011: http://www.naesb.org/member_login_form.asp?doc=fa_2010_weq_api_4a_4b.doc

2010 WEQ Annual Plan Item 4d - Business Practice Standards for Measurement Verification of Energy Efficiency Products as approved by the WEQ EC via notational ballot on April 8, 2011 – Ratified May 13, 2011. Recommendation: http://www.naesb.org/member_login_form.asp?doc=fa_2010_weq_api_4d.doc

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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
AUGUST 9, 2011

Recommendations:

2009 WEQ Annual Plan Item 2(a)(i)(1-8) – Develop business practice standards to better coordinate the use of the transmission system among neighboring transmission providers. Such business practice standards would be based on recommendations from NERC's Long Term ATC/AFC Task Force and would involve revised procedures for the ATC calculation and/or revised protocols as determined by the final order. Development is using joint standards development process with NERC. Request R050004 was expanded to include the Order No. 890 (Docket Nos. RM05-25-000 and RM05-17-000) and Order No. 890-A (Docket Nos. RM05-17-001, 002 and RM05-25-001, 002), "Preventing Undue Discrimination and Preference in Transmission Services," issued April 11, 2007). Group 3: Network Service on OASIS – Recommendation currently under development by the WEQ OASIS Subcommittee http://naesb.org/weq/weq_oasis.asp

2009 Annual Plan Item 2.a.i.1 through 2.a.i.8 and 3.a.i - Network Service on OASIS – Recommendation currently under development by the WEQ OASIS Subcommittee.
Draft Recommendation: http://www.naesb.org/pdf4/weq_oasis062110reqcom_a1.doc
Request for Informal Comments - http://www.naesb.org/pdf4/weq_oasis062110reqcom.doc - *comment period ended July 12, 2010*

2010 WEQ Annual Plan Item 1.d – Monitor and develop NAESB business practices as needed to complement NERC reliability standards for FAC-012 and FAC-013
Recommendation: http://www.naesb.org/pdf4/weq_2010_api_1d_rec.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_092410_reqcom.doc - *comment period ended October 25, 2010*

2011 WEQ Annual Plan Items 2.a.iii.1 through 2.1.iii.3 - Service Across Multiple Transmission Systems (SAMTS) as reviewed and subsequently approved by the WEQ Executive Committee via notational ballot on July 8, 2011.
Recommendation:
http://www.naesb.org/member_login_form.asp?doc=weq_rat071111_weq_2011_ap_2aiii1_to_2aiii3_rec.doc
- *ratification period ends August 11, 2011*

2011 WEQ Annual Plan Item 2.a.iv.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. (*WEQ OASIS Subcommittee recommendation – No action to be taken*)
Recommendation: http://www.naesb.org/pdf4/weq_2011_api_2_a_iv_1_rec.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_080911_reqcom.doc - *comment period ends September 8, 2011*

2011 WEQ Annual Plan Item 7.a - Review standards 001-14.1.3 and 001-15.1.2 based on FERC Order No. 676-E.
Recommendation: http://www.naesb.org/pdf4/weq_2011_api_7a_rec.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_080911_reqcom.doc - *comment period ends September 8, 2011*

2011 WEQ Annual Plan Item 5.a / R08001 / R08002 / R08003 / R08005 - Make consistency changes to Version 2.2.
Recommendation: http://www.naesb.org/pdf4/weq_2011_api_5a_r08001_r08002_r08003_r08005_rec.doc
Request for Formal Comments - http://www.naesb.org/pdf4/weq_080911_reqcom.doc - *comment period ends September 8, 2011*

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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
AUGUST 9, 2011

Minor Corrections:

Minor Correction MC11016, Submitted by D. Rager, NAESB – For NAESB WGQ Version 2.0 and WEQ Version 002.1, Joint WEQ/WGQ Minor Correction to the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing to correspond to modifications made by FERC to its Implementation Guide for Electronic Filing of Parts 25, 154, 284, 300, and 241 Tariff Filings as noted in the FERC eTariff RSS Feed(s), dated April 18, 2011 approved by the WGQ EC on May 5, 2011 and WEQ EC via Notational Ballot on May 20, 2011: http://www.naesb.org/pdf4/weq_wgq_mc11016_052011.doc - *(Effective date June 23, 2011)*

Minor Correction MC11015, Submitted by Bob Harshbarger, Puget Sound Energy – For NAESB WEQ Version 002.1, Minor Correction to NAESB WEQ Electronic Tagging – Functional Specifications, Version 1.8.1 - Correct links to e-Tag 1.8.1 XML Schema and WECC web site in NAESB WEQ Electronic Tagging – Functional Specifications, Version 1.8.1 approved by the WEQ EC via Notational Ballot on May 20, 2011: http://www.naesb.org/pdf4/weq_mc11015_052011.doc - *(Effective date June 23, 2011)*

Minor Correction MC11009, Submitted by Ed Skiba, Midwest ISO – For NAESB WEQ Version 002.2, Minor Correction to Diagram for Meter Before/Meter After Definition (WEQ-000) approved by the WEQ EC via Notational Ballot on April 8, 2011: http://www.naesb.org/pdf4/weq_mc11009_rec_040811.doc *(Effective date May 13, 2011)*

Minor Correction MC11011, Submitted by Kathy York, Jim Castle and Ed Skiba – For NAESB WEQ Version 002.1, Minor Correction to Manual Time Error Correction (WEQ-006) - to suspend the NAESB Business Practice Standards for WEQ 006-1 through WEQ 006-12 based on the motion approved by the NERC Operating Committee at their March 9, 2011 meeting approved by the WEQ EC via Notational Ballot on April 8, 2011: http://www.naesb.org/pdf4/weq_mc11011_rec_040811.doc *(Effective date May 13, 2011)*

Minor Correction MC10041, Submitted by D. Rager, NAESB - For NAESB WGQ Version 2.0 and WEQ Version 002.1, Joint WEQ/WGQ Minor Correction to the NAESB WEQ/WGQ Implementation Guide for Electronic Tariff Filing to correspond to modifications made by FERC to its Implementation Guide for Electronic Filing of Parts 25, 154, 284, 300, and 241 Tariff Filings as noted in the FERC eTariff RSS Feed(s), dated October 8, 2010 approved by the WEQ and WGQ ECs via Notational Ballot on December 20, 2010: http://www.naesb.org/pdf4/weq_wgq_mc10041_122010.doc *(Effective date February 3, 2011)*

Minor Correction MC10033, Submitted by Y. Coleman, Bonneville Power Administration – For NAESB WEQ Version 002.1, WEQ-003 Data Dictionary and WEQ-013 Implementation Guide approved by the WEQ EC on October 26, 2010: http://www.naesb.org/pdf4/weq_mc10033_102610.doc *(Effective date January 3, 2011)*

Minor Correction MC10032, Submitted by E. Skiba, JT. Wood, N. Saini, M.Otondo – For NAESB WEQ Version 002.1, WEQ 2010 AP Item 1.a.i – Interim Solution for Parallel Flow Visualization revised/approved by the WEQ EC on October 26, 2010: http://www.naesb.org/pdf4/weq_mc10032_102610.doc *(Effective date January 3, 2011)*

Minor Correction MC10019, Submitted by D. Davis, Williams Gas Pipeline for NAESB WGQ Version 1.9: Joint NAESB WEQ Version 002.1 Standard WEQ-014-A and WGQ Version 1.0 Standard No. 11.4.1 (Implementation Guide for Electronic Tariff Filing) revised/approved by the WEQ EC on August 17, 2010 and the WGQ EC on August 19, 2010: http://www.naesb.org/pdf4/wgq_weq_mc10019_revised.doc *(Effective date October 7, 2010)*

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NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)
AUGUST 9, 2011

Minor Correction MC10031, WEQ-001 Minor Correction to be applied to Version 002.2, Submitted by M. Goldberg, ISO New England Inc. revised/approved by the WEQ EC on August 17, 2010: http://www.naesb.org/pdf4/weq_mc10031_revised.doc *(Effective date October 7, 2010)*

Minor Correction for WEQ-001 to be applied to Versions 002.1 and 002.2 submitted by JT Wood, Southern Company - approved by the WEQ Executive Committee on October 27, 2009: http://www.naesb.org/pdf4/weq_mc111209_attach1_revised.doc *(Effective date December 14, 2009)*

TIMELINE:

- Version 002.2 is scheduled for publication end of third quarter 2011.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.

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NAESB UPDATE: VERSION 1.4 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ)
AUGUST 9, 2011

ACTIONS TO BE APPLIED TO RETAIL VERSION 1.3 TO CREATE RETAIL VERSION 1.4:

Version 1.3 was published on March 31, 2011.

2011-12:

Final Actions:

2011 Retail Annual Plan Item 8(d)/R10012 – Third Party Access to Smart Meter-based Information as approved by the REQ Executive Committee on July 7, 2011.

