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

# NAESB RETAIL GAS & ELECTRIC QUADRANTS EXECUTIVE COMMITTEE MEETING

## ASSEMBLED MEETING MATERIALS

**MAY 5, 2010**

# North American Energy Standards Board

801 Travis, Suite 1675, Houston, Texas 77002
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**NORTH AMERICAN ENERGY STANDARDS BOARD**

**RETAIL QUADRANTS EXECUTIVE COMMITTEE MEETING**

**Wednesday, May 5, 2010 – 10:00 am to 4:00 pm E**
**Pennsylvania Public Utility Commission in Harrisburg, PA**

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**NORTH AMERICAN ENERGY STANDARDS BOARD**

**RETAIL QUADRANTS EXECUTIVE COMMITTEE MEETING**

**Wednesday, May 5, 2010 – 10:00 am to 4:00 pm E**
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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**
**2010 EXECUTIVE COMMITTEE TERMS – Wholesale Gas Quadrant**

| **PRODUCERS SEGMENT** | | **TERM END:** |
|---|---|---|
| Jim Busch | Director of Energy Policy and Regulation, BP Energy Company | 12-31-2010 |
| Pete Frost | Director – Regulatory Affairs, ConocoPhillips Gas and Power Marketing | 12-31-2010 |
| 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** | Consultant, Williams Gas Pipeline | 12-31-2010 |
| 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 |
| Paul Buckley | Director of Rates and Regulatory Affairs, Washington Gas | 12-31-2010 |
| Mike Novak | Assistant General Manager, National Fuel Gas Distribution | 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 | 12-31-2010 |
| Valerie Crockett | Senior Program Manager - Energy Markets & Policy, Tennessee Valley Authority | 12-31-2010 |
| Lori-Lynn C. Pennock | Senior Fuel Supply Analyst, Salt River Project | 12-31-2011 |
| Dona Gussow | Manager, Contract Administration, Florida Power and Light Company | 12-31-2011 |
| Tina Burnett | Natural Gas Operations Administrator, The Boeing Company | 12-31-2011 |
| **SERVICES SEGMENT** | | |
| Steve Abbey | Manager of Regulatory Affairs in the Marketing Department of Anadarko | 12-31-2010 |
| Lisa Simpkins | Vice President, Energy Policy – Natural Gas, Constellation Energy Commodities Group | 12-31-2010 |
| 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 Alan Johnson is the WEQ vice chairman.

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**2010 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 |
| Jennifer Teel | Vice President of Client Services, ista | 12-31-2010 |
| Susan Munson | ERCOT Retail Market Liaison, Electric Reliability Council of Texas (ERCOT) | 12-31-2010 |
| **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 | 12-31-2010 |
| Michael J. Jesensky | Director – Demand –Side Analysis, Dominion Resources Services, Inc. (representing Dominion Virginia Power) | 12-31-2010 |
| **END USERS/PUBLIC AGENCIES SEGMENT** | | |
| V A C A N C Y | | 12-31-2011 |
| V A C A N C Y | | 12-31-2011 |
| Annunciata E. Marino | Utility Energy Policy and Technology Analyst, Pennsylvania Public Utility Commission | 12-31-2010 |
| Christopher Kotting | Administrator – Energy Assurance, Public Utility Commission of Ohio | 12-31-2010 |