Final Action: http://www.naesb.org/member_login_form.asp?doc=fa_req_r10012.doc - *Ratified August 8, 2011*

Recommendations:

2011 Retail Annual Plan Item 8(c)/R10008 - Develop standards to support inclusion of OpenADE requirements document into the NAESB Smart Grid standards (R10008), specifically to standardize the exchange of Energy Usage Information.
Recommendation: http://www.naesb.org/pdf4/r10008_rec_070711.docx
Request for Formal Comments due August 8, 2011: http://www.naesb.org/pdf4/req_070711_reqcom.doc

2011 Retail Annual Plan Item 7 – Supplier Marketing Practices.
Recommendation: http://www.naesb.org/pdf4/retail_2011_ap_7_rec.doc
Request for Formal Comments due August 12, 2011: http://www.naesb.org/pdf4/retail_071311_reqcom.doc

Minor Corrections:

TIMELINE:

- Version 1.4 is scheduled for publication in April 2012.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

Month - 4	Subcommittee Recommendations Completed and sent out for comment
Month - 3	EC Actions taken
Month - 2	Ratifications sent out and completes, minor corrections applied
Month - 1	Review of draft publication
Month - 0	Date of Publication.

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August 1, 2011

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

FROM: Cory Galik Cummings, NAESB Staff Attorney

RE: Draft Minutes of the NAESB Board Meeting –June 23, 2011

NAESB BOARD OF DIRECTORS MEETING
Marriott Hotel, Houston, Texas
Thursday, June 23, 2011 – 9:00 a.m. to 1:00 pm Central
FINAL MINUTES

1. Administration and Welcome

Ms. Crockett welcomed the Board members and guests in the room and on the phone. Ms. Cummings provided the antitrust guidance and called the roll of the NAESB Board members. Quorum was established.

2. Adoption of the Agenda and Minutes

Mr. Hurley moved, seconded by Mr. Rodriquez, to approve the consent agenda. The motion passed unanimously.

3. Membership and Financial Report

Membership Report: Ms. McQuade reviewed the membership report. She noted that NAESB lost four members this year, but that membership tends to increase through the year.

Financial Report: Ms. Wishart provided the financial report. Spending increases can be attributed to an increase in the number of meetings being held; NAESB hosted 450 meetings by this time last year and has held over 600 so far this year.

4. Reports from Board Committees

Resources: Mr. Booe provided the report of the Resources Committee. He stated that NAESB had a positive gain of three members since the last Board meeting. Access to standards and participation have been the primary drivers for companies to join. Ms. McQuade noted that NAESB staff would be attending the summer NARUC meetings and would be meeting with various state commission staff, which could hopefully increase interest in membership.

Critical Infrastructure Committee: Mr. Burks provided an update of the activities of the Critical Infrastructure Committee. He reviewed the April 15 Critical Infrastructure Committee meeting. He noted that the mission of the committee is to inform the Board of any critical infrastructure issues that may have an impact on NAESB. Mr. Hurley would give a more detailed update in agenda item 6.

Retail Restructuring Update: Mr. Minneman provided the update for the Retail Restructuring Committee. Membership has increased in the Retail Electric Quadrant (REQ) due to the energy efficiency and Smart Grid efforts. The Retail Gas Quadrant (RGQ) membership, however, has remained low. The activities that led to the increase in the REQ are not as relevant to the RGQ. The committee continues to discuss ways in which to increase RGQ membership.

Parliamentary Committee: Ms. Crockett provided the review of the Parliamentary Committee. Since the last Board meeting, the committee has worked on changes to the NAESB operating practices in regards to abstention votes at the EC level and fully staffing of minor corrections for publications. These changes will be presented to the Board for approval in September.

Certification Committee: Mr. Spangler provided the update of the Certification Committee. The committee has met since April to discuss the requirements to become an Authorized Certificate Authority (ACA) for the Public Key

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Infrastructure standards (WEQ-012). He noted that meetings were open to all interested participants. The committee plans to have ACA requirements to the Board for approval in September.

Gas-Electric Coordinating Committee: This subcommittee has not begun to meet. At the last Board meeting, Ms. Crockett asked for volunteers to join the committee. Several Board members have expressed interest but NAESB is awaiting further FERC and National Petroleum Council direction prior to activating the committee.

Managing Committee: Ms. Crockett noted that the Managing Committee has not met since the last Board meeting.

5. Implications of the Dodd-Frank Bill to NAESB

Mr. Sappenfield and Mr. Coggins presented a power point presentation, which contained a great deal of background information and definitions included the bill. Mr. Boswell asked if the bill would only apply to publicly traded companies. Mr. Sappenfield answered that it would apply to anyone who has an end-user derivative, which could include farmers, co-ops, and more. Ms. McQuade asked if there has been any analysis on the number of reports that will be generated once companies begin complying. Mr. Sappenfield answered that the number of reports and their complexity was vastly underestimated. Board members discussed the uncertainty in the bill and how it may impact the market. Mr. Sappenfield noted that several companies were considering a reduction of their activity in an effort to avoid being considered a major swap participant or a swap dealer due to the extra burdens of regulations and requirements over their business activity. The definition of swap dealer is unclear, which may result in the inclusion of many parties that do not currently believe they are swap dealers.

6. Status of pending legislation related to cyber-security that may impact NAESB

Mr. Hurley provided the update. He noted several cyber-attacks, which present the biggest threat to the Department of Defense and intelligence community. He noted several prominent companies that have been the victims of such attacks, including Sega, Citibank, Bank of America, and others. These attacks raise questions about how information is being protected and the need for more laws on data privacy. He stated that the idea of private standards setting is resonating with Congress. Under the Grid Act, FERC could issue final Orders without a notice of proposed rulemaking (NOPR), which will impact the ability of the industry to voice concerns.

7. Update on Rice University's activities related to the energy industry and NASA

Mr. Pena provided the update. He stated that President Obama plans to put together a task force on ocean safety in the Department of the Interior. He noted that the Johnson Space Center, with the end of the NASA shuttle program, has the knowledge and capability to provide this service. The employees at NASA are skilled in safety, reliability and quality assurance, which is vital for the ocean safety work. Ms. McQuade noted that a section of the upcoming National Petroleum Council report related to both onshore and offshore energy production safety and environmental awareness and suggested they would be a valuable resource in this effort.

8. Updates on Specific Efforts

Publications: Ms. Rager provided an update of the NAESB publication schedule. The next WGQ publication, Version 2.1, will occur in July of 2012. The WEQ Version 2.2 is scheduled to be published in September, 2011. The Retail Version 1.4 will be published in April, 2012.

WEQ, Update on FERC Order No. 890 efforts: Ms. York provided an update on the Order No. 890 efforts. The OASIS subcommittee continues its work on Network Integrated Transmission Service (NITS) and the standards for Scheduling of Transmission Service Across Multiple Transmission Systems (SAMTS). During the last quarter, the subcommittee chairs met with the Executive Committee leadership and agreed to focus efforts on the completion of the SAMTS standards. Once those standards were completed, the subcommittee could focus on the NITS standards, which will be voluminous. With that direction, the subcommittee completed the SAMTS standards, which will be voted on June 30. The team held a preliminary teleconference to review the standards and allow industry participants to ask any questions they may have. Thirteen sets of formal comments were received and will be reviewed by the subcommittee prior to the EC vote. The completion date for the NITS standards has been extended to the third quarter of 2011 to allow for the SAMTS work to be completed.

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WEQ/Retail Electric, Update on Demand Response and Demand Side Management: Since the last Board meeting, the WEQ Energy Efficiency recommendation was approved via notational ballot on April 18, 2011 and ratified by membership on May 13, 2011. The Wholesale Electric Energy Efficiency Standards were filed jointly with the Wholesale Electric Demand Response Standards on April 30, 2011. In that filing, NAESB informed the Commission that the Demand Response standards went as far as possible without impacting the ISO/RTO stakeholder process. Any further detail will require a directive from the FERC to do so. With the completion of the Phase 2 Demand Response Model Business Practices, the Retail DR work group has focused its efforts on R10002, which is a request to develop Model Business Practices for Enrollment in Demand Response programs. Mr. Miyaji, of Comverge, supplied the work group with a presentation of Comverge's enrollment process. James Tillett, the original requestor, agreed that Comverge's enrollment process was a good starting point for the work group's efforts. In response to that direction, Phil Precht created process flows to map out the enrollment process to be used in the model business practices. The process flows were revised during the last retail DR work group conference call on June 8. The next Retail DR conference call is scheduled for Wednesday, July 13 from 1:00 to 3:00 pm Central.

The Retail Energy Efficiency work group continues to work on its recommendation. During the May Retail EC meeting, the co-chairs of the work group expressed concern regarding the scope of the recommendation. As the work group was drafting the recommendation there was concern voiced that the scope was too broad, while others thought the scope was not broad enough. There was also concern raised that NAESB's efforts were overlapping the SEE Action effort led by the Department of Energy. A conference call was held between the DOE, NARUC and NAESB to address this concern. During that meeting, it became apparent that there was not redundancy in the two efforts. As a result, several participants volunteered to take the recommendation in its current form and complete a full set of model business practices. The model business practices will be complete in mid-July and a Retail Energy Efficiency work group meeting has been scheduled for July 18 to review the work product at the work group level. A full DSM-EE subcommittee conference call has been scheduled for July 27 from 1 to 3 pm to address any concerns and offer guidance to the Retail EE work group as they complete their work efforts. DOE will be included in the review of the NAESB Retail EE model business practices, to ensure that the efforts are complementary, but not duplicative.

RFP Status for the Electric Industry Registry: Ms. Cummings provided the update. NAESB and OATI continue to work closely to transfer the TSIN registry from NERC to NAESB. OATI has completed the functional specifications, which was approved by both NERC and NAESB, and work has begun on the development of the new webRegistry. A meeting will be scheduled shortly to present the webRegistry timeline to the industry.