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| **TRANSMISSION SEGMENT** | | **TERM END:** | **SUBSEGMENT:** |
|---|---|---|---|
| Patrick McGovern | Manager - System Services, Georgia Transmission Corporation | 12-31-20011 | Muni/Coop |
| Wendy D. Weathers | System Operations, Salt River Project | 12-31-2010 | Fed/State/Prov. |
| Daryl McGee | Manager – Transmission Services, Southern Company Services | 12-31-2010 | IOU |
| Edward Davis | Policy Consultant, Entergy Services, Inc. | 12-31-2011 | IOU |
| Mark Hackney | Section Leader of Transmission Services Trading, Arizona Public Service | 12-31-2010 | 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** | Sr. Energy Markets & Policy Specialist, Tennessee Valley Authority | 12-31-2010 | Fed/State/Prov. |
| V A C A N C Y | | 12-31-2010 | IOU |
| John Ciza | Project Manager Energy Policy and Regulatory Affairs, Southern Company Services | 12-31-2011 | IOU |
| **Alan Johnson** | Director Regulatory Compliance – Commercial Operations & Commodities, NRG Energy, Inc. | 12-31-2010 | Merchant |
| Trent Carlson | Vice President – Regulatory Affairs, RRI Energy Services, Inc. | 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. | 12-31-2010 | Muni/Coop |
| Belinda Thornton | General Manager - Energy Origination, Tennessee Valley Authority | 12-31-2011 | Fed/State/Prov. |
| V A C A N C Y | | 12-31-2010 | at large |
| Richard Lehman | Supply and Trading, Salt River Project | 12-31-2011 | at large |
| John Apperson | Director – Commercial and Trading, PacifiCorp Energy | 12-31-2010 | IOU |
| Roy True | Manager of Regulatory and Market Affairs, ACES Power Marketing | 12-31-2011 | at large |
| Barry Green | Barry Green Consulting (representing Electric Power Supply Association (EPSA)) | 12-31-2011 | at large |

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| DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT | | TERM END: | SUBSEGMENT: |
|---|---|---|---|
| Ray Phillips | Manager of Compliance and Special Projects, Alabama Municipal Electric Authority | 12-31-2010 | Muni/Coop |
| V A C A N C Y | | 12-31-2011 | at large |
| Alan Pritchard | Senior Engineer, Duke Energy Corporation | 12-31-2010 | 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 | 12-31-2010 | at large |
| Syd Berwager | Industry Restructuring Project Manager, Bonneville Power Administration/Power Business Line | 12-31-2011 | Other |
| Andy Rodriquez | Manager of Business Practice Coordination, NERC | 12-31-2011 | At-Large |
| **END USERS SEGMENT** | | | |
| V A C A N C Y | | 12-31-2011 | at large |
| Aaron Breidenbaugh | Senior Manager - Regulatory Affairs and Public Policy - New York, EnerNOC, Inc. | 12-31-2010 | at large |
| Lou Ann Westerfield | Policy Strategist, Idaho Public Utilities Commission, rep. National Association of Regulatory Utility Commissioners | 12-31-2010 | Regulator |
| V A C A N C Y | | 12-31-2011 | at large |
| Christopher Kotting | Administrator – Energy Assurance, Public Utility Commission of Ohio | 12-31-2010 | at large |
| V A C A N C Y | | 12-31-2011 | at large |
| Paul Sorenson | Vice President - Central Markets Strategy, Open Access Technology International, Inc. | 12-31-2011 | At-Large |
| **INDEPENDENT GRID OPERATORS/PLANNERS** | | | |
| Thomas Bowe | Executive Director – Reliability Integration, PJM Interconnection, LLC | 12-31-2010 | |
| Jim Castle | Manager - Grid Operations, New York Independent System Operator, Inc. | 12-31-2010 | |
| Matt Goldberg | Director Reliability & Operations Compliance ISO New England, Inc. | 12-31-2010 | |
| Nancy Traweek | Director – Market Services, California ISO | 12-31-2010 | |
| 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. | 12-31-2010 |
| V A C A N C Y | | 12-31-2010 |
| V A C A N C Y | | 12-31-2010 |
| V A C A N C Y | | 12-31-2010 |
| V A C A N C Y | | 12-31-2011 |
| V A C A N C Y | | 12-31-2011 |
| V A C A N C Y | | 12-31-2011 |

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| **SERVICE PROVIDERS/SUPPLIERS SEGMENT** | | **TERM END:** |
|---|---|---|
| V A C A N C Y | | 12-31-2011 |
| V A C A N C Y | | 12-31-2011 |
| Richard Zollars | Director - Data and Billing, Dominion Retail, Inc. | 12-31-2010 |
| V A C A N C Y | | 12-31-2010 |
| **DISTRIBUTORS SEGMENT** | | |
| Dan Jones | Supervisor - Certified Supplier Business Center, Duke Energy | 12-31-2011 |
| V A C A N C Y | | 12-31-2011 |
| **Michael Novak** | Assistant General Manager, National Fuel Gas Distribution Corporation | 12-31-2010 |
| V A C A N C Y | | 12-31-2010 |
| **END USERS/PUBLIC AGENCIES SEGMENT** | | |
| V A C A N C Y | | 12-31-2010 |
| V A C A N C Y | | 12-31-2010 |
| V A C A N C Y | | 12-31-2011 |
| V A C A N C Y | | 12-31-2011 |