Smart Grid Activities: Mr. Booe provided the update. The NAESB staff completed the draft report that will be filed with the FERC and provided to NARUC on the standards developed in response to Priority Action Plans 3, 4, 9 and 10. The report is currently being circulated among the managing committee and informally with FERC and NIST staff. It will be finalized within the next week. The OASIS standards setting organization is still in the process of drafting the specifications based upon NAESB's data requirements for priority action plans 3, 4 and 9. The Energy Usage Information Model developed in response to priority action plan 10 is being evaluated and voted upon by the Smart Grid Interoperability Panel (SGIP) for inclusion in the Catalog of Standards. The voting period closes on July 7. The next SGIP meeting is scheduled for July 12-1^{h} in Montreal and will focus on international collaboration.

The Energy Services Provider Interface Task Force has continued to meet weekly over the last quarter to develop a recommendation in response to REQ AP Item 9.e (the standardization of the Open ADE specification – which is a specification that describes communications between utilities, customers and third party service providers). This standard is considered an extension of the PAP 10 Energy Usage Information Model and is being monitored by leadership within the SGIP. The task force distributed a draft recommendation for an informal comment period and is currently in the process of reviewing the submitted comments and providing resolutions. The task force is working under an expedited schedule to meet its second quarter deadline and plans to vote the recommendation out during the first week of July.

The REQ Data Privacy Task Force, which is responsible for addressing request R10012 to develop model business practices that will set forth standards for the release of consumer information to third parties and the privacy policies

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and practices those third parties should employ, has completed its efforts. The task force unanimously voted out a recommendation on May 19 for a formal comment period which ended on June 20. The task force has scheduled a meeting for Monday, June 27 from 10:00 am to 2:00 pm Central to review the formal comments submitted (6 sets) and provide a set of late comments that will be reviewed by the REQ EC during a single topic review session on June 30 and voted on during a July 7 conference call. This effort was completed by the task force on a truncated timeline of four months at the requests of NARUC and state commission staff members who participated heavily. If approved, the recommendation will become a final action in early August.

Update on Parallel Flow Visualization: Ms. York provided the update. The business practice subcommittee hit a milestone over the last quarter with its work to develop a long-term solution for the Parallel Flow Visualization project. The subcommittee voted to focus on the development of a hybrid method that includes generator prioritization. This decision came after record voting on a subcommittee call, which demonstrates that this work is one of the most important items that the WEQ is working on at this time. The purpose of these standards is to help alleviate curtailment issues by improving the data that is sent to the NERC Interchange Distribution Calculator. With monthly meeting scheduled for the remainder of the year, the subcommittee will focus its work on the development of its recommendation by end of the fourth quarter.

Update on Common Codes: Ms. Davis provided the review. Since the last Board meeting, the WGQ business practice subcommittee has continued to meet to discuss common codes. A survey was completed in which industry feedback noted that common codes were not considered necessary and could be replaced with proprietary codes. A meeting between FERC staff and the WGQ BPS has been scheduled to discuss the changes currently being considered by the subcommittee. FERC feedback is vital to these changes, as common codes are referenced several times throughout FERC regulations.

Update on streamlining WGQ standards: Ms. Davis noted that the first four items in the WGQ annual plan relate to clean up and streamlining of the WGQ standards. It is anticipated that this work will be completed by the July 2012 publication deadline.

Update on development of WGQ Gas Contract: Mr. Sappenfield provided the update. These development efforts were concluded after a survey and discussion on whether to incorporate special provisions into the NAESB gas contract clarified that such changes were not required at this time.

9. Old and New Business

Ms. McQuade stated that NAESB had made several filings in recent weeks. The NAESB office filed the DSM-EE standards with plans to file SAMTS, two minor correction filings and the Smart Grid filings shortly.

Ms. McQuade reviewed the Board meeting schedule for the remainder of 2011.

10. Adjourn

The meeting adjourned at 12:25 pm Central.

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10. 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.	In Person
Randy E. Parker	Global Regulatory Advisor, ExxonMobil Gas and Power Marketing Company	
Catherine Abercrombie	Regulatory Affairs, ConocoPhillips Gas and Power Marketing	
WGQ PIPELINE SEGMENT		
Douglas Field	Manager – Compliance, Southern Star Ventral Gas Pipeline	Phone
Bill Grygar	Vice President, Panhandle Eastern Pipe Line	In Person
Susanna B. Barry	Vice President – Commercial Operations, Tennessee Gas Pipeline Company	In Person
Randy Young	Vice President – Regulatory Compliance and Corporate Services, Boardwalk Pipeline Partners, LP	In Person
Richard Kruse	Senior Vice President, Spectra Energy Transmission	In Person
WGQ LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT		
Craig Colombo	Energy Trader III, Dominion Resources	Phone
Tim Sherwood	Managing Director of Gas Operations and Capacity Planning, AGL Resources	
David W. Hadley	Senior Vice President – Regulatory Affairs, NiSource, Inc.	
WGQ END USERS SEGMENT		
Valerie Crockett	Senior Program Manager – Energy Markets & Policy, Tennessee Valley Authority	In Person
Timothy W. Gerrish	Director of Origination-Energy Marketing and Trading, Florida Power & Light	
Tina Burnett	Natural Gas Resources Administrator, The Boeing Company	In Person
Lori-Lynn C. Pennock	Senior Fuel Supply Analyst, Salt River Project	In Person
Jim Templeton	Principal, Comprehensive Energy Services	
WGQ SERVICES SEGMENT		
Darilyn Jones	Senior Vice President – Risk Control, Sequent Energy Management	In Person
Rusty Braziel	Managing Director, Bentek Energy, LLC	
Marty Patterson	Senior Vice President Commercial Services, American Midstream Partners, LP	
Paul Kahler	Midstream Regulatory Advisor, Cenovus Energy Inc.	
Jeff Miers	Senior Executive (Partner), Accenture LLP	

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10. Board Attendance and Voting Record (Vacancies Omitted)

REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT			
Wendell Miyaji	Senior Director – Systems, Comverge, Inc.		In Person
Jim Minneman	Controller, PPL Solutions LLC		In Person
J Cade Burks	Executive Vice President of ista		In Person
Austin Morris	Managing Partner – Energy, SunGard Consulting Services, LLC		
REQ UTILITIES SEGMENT			
Brandon Stites	Director – Energy Conservation & Advanced Metering, 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
REQ END USERS/PUBLIC AGENCIES SEGMENT			
Kevin Cooney	Managing Director – Energy, Navigant Consulting, Inc.		In Person
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	Phone
Chuck Feagans	Senior Manager, Reliability Policy, Tennessee Valley Authority	Fed/State/Prov.	Phone
Terry Coggins	Manager – Transmission Policy, Southern Company Transmission	IOU	In Person
Mike Montoya	Director of Grid Advancement, Southern California Edison	at large	
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	
Kathy York	Senior Program Manager – Energy Markets, Policy and Compliance Reporting, Tennessee Valley Authority	Fed/State/Prov.	In Person
Lou Oberski	Director – Electric Market Policy, Dominion Resources Services, Inc.	IOU	Phone
Wayne Moore	Regulatory Affairs & Energy Policy Director and Compliance Officer – Generation, Southern Company Services, Inc.	IOU	
Elizabeth Killinger	Senior Vice President – Customer Operations, NRG Energy, Inc.	at large	Phone
Shah Hossain	Senior Regulatory Specialist, Westar Energy, Inc.	at large	In Person

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10. Board Attendance and Voting Record (Vacancies Omitted)

WEQ MARKETERS/BROKERS SEGMENT			
Roy True	Manager of Regulatory and Market Affairs, ACES Power Marketing	Muni/Coop	
Jeff Ackerman	Manager – Colorado River Storage Project Energy Management and Marketing Office, Western Area Power Administration	Fed/State/Prov.	
Gavin Cunningham	Manager – FirstEnergy Solutions Corp.	at large	Phone
Jim Drake	Trading Desk Head – Power, Florida Power & Light	IOU	
R. Scott Brown	Vice President and Director, Exelon Generation Power Team	IOU	Phone
WEQ DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT			
Arthur G. Fusco	Vice President and General Counsel, Central Electric Power Cooperative Inc.	Muni/Coop	In Person
Paul McCurley	Manager – Power Supply, National Rural Electric Cooperative Association	Muni/Coop	
Andrew Rodriquez	Director of Standards Development, North American Electric reliability Corporation (NERC	IOU	In Person
Nelson Peeler	Vice President System Operations, Duke Energy	IOU	Phone
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	
Marie Pieniazek	Consultant, Rep: Energy Curtailment Specialists, Inc.	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
Michael Cleary	Senior Vice President and COO, ERCOT		In Person
Kevin Kirby	Vice President Market Operations, ISO New England, Inc.		Phone
Rana Mukerji	Vice President Market Structures, New York Independent System Operator, Inc. (NYISO)		Phone
Andy Ott	Senior Vice President Marketing, PJM Interconnection, LLC		Phone
Bill Phillips	Vice President Standards Compliance & Strategy, Midwest ISO (MISO)		In Person

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10. Board Attendance and Voting Record (Vacancies Omitted)