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**2010 EXECUTIVE COMMITTEE ALTERNATES – Wholesale Gas Quadrant**

| | |
|---|---|
| **END USER SEGMENT** | |
| Paul A. Jones | Senior Marketing Representative, Salt River Project |
| Art Morris | Gas Originator, Florida Power & Light Company |
| Kenneth Nordlander | Fuel Procurement, Arizona Public Service Company |
| Katherine C. Zeitlin | Legal Department, Arizona Public Service Company |
| **DISTRIBUTION SEGMENT** | |
| Rick Ishikawa | Interconnect Account Manager in Capacity Products Group, Southern California Gas Company |
| Donald Petersen | Senior Gas Resource Analyst, Pacific Gas and Electric Company |
| Jim Blasiak | Specialist Federal Regulatory Affairs, Washington Gas Light Company |
| George Simmons | FERC Specialist, NiSource Inc. |
| Scott Butler | Project Manager, Energy Markets Policy Group, Consolidated Edison Company of New York, Inc. |
| **PIPELINE SEGMENT** | |
| Bill Grygar | Vice President, Panhandle Eastern Pipe Line |
| Scott Hansen | Questar Pipeline Company |
| Ronald G. Tomlinson | Manager – Business Technology, Dominion Gas Transmission, Inc. |
| Paul Love | Director, Electronic Customer Services, Natural Gas Pipe Line Company of America |
| Mark Gracey | Consultant, Tennessee Gas Pipeline Company |
| Christopher Burden | Consultant e-Commerce & Service Delivery, Williams Gas Pipeline |
| Tom Gwilliam | Iroquois Gas Transmission System |
| **PRODUCER SEGMENT** | |
| David Ogden | Manager, Marketing Administration, Dominion Exploration & Production, Inc. |
| Rhonda Denton | Regulatory Affairs, BP Energy Company |
| **SERVICES SEGMENT** | |
| Keith Sappenfield | Director, US Regulatory Affairs, Midstream and Marketing, EnCana Oil and Gas (USA), Inc. |

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 EXECUTIVE COMMITTEE ALTERNATES – Retail Electric Quadrant**

| **UTILITIES SEGMENT** | |
|---|---|
| Keith P. Hock | Director ARES Business Center, Ameren Services Company |
| H. Neal Allen | Profitability & Economic Analysis Manager, Alabama Power Company |
| Debbie McKeever | Market Advocate, Oncor |
| William J. Welzant | Principal Supplier Services Analyst, Supplier Account Management, Baltimore Gas and Electric |
| **END USERS/PUBLIC AGENCIES SEGMENT** | |
| **SERVICE PRODUCERS/SUPPLIERS SEGMENT** | |
| Brandon S. Siegel | Manager – Market Management, E:SO |

**North American Energy Standards Board**
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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 EXECUTIVE COMMITTEE ALTERNATES – Wholesale Electric Quadrant**

| **END USER SEGMENT** | | **SUB-SEGMENT** |
|---|---|---|
| **DISTRIBUTION/LSE SEGMENT** | | **SUB-SEGMENT** |
| Gerry Adamski | Vice President of Standards, NERC | At-Large |
| Paul K. Jett | Director – RTO Activities, Duke Energy Corporation | IOU |
| Lee Hall | Coordination Manager – Power Services, Bonneville Power Administration | Other |
| **GENERATION SEGMENT** | | **SUB-SEGMENT** |
| Joel Dison | Project Manager, Southern Company Generation and Energy Marketing | IOU |
| Lou Oberski | Director – Electric Market Policy, Dominion Resources Services, Inc | IOU |
| Francis Halpin | Bonneville Power Administration | Fed/State/Prov. |
| **MARKETER/BROKER SEGMENT** | | **SUB-SEGMENT** |
| Jeff Ackerman | Manager, CRSP-Energy Mgmt., Western Area Power Administration | Fed/State/Prov |
| Brenda Anderson | Bonneville Power Administration | Fed/State/Prov |
| Valerie Crockett | Senior Program Manager, Energy Markets & Policy, Tennessee Valley Authority | Fed/State/Prov |
| **TRANSMISSION SEGMENT** | | **SUB-SEGMENT** |
| Barbara Rehman | Policy Development & Analysis, Bonneville Power Administration | Fed/State/Prov. |
| Chuck Feagans | Tennessee Valley Authority | Fed/State/Prov. |
| Shay Labray | Transmission Strategy Consultant, PacifiCorp | IOU |
| Jane Daly | Rate & Regulatory Advisor, Arizona Public Service Company | IOU |
| Marceline Otondo | Regulatory Compliance Advisory, Arizona Public Service Company | IOU |
| Narinder Saini | Policy Consultant, Entergy Services, Inc. | IOU |
| J.T. Wood | Southern Company Services | IOU |
| Dean Ulch | Principal Engineer – Transmission Policy and Services, Southern Company Services, Inc. | IOU |
| Hasnah Mat-Amin | Market Interface Manager, Western Electricity Coordinating Council | At Large |
| Ross Kovacs | Transmission Strategic Coordinator, Georgia Transmission Corporation | Muni/Coop |

# North American Energy Standards Board

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

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 EXECUTIVE COMMITTEE ALTERNATES – Retail Gas Quadrant**

| | |
|---|---|
| **DISTRIBUTORS SEGMENT** | |
| Joe Stengel | Manager, Federal Regulatory Affairs, Philadelphia Gas Works |
| **END USERS/PUBLIC AGENCIES SEGMENT** | |
| | |
| **SERVICE PROVIDERS/SUPPLIERS SEGMENT** | |
| Paul Cherevka | Project Manager Data Warehouse, Dominion Retail |

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April 12, 2010

**TO:** NAESB Wholesale Electric 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 Revised[1]

**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETINGS**
**Hosted by Pennsylvania Public Utility Commission in Harrisburg, PA**

First, let me thank the Pennsylvania PUC and Annunciata Marino 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.

As we have announced at prior Executive Committee meetings, meeting announcements and in other communications, the Executive Committee (EC) will meet in Harrisburg, PA hosted by the Pennsylvania PUC. Below are the meeting arrangements:

| | |
|---|---|
| Where: | 400 North Street, Keystone Building, Harrisburg, PA 17120 |
| Contact: | Veronica Thomason, 713-356-0060 |
| When: | Tuesday, May 4 -- 10:00 a.m. to 4:00 p.m. Eastern – Wholesale Electric Quadrant |
| | Wednesday, May 5 -- 10:00 a.m. to 4:00 p.m. Eastern – Retail Gas Quadrant and Retail Electric Quadrant |

If you plan to attend any of the above EC meetings and have not already RSVPed to our office through the other announcements, please do so at your earliest convenience to the NAESB office (naesb@naesb.org) so that proper meeting arrangements can be made by NAESB and our host. Travel information is posted on the NAESB web site on the EC pages and can be directly accessed from the following links: http://www.naesb.org/pdf4/ec050410ma.doc and http://www.naesb.org/pdf4/ec050410ma2.pdf. If you plan to participate by conference call, the information to do so is provided in this document. The EC meetings will be web cast as well. The meeting, conference calling and web casting is open to any interested party.

The materials for the meeting will be emailed to the participants and posted on the web site shortly. In an effort to control costs and be more environmentally aware, we are not printing Executive Committee books any longer, 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 posted on the web site, along with the pdf assembled books.