Mark Wilson	Director of Corporate Planning, Independent Electricity System Operator (IESO)	Phone
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)	
David A. Wollman	Leader, Smart Grid Team – Standards and Electrical Metrology Groups, National Institute of Standards and Technology (NIST)	Phone
Sylvia Munson	Director – Product Management and Regulatory Compliance, SunGard Energy and Commodities	In Person
Dr. Scott Coe	Vice President, Utility Integration Solutions, Inc. (UISOL)	In Person
RGQ SERVICE PROVIDERS/SUPPLIERS SEGMENT		
Leigh Spangler	President, Latitude Technologies Inc.	In Person
Joseph Monroe	Vice President – External Affairs, SouthStar Energy Services, LLC	In Person
Dave Darnell	President & CEO, Systrends USA	Phone
Greg Lander	President, Capacity Center	Phone
RGQ DISTRIBUTORS SEGMENT		
Alonzo Weaver	Vice President of Engineering and Operations, Memphis Light, Gas & Water Division (APGA)	In Person
Ralph Cleveland	Senior Vice President – Engineering and Operations, AGL Resources, Inc.	Phone
Mike Novak	Assistant General Manager – Federal Regulatory Affairs, National Fuel Gas Distribution	Phone
RGQ END USERS/PUBLIC AGENCIES SEGMENT		

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13. Other Attendance

Name	Organization	Attendance
Jonathan Booe	NAESB	In Person
Bill Boswell	NAESB	In Person
Christopher Burden	Williams Gas Pipeline	Phone
Jim Castle	NYISO	In Person
Cory Cummings	NAESB	In Person
Dale Davis	Williams Gas Pipeline	In Person
Bill Griffith	El Paso Natural Gas	In Person
Annunciata Marino	Pennsylvania Public Utility Commission	Phone
Susan Munson	ERCOT	Phone
Annie McIntyre	Ardua Strategies	In Person
Rae McQuade	NAESB	In Person
Larry Monday	LG&E	In Person
Joelle Ogg	DC Energy	In Person
Emil Pena	Energy and Environmental Systems Institute	In Person
Alan Pritchard	Duke Energy	Phone
Denise Rager	NAESB	In Person
Lisa Simpkins	Constellation Energy Resources	Phone
Marisol Santillan	APS	In Person
Ed Skiba	Midwest ISO	In Person
Rick Smead	Navigant Consulting	In Person
Mark Smith	NRG Energy	In Person
Veronica Thomason	NAESB	In Person
Jill Vaughn	Preferred Legal Services	In Person
Darla Wishart	NAESB	In Person
Charles Yeung	SPP	In Person

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via posting

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

FROM: Jonathan Booe, Deputy Director, NAESB

RE: Meeting Notes for the NAESB Board Critical Infrastructure Committee

DATE: August 2, 2011

Dear Critical Infrastructure Committee Members,

A Critical Infrastructure Committee conference call was held on July 28, 2011. The meeting was called to order at 1:00 pm C. 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 from the July 28, 2011 NAESB Board Critical Infrastructure Committee Meeting

Administrative: Mr. Hurley welcomed the participants to conference call and thanked them for attending. Mr. Booe provided the antitrust guidance and called the roll. Mr. Hurley reviewed the draft agenda and Mr. Gracey made a motion to adopt the agenda as drafted. Mr. Kirby seconded the motion and the motion passed without opposition.

Review Recent Legislative Action Mr. Hurley provided an update of the recent cyber security related legislative activities. He stated that current draft of the bill, which is being circulated around the House floor, has had input from the Commerce Committee, the House Committee on Homeland Security and Senator Reid's internal staff but has not had much scrutiny from other areas of the legislature. He stated that the bill is expected to become higher priority, given the recent Lulzsec and Anonymous activities. He also noted that the bill is going to dovetail with the GRID Act, which give the Department of Homeland Security (DHS) authority to conduct audits of operations of all critical assets. Ms. Barry asked what the bills current status is. Mr. Hurley stated that the bill is still working through the committees he noted earlier.

GRID Act Status Mr. Hurley provided an update of the current status of the GRID Act. Mr. Hurley stated that the Act gives FERC 120 days to review the NERC CIP standards and make a determination on their adequacy. If they are deemed inadequate NERC will be given 180 days to modify the standards, after which, FERC is given authority to issue an emergency rulemaking regarding the standards. He also noted that the Act gives FERC to conduct and EMP study. Mr. Gent stated that he understands the Act gives the FERC power over distributions centers that are deemed critical to the bulk power system despite their current regulatory agency structure. Mr. Gee noted that Act could preempt many of the current jurisdictional constraints. The participants discussed how certain facilities are related to reliability and national security and how difficult it will be to parse out the facilities deemed critical. Mr. Hurley stated that the Act is adopted the definition of Critical Infrastructure used in the Patriot Act, which basically includes any entity attached to the grid.

Discussion of Stuxnet Article Mr. Hurley reviewed the Stuxnet article and noted that the related malware as become more accessible and more effective at infecting systems, including those that do not have an outward facing public network. Ms. McQuade asked how standards development in the area could cascade to NAESB. Mr. Hurley responded that there are vulnerabilities in corporate or business systems that can affect or be integrated into operations systems and affect reliability. Mr. Cleary asked if Stuxnet has evolved beyond the Siemens and step seven applications. Mr. Hurley responded affirmatively and stated that anything that is schema based may be vulnerable. Ms. McQuade asked if any of the recent cyber security breaches have affected the natural gas SCADA systems. Mr. Gee and Ms. Barry responded that they are not aware of any such attacks.

Mr. Hurley stated there is very little authentication included in the NAESB standards other than the OASIS standards and that is important to ensure that companies are building security into their systems. He recommended that NAESB be proactive in conducting security reviews of the standards rather than leaving the task to other departments such as the DHS. Ms. Barry asked if the Committee should recommend the development of a multi-quadrant subcommittee to conduct such a review. Mr. Hurley stated that it would be a good recommendation to the Board of Directors. Mr. Kirby asked why NAESB should review our standards and make modifications or develop new standards if parallel efforts may be underway by NERC, DHS or the DoE. Mr. Hurley stated that under the FTAA that governmental agencies are required to use voluntary industry

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Notes from the July 28, 2011 NAESB Board Critical Infrastructure Committee Meeting

standards when possible. Mr. Kirby suggested that NAESB focus on supporting NERC and developing complementary standards. Ms. McQuade supported Mr. Kirby's recommendation. The participants discussed the importance of maintaining liaisons with NERC and the DHS and keeping all four quadrants involved in any critical infrastructure activity.

Other Business

Mr. Hurley and Ms. McQuade noted that NAESB will host a webinar serious dedicated to critical infrastructure issues as a benefit to our members. The educational seminars will be led by Mr. Hurley and will provide insight into the nature of the emerging threats and the state of the art solutions that can be implemented to address the challenges facing the industry. Ms. McQuade thanked Mr. Hurley as he has agreed to give the webinars free of charge and noted that at lease three weeks notice will be given to encourage participation.

Adjourn:

Mr. Kirby moved to adjourn the meeting at 2:27 pm Central and Mr. Gee seconded the motion. The motion passed without opposition.

Work Papers Provided for the Meeting:

Meeting Related Documents:

- April 15, 2011 meeting notes: http://www.naesb.org/pdf4/bd_cic_041511notes.doc
- GRID Act: http://www.utcinsight.org/content/senate-committee-approves-grid-cyber-security-act-unanimously
- How Digital Detectives Deciphered Stuxnet: http://www.wired.com/threatlevel/2011/07/how-digital-detectives-deciphered-stuxnet/all/1

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Notes from the July 28, 2011 NAESB Board Critical Infrastructure Committee Meeting

CRITICAL INFRASTRUCTURE COMMITTEE MEMBERS

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

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Notes for the July 28, 2011 NAESB Board Critical Infrastructure Meeting

OTHER ATTENDEES

Attendee	Organization
Jonathan Booe	NAESB
Kathryn Burch	Spectra Energy
Christopher Burden	Williams Gas Pipeline
John Ciza	Southern Company
Jianmei Chai	Consumers Energy Company
Ed Davis	Entergy
Anne Delanola	ERCOT
Richard Ishikawa	Southern California Edison
Kirk Kubousek	OATI
Annunciata Marino	Pennsylvania Public Utility Commission
Kevin Money	Iroquois
Candy Morakinyo	We Energies
Joe Morgan	National Fuel Gas
Ed Skiba	Midwest ISO
Patrick Tronnier	OATI
Craig Williams	WECC

NORTH AMERICAN ENERGY STANDARDS BOARD
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July 7, 2011

Filed Electronically

Ms. Kimberly Bose
Secretary
Federal Energy Regulatory Commission
888 First Street N.E., Room 1A
Washington, D.C. 20585

RE: Submittal of Smart Grid Related Standards (Docket No. RM05-5-000, et al)

Dear Ms. Bose:

The North American Energy Standards Board ("NAESB") submits this report to the Federal Energy Regulatory Commission ("FERC" or "Commission") regarding the NAESB smart grid standards developed at the request of the National Institute of Standards and Technology ("NIST") and the Smart Grid Interoperability Panel ("SGIP") in response to priority action plans 03, 04, 09 and 10. This report is voluntarily submitted by NAESB in Docket No. RM05-5-000. The NAESB smart grid standards related to Priority Action Plan 10 were ratified by NAESB membership on November 29, 2010 and the NAESB smart grid standards related to Priority Action Plans 03, 04 and 09 were ratified by NAESB membership on March 21, 2011. All NAESB smart grid standards are available as final actions. We very much appreciate the time, knowledge and industry leadership provided by all participants, both members and non-members, and look forward to the further development of smart grid related business practice standards, if directed to do so by the Commission, NIST, the SGIP or the industry.

The report is being filed electronically in Adobe Acrobat® Portable Document Format (.pdf). All of the documents are also available on the NAESB web site (www.naesb.org). Please feel free to call me at (713) 356-0060 or refer to the NAESB website (www.naesb.org) should you have any questions or need additional information regarding the NAESB smart grid standards or any other NAESB work products.

Respectfully submitted,

Rae McQuade

Ms. Rae McQuade
President & COO, North American Energy Standards Board

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July 7, 2011

cc with enclosures: Chairman Jon Wellinghoff, Federal Energy Regulatory Commission
Commissioner Philip D. Moeller, Federal Energy Regulatory Commission
Commissioner John R. Norris, Federal Energy Regulatory Commission
Commissioner Marc Spitzer, Federal Energy Regulatory Commission
Commissioner Cheryl LaFleur, Federal Energy Regulatory Commission

Mr. Michael Bardee, General Counsel of the Commission, Federal Energy Regulatory Commission
Mr. Joseph McClelland, Director, Office of Electric Reliability, Federal Energy Regulatory Commission
Ms. Jamie L. Simler, Director, Office of Energy Policy and Innovation, Federal Energy Regulatory Commission

Mr. Michael Goldenberg, Senior Attorney, Office of General Counsel, Federal Energy Regulatory Commission
Mr. Mason Emnett, Director, Office of Energy Policy and Innovation, Federal Energy Regulatory Commission
Mr. William E. Murrell, Deputy Director, Division of Economic and Technical Analysis, Office of Energy Policy and Innovation, Federal Energy Regulatory Commission

Mr. George Arnold, National Coordinator for Smart Grid Interoperability, National Institute of Standards and Technology.
Mr. Dave Wollman, Leader, Electrical Metrology Groups, National Institute of Standards and Technology.

Ms. Valerie Crockett, Chairman and CEO, North American Energy Standards Board
Mr. William P. Boswell, General Counsel, North American Energy Standards Board
Ms. Rae McQuade, President & COO, North American Energy Standards Board
Mr. Michael D. Desselle, Vice Chairman – WEQ, North American Energy Standards Board
Mr. J. Cade Burks, Vice Chairman – REQ, North American Energy Standards Board

Enclosures (all documents noted in the appendices are available publicly on the NAESB web site – www.naesb.org):

Appendix A	Smart Grid Distribution Lists
Appendix B	WEQ/REQ Smart Grid Standards Development Subcommittee and Smart Grid Standards Subcommittee on Priority Action Plan 10 Standards Task Force Meeting Minutes Links
Appendix C	Executive Committee Meeting Minutes, Comments, Voting Records Links and Availability of Transcripts
Appendix D	Ratification Ballots and Results Links
Appendix E	2009 Wholesale Electric Quadrant Annual Plan
Appendix F	2010 Wholesale Electric Quadrant Annual Plan
Appendix G	NAESB Process for Standards Development

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Standards for Business Practice and Communication Protocols for Public Utilities	**)** **)**	**Docket No. RM05-5-000**

REPORT OF THE NORTH AMERICAN ENERGY STANDARDS BOARD

The North American Energy Standards Board ("NAESB") is voluntarily submitting this report in accordance with the Commission's Orders in the above referenced docket.

I. NAESB Involvement in the Smart Grid

In the spring of 2009, at the request of the NAESB Advisory Council, NAESB leadership met with Dr. George Arnold, the National Coordinator for Smart Grid Interoperability for the National Institute of Standards and Technology ("NIST"), and offered to support NIST in its fulfillment of obligations under the Energy Independence and Security Act of 2007 ("EISA")[1]. At the recommendation of NIST leadership, NAESB participated in the NIST hosted summer workshops of 2009 and received assignments related to priority action plan 03 (Common Price Communication Model)[2], priority action plan 04 (Common Scheduling Mechanism)[3] and priority action plan 09 (Standardized Demand Response and Distributed Energy Resource Signals)[4]. Specifically, NAESB was asked to develop communication use cases and data requirement standards related to each priority action plan as well as ancillary tasks to leverage existing work products and encourage collaboration with other organizations. In response to these assignments and at the direction of the NAESB Board of Directors, the NAESB Wholesale Electric Quadrant ("WEQ") and Retail Electric Quadrant ("REQ") Executive Committees formed the joint WEQ and REQ Smart Grid Standards Development Subcommittees to address the assignments and solicited co-chairs for the joint subcommittee. Representatives from ISO New England, NRG Energy, Consumers Energy and Xtensible Solutions volunteered to serve as co-chairs and lead the NAESB effort.

The NAESB Board of Directors recommended that the standards development effort be addressed jointly between the REQ and WEQ, recognizing the multi-market impacts that may be realized as standards to support smart grid applications are developed. The NAESB Board of Directors, through a board resolution[5], requested that the NAESB smart grid standards developed by the REQ and WEQ Executive Committees strive to be consistent across markets in all areas excepting where there are substantive jurisdictional differences. As such, the NAESB

[1] EISA § 1305(d), Public Law No. 110-140, 121 Stats. 1492, 1788 (2007) (to be codified at 15 U.S.C. § 1735(d))

[2] NIST Smart Grid Collaboration Wiki Smart Grid Interoperability Panel Site for Priority Action Plan 03 is available at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP03PriceProduct.

[3] NIST Smart Grid Collaboration Wiki Smart Grid Interoperability Panel Site for Priority Action Plan 04 is available at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP04Schedules

[4] NIST Smart Grid Collaboration Wiki Smart Grid Interoperability Panel Site for Priority Action Plan 09 is available at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP09DRDER.

[5] The June 24, 2010 NAESB Board Meeting Final Minutes are available at http://www.naesb.org/pdf4/bd062410fm.doc

smart grid standards related to priority action plans 03, 04, 09 and 10 (Standard Energy Usage Information)[6] have been developed by volunteers in both the retail and wholesale electric markets but have resulted in standards that are specific to each market respectively.

Working through the NIST priority action plan process NAESB was asked to coordinate with external standards setting organizations such as the Organization for the Advancement of Structured Information Standards ("OASIS")[7], the ZigBee Alliance[8], the UCA International Users Group[9], FIX Protocol[10], CalConnect[11] and Lawrence Berkley National Laboratory[12], among others. Specific to priority action plans 03, 04 and 09, NAESB was asked by NIST to make the NAESB use case and data requirement standards available to the OASIS Technical Committees responsible for developing the specifications based upon the NAESB data requirements in fulfillment of their obligations under the priority action plans. As the NAESB effort and the effort of the OASIS Technical Committees to develop specifications based upon the NAESB data requirements were underway simultaneously, the two organizations took a waterfall approach to the standards development by encouraging overlap between the participants of the NAESB subcommittee and OASIS Technical Committees, while completing the work in phases. The NAESB subcommittee completed its obligations related to priority action plans 03, 04 and 09 through a two phase approach. NAESB developed an initial set of use cases and data requirements within the timeline originally specified in the priority action plans and made those recommendations available to the OASIS Technical Committees in an effort to initiate their work on the related specifications as quickly as possible. The NAESB Smart Grid Standards Development Subcommittee completed the phase two recommendations and satisfied its obligations under the priority action plans 03, 04 and 09 in November 2010.

In January 2010, as the NAESB Smart Grid Standards Development Subcommittee addressed phase one of priority action plans 03, 04 and 09, the Smart Grid Interoperability Panel ("SGIP")[13] asked NAESB to conduct an industry survey to determine the current energy usage communications between energy suppliers, consumers and third party service providers as part of priority action plan 10 (Standard Energy Usage Information). In May 2010, the assignments related to PAP10 were restructured by the SGIP in response to the urging of the Administration to produce a single standard information model for energy usage. NAESB was designated as the standards development organization to develop the standard and asked to complete it by year end 2010. The SGIP requested that NAESB leverage the work products of external standards setting organizations and strive to create an information model that is compatible with, or may be mapped to, the Open ADE 1.0 Specification, Smart Energy Profile 2.0, the EIS Alliance Requirements documents and the IEC TC57 Common Information Model. In response to this request, NAESB created the joint REQ and WEQ Smart Grid Standards Subcommittee and hosted its first conference call on June 22, 2010. In an effort to ensure that the standard developed by the subcommittee was

[6] NIST Smart Grid Collaboration Wiki Smart Grid Interoperability Panel Site for Priority Action Plan 10 is available at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PAP10EnergyUsagetoEMS

[7] The Organization for the Advancement of Structured Information Systems website is available at http://www.oasis-open.org

[8] The ZigBee Alliance website is available at http://www.zigbee.org

[9] The UCA International Users Group website is available at http://www.ucaiug.org/default.aspx

[10] The FIX Protocol website is available at http://www.fixprotocol.org

[11] The CalConnect website is available at http://www.calconnect.org

[12] The Lawrence Berkley National Laboratory website is available at http://www.lbl.gov

[13] The SGIP was formed in November of 2009 to act as a consensus body of industry participants and support NIST in the fulfillment of its obligations under EISA 2007

properly coordinated with the identified standards setting organizations, the NAESB REQ and WEQ Executive Committees provided leadership positions within the subcommittee for representatives from the various stakeholder organizations. The resulting NAESB Energy Usage Information Model was ratified by the NAESB membership on November 29, 2010 and is currently being considered for inclusion in the SGIP catalog of standards. The standards resulting from these NAESB efforts will be included in the future publication of the WEQ Version 2.2 NAESB Standards and have been included in the REQ Version 1.3 NAESB Standards.

II. Smart Grid Standards Development Subcommittee

a. Priority Action Plan 03 – Common Price Communication Model

As requested by NIST through priority action plan 03, the Smart Grid Standards Development Subcommittee held their first meeting jointly with FIX Protocol in September 2009. During this meeting, and subsequent meetings through October, the NAESB subcommittee and leadership from FIX Protocol developed a scope of work and seminal work papers from which a product definition for electrical energy and a price communication format could be developed. The seminal work papers, developed collaboratively, served as the base documentation for the development of the phase one requirements specification for a common electricity product and price definition recommendation developed by the Smart Grid Standards Development Subcommittee to support priority action plan 03. This work was completed through a phased approach in effort to comply with the NIST imposed deadlines and to provide an initial work product from which the OASIS technical committee responsible for the development of a specification based upon the NAESB data requirements could begin their work. The parallel work process in the NAESB subcommittee and the OASIS technical committee was only possible through the close coordination of the two standards organizations and a crossover participation in both the subcommittee and technical committee. Through the phase one of the effort, the subcommittee developed a set of use cases to describe price communication scenarios related to shifts in demand and environmental and economic changes. These use cases were then used to develop the price attributes and product identification information or data requirements necessary to communicate price. As a second phase, the subcommittee refined both the use cases and the data requirements in an effort to create a more complete robust standard.

Between September 1, 2009 and February 18, 2010, when the phase one recommendation was unanimously approved by the Smart Grid Standards Development Subcommittee and posted for a thirty-day formal comment period, the subcommittee held sixteen conference calls, two meetings and two informal comment periods. The recommendations were reviewed by the REQ and WEQ Executive Committees on June 7, 2010 in a single topic review session and then considered for vote on June 16, 2010, during which the REQ recommendation was approved and later ratified by the REQ membership on July 30, 2010. The WEQ recommendation was distributed for a notational ballot period which closed on June 25, 2010, but, as not enough votes were received to make a determination on the recommendation, a subsequent meeting was scheduled for July 7, 2010 to reconsider the recommendation and the modifications made during the June 16, 2010 single topic conference call. On July 7, 2010, the WEQ Executive Committee reconsidered the recommendation in light of the June 24, 2010 Board Resolution[14] and once again voted on the recommendation. The recommendation passed the required super-majority

[14] *See supra* note 5

voting threshold through a notational ballot on July 16, 2010 and was ratified by the membership on August 20, 2010.

On March 4, 2010, immediately after the phase one recommendation was voted out of subcommittee, the Smart Grid Standards Development Subcommittee began meeting to discuss the direction of the phase two effort and the process by which the phase one use cases and data requirements should be refined. The subcommittee held seventeen conference calls and one meeting before approving the recommendation and posting it for the formal comment period on October 14, 2010. The phase two REQ recommendation was reviewed and approved by the REQ Executive Committee on February 2, 2011 and ratified by the membership on March 21, 2011. The WEQ recommendation was considered by the by the WEQ Executive Committee on February 1, 2011 and approved through notational ballot on February 18, 2011. The WEQ final action was also ratified by the membership on March 21, 2011. Through the phase two process, the REQ and WEQ phase two recommendations have been made nearly identical as there are no substantive jurisdictional implications in the implementation of the data requirement standards.

On December 10, 2010, the NAESB Smart Grid Standards Development Subcommittee met with the OASIS Technical Committee responsible for developing the price communication specification based upon the data requirements included in the NAESB standards. During this meeting, leadership from the OASIS Technical Committee reviewed the eMIX specification[15] and identified how the NAESB data requirement standards to support priority action plan 03 were incorporated into their work products. The eMIX specification is still under development but will be made available to the SGIP upon completion in satisfaction of the obligations required by priority action plan 03.

b. Priority Action Plan 04 – Common Scheduling Mechanism

The Smart Grid Standards Development Subcommittee initiated efforts to address the NAESB responsibilities related to priority action plan 04 on October 22, 2009. Through discussion, the subcommittee determined that the date and time based data requirements should be limited in scope to those used in demand response programs. This direction was communicated to NIST representatives and deemed appropriate and in compliance with the priority action plan 04 tasks assigned to NAESB. A draft recommendation describing date and time-based data elements and usage examples of those data elements was reviewed by the subcommittee on October 29, 2009 and distributed for an informal comment period the following week. The subcommittee held ten conference calls and an additional informal comment period and on January 28, 2010 the subcommittee unanimously approved the phase one requirements specification for a common scheduling mechanism recommendation developed to support priority action plan 04. The draft recommendations were immediately made available to the OASIS WS Calendar Technical Committee[16] responsible for incorporating the data element requirements developed by the NAESB subcommittee and including them in their scheduling specification.

The phase one recommendations were reviewed by the REQ and WEQ Executive Committees on June 7, 2010 in a single topic review session and then considered for vote on June 16, 2010. During the June 16, 2010 meeting, the REQ recommendation was approved and subsequently ratified by the membership on July 30, 2010,

[15] The OASIS eMIX Technical Committee website is available at http://www.oasis-open.org/committees/emix

[16] The OASIS WS Calendar Technical Committee website is available at http://www.oasis-open.org/committees/ws-calendar

but due to a lack of determinative votes a notational ballot was distributed to adopt the WEQ recommendation. The WEQ recommendation was adopted by the Executive Committee on June 25, 2010, but was subsequently rescinded and reviewed by the Executive Committee in light of the June 24, 2010 board resolution[17]. The revised WEQ phase one recommendation was approved via notational ballot on July 16, 2010 and ratified by the membership on August 20, 2010.

As part of the phase two effort, very few modifications were made to the phase one requirements specification for a common scheduling mechanism recommendation. No modifications were made to the date and time-based data elements and usage examples of those data elements included in the original recommendation and only a few modifications to the clarifying language included in the recommendation were offered. The subcommittee held three conference calls to refine the language included in the phase two recommendations and voted the recommendations out of subcommittee on October 14, 2010. The REQ Executive Committee reviewed and approved the REQ recommendation on February 2, 2011, and the recommendation was ratified by the membership on March 21, 2011. The WEQ recommendation was considered by the WEQ Executive Committee on February 1, 2011 and approved through notational ballot on February 18, 2011. The WEQ final action was ratified by the membership on March 21, 2011. As with the requirements specification for a common electricity product and price definition standard to support priority action plan 03, the REQ and WEQ phase two recommendations to support priority action plan 04 have been made nearly identical as there are no substantive jurisdictional implications in the implementation of the standards.

c. Priority Action Plan 09 – Standardized Demand Response and Distributed Energy Resources Signals

As with priority action plan 03 and priority action plan 04, NAESB was given the task of developing use cases and data requirement standards to support priority action plan 09. The Smart Grid Standards Development Subcommittee held their first meeting to address the priority action plan 09 obligations on September 2, 2009 to discuss the current external efforts that have been initiated related to demand response and distributed energy resources signaling. Within a month of the first meeting, and through the collaboration of shared participants in the NAESB subcommittee, Open Automated Demand Response (Open ADR) participants and members of the UCAiug, the subcommittee developed a document that described the contextual framework for demand response and was used to guide and prioritize the use case and data requirements analysis[18]. The document served as a basis for the REQ phase one draft recommendation.

During this time, the subcommittee became aware that a parallel effort to develop standardized demand response signals within the wholesale markets was underway within the Independent System Operator / Regional Transmission Organizations Council (IRC). In effort to eliminate duplicative work products and to leverage the subcommittee's and IRC's work to date, the subcommittee held a three-day face-to-face meeting where the two groups reviewed each others work and discussed the process by which the IRC project could be incorporated into the NAESB effort. At this meeting, the subcommittee determined that, given the structural and operational differences between the retail and wholesale markets, the subcommittee should develop coordinated yet separate recommendations for the two markets. This approach was facilitated by the joint development of a shared entity

[17] *See supra* note 5

relationship model, which has been included in all of the final actions to support priority action plan 03, 04 and 09 as an appendix, and through a common set of use case actors and definitions for both the retail and wholesale standards. A phased approach was used to develop the recommendations as described for priority action plan 03 and 04.

To develop the wholesale phase one recommendations the subcommittee held a total of twenty conference calls, two meetings and two informal comment periods between September 2009 and February 5, 2010 when the wholesale recommendation was unanimously voted out of the subcommittee and posted for the thirty-day formal comment period. As with the recommendations to support priority action plans 03 and 04, the phase one wholesale and retail recommendations were reviewed by the REQ and WEQ Executive Committees on June 7, 2010 in a single topic review session and considered for vote on June 16, 2010. The retail recommendation was adopted by the REQ Executive Committee during that meeting, and the wholesale recommendation was subsequently adopted via notional ballot on July 16, 2010, after reconsideration in light of the June 24, 2010 Board resolution[19].

Upon adoption of the phase one recommendation by the subcommittee, the recommendation was made available to the members of the OASIS Energy Interoperation Technical Committee so that they could begin their work to address their responsibilities related to priority action plan 09. As with priority action plan 03, the subcommittee immediately began phase two of the effort to both expand the data requirements that had been developed during phase one and to more closely align the wholesale and retail recommendations. As part of the phase two effort, the subcommittee held 13 conference calls and one two-day meeting to develop the recommendation, which was unanimously approved on October 14, 2010. The REQ Executive Committee reviewed and approved the REQ recommendation on February 2, 2011, and the recommendation was ratified by the membership on March 21, 2011. The WEQ recommendation was considered by the WEQ Executive Committee on February 1, 2011 and approved through notational ballot on February 18, 2011. The WEQ final action was ratified by the membership on March 21, 2011. The wholesale final action describes, through the use of diagrams, 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. The final action contains common terminology from the NAESB Measurement and Verification Standards for Demand Response and has been coordinated with the retail final action.

d. Master Data Element List

During the development of the phase two recommendations to support priority action plans 03, 04 and 09, the subcommittee determined that it would be beneficial to create a matrix containing the data elements identified in the priority action plans 03 and 09 recommendations. The purpose of the matrix is to identify specific applications of the data elements to the use cases developed in the recommendations to support priority action plan 03 and 09. To develop the matrix, the subcommittee held 19 conference calls and one meeting between March and October 2010. The matrix was reviewed by the WEQ and REQ Executive Committees in conjunction with the phase two recommendations to support priority action plans 03, 04 and 09 on February 1, 2011 and February 2, 2011, respectively. The REQ recommendation was adopted by the REQ Executive Committee on February 2, and ratified

[18] The Archived Framework for Integrated DR and DER Models is available at http://www.naesb.org/pdf4/smart_grid_ssd022510a1.doc

[19] *See supra* note 5

by on March 21, 2011. The WEQ recommendation was adopted the WEQ Executive Committee through notational ballot on February 18, 2011 and ratified on March 21, 2011. The REQ and WEQ final actions are identical and included all retail and wholesale data elements.

III. Priority Action Plan 10 – NAESB Energy Usage Information Model (timeline, freely available)

In January 2010, NAESB was asked by the SGIP to develop a survey regarding the current practice of usage communications between energy suppliers and consumers, including providers of intermediary services to initiate the process of developing a standard to support priority action plan 10. The Smart Grid Standards Development Subcommittee responded to the request and developed a survey that was distributed to the NAESB membership, among other recipients, on April 12, 2010 and returned on April 30, 2010. The subcommittee processed the results of the survey and made them available to the SGIP on July 30, 2010[20].

In May 2010, while the Smart Grid Standards Subcommittee was working on the survey, the SGIP renewed focus on the development of a single standard information model for energy usage to support priority action plan 10, and, as a result, the tasks assigned to the various standards setting organizations involved in priority action plan 10 were restructured. Through meetings held in conjunction with the spring 2010 SGIP meeting, NAESB was approached and asked to serve as the standards development organization to develop the information model and was asked to have the standard adopted through the NAESB standards development process by the end of the year. In response, the joint REQ and WEQ Smart Grid Standards Subcommittee on Priority Action Plan 10 was created and held its first meeting on June 22, 2010. The subcommittee was co-chaired by eight representatives from the UCA International Users Group, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), ZigBee Alliance, National Association of Regulatory Utility Commissioners, EIS Alliance, OASIS, and the NAESB Wholesale and Retail Electric Quadrants. As requested by the SGIP, the subcommittee leveraged the work of an SGIP-developed white paper that proposed a straw model based upon the requirements of several existing work products, including specifications related to Open ADE 1.0, Smart Energy Profile 2.0 and the EIS Alliance Requirements document.

Between June 22, 2010 and August 31, 2010, when both the REQ and WEQ Energy Usage Information Model were unanimously adopted, the subcommittee held a total of fifteen conference calls and a one week informal comment period. The recommendations were reviewed by the WEQ and REQ Executive Committees on October 15, 2010 and considered for vote on October 22, 2010. The REQ recommendation was adopted by the Executive Committee during the October 22, 2010 meeting, and the WEQ recommendation was adopted through notational ballot on October 29, 2010. Both recommendations were ratified by the membership on November 29, 2010 and presented at the fall 2010 SGIP meeting the same week.

The resulting information models contained in both the REQ and WEQ recommendations are identical and were developed jointly by the NAESB to ensure compatibility while respecting the regulatory structure of the energy markets. The energy usage information model serves as a “seed standard” and focuses on the representation of energy usage information, which includes historic, present and future projected usage and load for specific time periods. The standard defines a common data format of classes and attributes to communicate

[20] The NAESB Smart Grid PAP10 Survey Results are available at http://www.naesb.org/pdf4/naesb_smart_grid_pap10_survey_results.pdf

information between utilities, third parties, and energy use customers, via customer devices and/or third-party energy services providers and enables the exchange of detailed energy information in a consistent format for use by all parties. On January 28, 2011 the SGIP Governing Board voted to approve the standards and recommended that they be considered for inclusion in the SGIP Catalog of Standards.

Other Smart Grid Related Standards Development Efforts Currently Underway

As previously noted, the NAESB energy usage information Model was developed to serve as a "seed" standard from which other standards and schemas may be developed. Within NAESB, the REQ Energy Services Provider Interface Task Force is currently developing a standard for the exchange of energy usage information between designated parties and will build upon the energy usage information model. The specification is targeted to apply to communications between utility providers, third parties and consumers, based upon the use cases and requirements identified in the 3PDA and Open ADE 1.0 specifications. The request for standards development was submitted by the Open ADE Task Force within the UCA International Users Group and the task force is co-chaired by representatives from Tendril and Xtensible Solutions. The effort is scheduled to be complete, at the task force level, by the end of the third quarter 2011.

The REQ is also addressing NAESB request R10012 submitted by Reliant Energy in December 2010, which calls for the development of model business practices that will set forth standards for the release of consumer information to third parties and the privacy policies and practices those third parties should employ. In response to the request, the REQ created the Data Privacy Task Force, which approved a recommendation that is currently out for the thirty-day formal comment period. The recommendation offers model business practices that incorporate many of the recommendations included in published reports on the subject by state commissions, the Department of Energy, the Department of Commerce, NIST and the FCC, among others. The task force, co-chaired by NARUC and the Public Utility Commission of Texas, met once more in June to develop a set of late comments in response to the comments received during the formal comment period for REQ Executive Committee consideration in a review session on June 30, 2011 and vote on July 7, 2011.

IV. Participation

As with all NAESB meetings, participation within the subcommittees and task forces that developed the smart grid related standards was open to anyone wishing to participate regardless of membership status. The NAESB practice of allowing non-members to draft and vote on standards at the subcommittee and task force level is in place to ensure compliance with the NAESB principles of openness and inclusivity and forms an important part of NAESB's American National Standards Institute accreditation. Participation in all NAESB meetings and conference calls is made freely available to anyone within the continental United States through telephone and web based participation in addition to the option to submit comments during the standards development process. These policies played a vital role in the development of the NAESB smart grid standards, as a majority of participation was from non-members and, in some cases, from those outside of the traditional energy industry.

136 FERC ¶ 61,039
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

[Docket No. RM11-2-000]

Smart Grid Interoperability Standards

(Issued July 19, 2011)

AGENCY: Federal Energy Regulatory Commission.

ACTION: Order.

SUMMARY: Section 1305(d) of the Energy Independence and Security Act of 2007 directs the Commission to institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets once it is satisfied that the work of the National Institute of Standards and Technology has led to "sufficient consensus" on smart grid interoperability standards. The Commission finds that there is insufficient consensus for the five families of standards under consideration. For this reason, the Commission will not institute a rulemaking proceeding at this time with respect to these standards and terminates this docket. In this order, the Commission encourages stakeholders to actively participate in the NIST interoperability framework process to work on the development of interoperability standards and to refer to that process for guidance on smart grid standards.

DATES: This order is effective [insert date of publication in the FEDERAL REGISTER].

ADDRESSES: Federal Energy Regulatory Commission, 888 First Street, NE,

Washington, DC 20426.

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SUPPLEMENTARY INFORMATION:

136 FERC ¶ 61,039
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;
Marc Spitzer, Philip D. Moeller,
John R. Norris, and Cheryl A. LaFleur.

Smart Grid Interoperability Standards Docket No. RM11-2-000

ORDER ON SMART GRID INTEROPERABILITY STANDARDS

(Issued July 19, 2011)

1. This order takes action on the five families of standards identified as ready for consideration by regulatory authorities by the National Institute of Standards and Technology (NIST). The order relies on information gathered at technical conferences held on November 14, 2010 and January 31, 2011 in this proceeding and on responses to the Supplemental Notice Requesting Comments issued February 16, 2011 (Supplemental Notice) seeking additional information on smart grid interoperability standards and the standards development process. In this order, we find insufficient consensus to institute a rulemaking proceeding at this time to adopt the five families of standards. Going forward, we encourage utilities, smart grid product manufacturers, regulators, and other smart grid stakeholders to actively participate in the NIST interoperability framework

process[1] to work on the development of interoperability standards and to refer to that process for guidance on smart grid standards.

I. Background

2. Section 1301 of the Energy Independence and Security Act of 2007 (EISA) provides that "it is the policy of the United States to support the modernization of the Nation's electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth and to achieve" a number of benefits.[2] EISA describes this modernization, efforts known collectively as the smart grid, by listing new characteristics to be incorporated in our nation's power systems.[3]

3. To achieve these benefits, EISA directs NIST to coordinate the development of a framework to achieve interoperability of smart grid devices and systems, including

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[1] The NIST interoperability framework process includes the work and outputs of a number of groups and events organized by NIST to achieve the goal of an interoperable smart grid. These groups include the Smart Grid Interoperability Panel (SGIP) along with its committees and working groups. Outputs include the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0, NIST Special Publication 1108 (Jan. 2010), *available at* http://www.nist.gov/public_affairs/releases/upload/smartgrid_interoperability_final.pdf; Guidelines for Smart Grid Cyber Security, NIST Interagency Report 7628 (Aug. 2010), *available at* http://csrc.nist.gov/publications/PubsNISTIRs.html; and various documents related to new or modified standards produced by Priority Action Plan working groups. These materials along with descriptions of the various groups, their memberships, tasks, and timelines can all be accessed at http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/WebHome.

[2] Public Law No. 110-140, 121 Stat. 1492, 1783-84, to be codified at 15 U.S.C. 17381 (2007).

[3] The characteristics of the smart grid are listed in EISA section 1301. *Id.*

protocols and model standards for information management.[4] Once the Commission is satisfied that NIST's work has led to "sufficient consensus" on smart grid interoperability standards, EISA directs the Commission to "institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets."[5]

4. In August 2009, NIST launched a plan to expedite the development of smart grid interoperability standards. NIST led the smart grid community in a participatory public process to identify applicable standards, as well as priorities for additional standardization activities. In January 2010, NIST released its *Framework and Roadmap for Smart Grid Interoperability Standards*, Release 1.0, identifying a number of standards that are applicable to the ongoing development of the smart grid.[6] NIST also oversaw the establishment of the Smart Grid Interoperability Panel (SGIP), a public-private partnership providing an ongoing process to support the evolution of the NIST interoperability framework process.

5. On October 6, 2010, NIST notified the Commission by letter that it had identified five families of standards as ready for consideration by regulators. The letter explained

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[4] EISA sec. 1305(a), to be codified at 15 U.S.C. 17385(a).

[5] EISA sec. 1305(d), to be codified at 15 U.S.C. 17385(d).

[6] *See supra* note 1.

that the identified standards, developed by the International Electrotechnical Commission (IEC), help to enable efficient and secure exchanges of information within and across smart grid domains.[7] The Commission then designated Docket No. RM11-2-000 for a possible rulemaking proceeding pursuant to section 1305(d) of EISA, noting that no determination had yet been made regarding whether there is "sufficient consensus" for the standards.

6. The Commission together with a number of state utility regulatory commissions held a joint technical conference to discuss the identified standards on November 14, 2010 at a meeting of the National Association of Regulatory Utility Commissioners in Atlanta, GA. Some of the information presented about the identified standards, including responses by panelists to questions from state commissioners, raised concerns about whether there was sufficient consensus to adopt these identified standards. To further explore the level of consensus on the identified standards, the Commission convened an additional technical conference on January 31, 2011 in

[7] The IEC is an international standards development organization located in Geneva, Switzerland. The five families of standards include: IEC 61968: Application Integration at Electric Utilities-System Interfaces for Distribution Management; IEC 61970: Energy management system application program interface; IEC 61850: Communication Networks and Systems for Power Utility Automation; IEC 60870-6 series: Telecontrol protocols compatible with ISO standards and ITU-T recommendations; and IEC 62351: Power systems management and associated information exchange – Data and communications security.

Washington, DC.[8] Based on the discussion at the conference, the Commission issued a Supplemental Notice on February 16, 2011 soliciting comments on a number of additional questions concerning the impact of adoption under EISA, how the Commission could judge whether sufficient consensus had been reached, how the Commission should proceed with its consideration of the standards, and related topics.

II. Discussion

7. The Commission supports the development of a modernized, secure electric power system that can support consumer needs, enhance reliability, and facilitate advanced technology to enable demand response, wide-area situational awareness, energy storage, electric transportation, and other potentially beneficial grid services and functions.[9] However, we find that there is insufficient consensus at this time to adopt, under section 1305(d) of EISA, the five families of IEC standards that NIST identified in its October 6, 2010 letter to the Commission. Commenters are nearly unanimous that we should not adopt these standards at this time, citing concerns with cyber security deficiencies and potential unintended consequences from premature adoption of individual standards. The Commission agrees with commenters' concerns, observant that certain aspects of the current NIST process were not in place during development of the NIST Framework document and identification of the IEC standards. Accordingly, the

[8] More information about the conference is available at: http://www.ferc.gov/industries/electric/indus-act/smart-grid.asp.

[9] *See, e.g.*, *Smart Grid Policy*, 128 FERC ¶ 61,060 (2009).

Commission is not instituting a rulemaking proceeding pursuant to section 1305(d) of EISA.

8. In response to the Supplemental Notice issued February 16, 2011, the Commission received extensive comments on a wide variety of topics, in addition to the topic of sufficient consensus. For example, some commenters urge the Commission to take a stronger role in the standards process, while others suggest that the Commission defer to NIST. Relying on the language in EISA section 1305(d), several commenters believe that it may not be "necessary" to adopt any standards. Additionally, some commenters call on the Commission to provide guidance with respect to smart grid interoperability standards and the standards development process. Several commenters request that the Commission define relevant terms such as interoperability, or establish goals and objectives, set functional priorities, or provide guidance on cyber security for the electric power system.

9. In its comments, NIST suggests that the Commission could send appropriate signals to the marketplace by recommending use of the NIST Framework without mandating compliance with particular standards. NIST adds that it would be impractical and unnecessary for the Commission to adopt individual interoperability standards.

10. We believe that the best vehicle for developing smart grid interoperability standards is the NIST interoperability framework process, including the work of the SGIP and its committees and working groups. This work includes harmonization and extensions of existing smart grid interoperability standards as well as the development of new standards. The SGIP brings together smart grid stakeholders from numerous

industries and areas of expertise to guide the development of smart grid interoperability standards within the context of the NIST interoperability framework process. The SGIP mission is supported by several standing committees on architecture and testing/certification as well as a permanent working group for addressing smart grid cyber security.

11. The Commission recognizes and appreciates the comprehensiveness of the smart grid interoperability framework process developed by NIST. Although some commenters raise concerns regarding NIST's initial efforts as its processes were first being developed, many other commenters point to and endorse recent and planned process improvements. These planned improvements include an enhanced SGIP role in reviewing existing as well as new smart grid interoperability standards, the establishment of a preliminary testing process, the establishment of a process to identify cyber security design principles, and efforts to better address reliability and implementation concerns within the SGIP process. Therefore, we encourage utilities, smart grid product manufacturers, regulators, and other smart grid stakeholders to actively participate in the NIST interoperability framework process to work on the development of interoperability standards and to refer to that process for guidance on smart grid standards.

12. The Commission notes that EISA identifies system security, including cyber security, as both a smart grid characteristic and function[10] and recognizes the work NIST

[10] *See* EISA sections 1301 and 1306(d).

has done to provide guidance to industry on this issue. Stakeholders concerned with smart grid cyber security should actively participate in the NIST interoperability framework process, including the SGIP Cyber Security Working Group.

13. For the reasons discussed above, we decline to institute a rulemaking proceeding to adopt these five families of standards at this time.

The Commission orders:

Docket No. RM11-2-000 is hereby terminated.

By direction of the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.

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November 30, 2010

TO: NAESB Board of Directors and Executive Committee
FROM: Rae McQuade
RE: Schedule of 2011 Meetings

Below is the schedule of 2011 meetings for the Board of Directors, Advisory Council and Executive Committee.

2011 Calendar of Board and Advisory Council Meetings

Date	Meeting	Location
February 12	Advisory Council Meeting	Washington D.C. – Renaissance Washington Hotel (in conjunction with NARUC Winter Meeting)
March 24	Board of Directors	Houston Marriott North at Greenspoint, 255 North Sam Houston Parkway East, Houston, Tx 77060 Phone: 281-875-4000 8 miles from IAH Intercontinental Airport, airport shuttle provided every 30 minutes
June 23	Board of Directors	Houston Marriott North at Greenspoint
September 22	Board of Directors, Meeting of the Members and Strategic Session	Four Seasons Hotel (Downtown) 1300 Lamar Street Houston, TX 77010 Phone: 713-652-6241 21.5 miles from IAH Intercontinental Airport, 18 miles from William P. Hobby Airport
December 8	Board of Directors	Four Seasons Hotel (Downtown)

2011 Calendar of Executive Committee Meetings

Date	Meeting	Location
February 1-3	Executive Committee (WEQ, Retail, WGQ)	Host Salt River Project, Phoenix, AZ
February 24-25	Leadership Seminar (WEQ, Retail, WGQ)	Mirage Hotel, Las Vegas
May 3-5	Executive Committee (WEQ, Retail, WGQ)	Host Aces Power, Carmel, IN
August 16-18	Executive Committee (WEQ, Retail, WGQ)	Host El Paso Western Pipeline, Colorado Springs, CO
October 25-27	Executive Committee (WEQ, Retail, WGQ)	Host Dominion, Richmond, VA

Notes:

1. The Retail Executive Committee meetings will be held by conference call and web cast unless otherwise determined by the retail leadership.
2. For each of the Board meetings, a dinner will be held the night before at the Petroleum Club in the Exxon Building, 800 Bell Street, 43rd Floor.
3. Board members are encouraged to attend the leadership seminar as well.