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

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

[1] Additions to the agendas are highlighted in yellow, including additional materials

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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. The details are:

| Date | Time | Meeting/Location |
|---|---|---|
| Monday, May 3 | 12 pm to 4 pm E | Retail BPS Meeting – Day 1<br>Conference Call Number: 866-740-1260<br>Access Code: 7133560<br>Security Code: 7342<br>Web Cast: http://www.readytalk.com (please use same codes) |
| Tuesday May 4 | 10 am to 4 pm E | WEQ EC Meeting<br>Conference Call Number: 866-740-1260<br>Access Code: 7133562<br>Security Code: 5812<br>Web Cast: http://www.readytalk.com (please use same codes) |
| | 9 am to 3 pm E | Retail BPS Meeting – Day 2<br>Conference Call Number: 866-740-1260<br>Access Code: 7133560<br>Security Code: 7342<br>Web Cast: http://www.readytalk.com (please use same codes) |
| Wednesday, May 5 | 10 am to 4 pm E | Retail EC Meeting by phone/web cast/ for in person attendance, please join NAESB staff<br>Conference Call Number: 866-740-1260<br>Access Code: 7133562<br>Security Code: 8724<br>Web Cast: http://www.readytalk.com (please use same codes) |
| | 9 am to 4 pm E | Day 1 of WEQ OASIS Subcommittee<br>Conference Call Number: 866-740-1260<br>Access Code: 7133564<br>Security Code: 1301<br>Web Cast: http://www.readytalk.com (please use same codes) |
| Thursday, May 6 | 9 am to 4 pm E | Day 2 of WEQ OASIS Subcommittee<br>Conference Call Number: 866-740-1260<br>Access Code: 7133564<br>Security Code: 1301<br>Web Cast: http://www.readytalk.com (please use same codes) |

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

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

Best Regards, *Rae*

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**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING**
**WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA**
**Tuesday, May 4, 2010 – 10:00 am to 4:00 pm E**
**Pennsylvania Public Utility Commission in Harrisburg, PA**

| # | Agenda Item |
|---|---|
| 1. | Welcome |
| | a. Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc |
| | b. Welcome to members and attendees |
| | c. 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) |
| | d. Adoption of WEQ Agenda (simple majority) http://www.naesb.org/pdf4/ec050410a.doc |
| 2. | Adoption of Wholesale Electric Quadrant Draft Minutes (simple majority to approve): February 2, 2010: http://www.naesb.org/pdf4/weq_ec020210dm.doc |
| 3. | Update on Confidentiality Agreement Decisions: http://www.naesb.org/pdf4/weq_ec_conf_agreement_031210a1.doc (Recommendation to the EC), http://www.naesb.org/pdf4/weq_ec_conf_agreement_031210notes.doc (Notes from the EC Task Force Call) |
| 4. | Update on 2009 WEQ Annual Plan Item 5(b) Modify NAESB definitions for consistency – ratified March 24, 2010, (review only): http://www.naesb.org/doc_view4.asp?doc=weq_rat022210_2009_weq_ap5b_rec_clean.doc |
| 5. | Update on progress on 2009 WEQ Annual Plan Items 5(a)(2), 5(i)/R08004/R09011 Affecting WEQ-011 Gas/Electric Coordination – (review only),WGQ comment period ends April 29, 2010 for WGQ. *[A single topic review session and joint EC voting session will be scheduled.]* |
| | a. Recommendation: http://www.naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec.doc<br>Attachment WEQ-011 (Redline): http://naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec_attach1.doc<br>Attachment WEQ-011 (Clean): http://naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec_attach2.doc |
| | b. Formal comment period ended November 2, 2009 - http://naesb.org/pdf4/weq_100209_reqcom.doc<br>Comments submitted by the NAESB Standards Review Subcommittee - http://naesb.org/pdf4/weq_100209weq_srs.doc<br>Comments submitted by M. Kulas, Consumers Energy Company - http://naesb.org/pdf4/weq_100209consumers.doc<br>Late comments in response to the Consumers Energy Comments submitted by the WEQ and WGQ BPS Co-Chairs - http://naesb.org/pdf4/weq_100209_weq_wgq_bps_late.doc |
| | c. Related WGQ R09011 Recommendation: http://naesb.org/pdf4/r09011_rec.doc |
| | d. WGQ Formal comment period ends April 29, 2010 - http://naesb.org/pdf4/wgq_033010reqcom.doc<br>(No comments to date) |
| 6. | Update on WEQ/REQ Recommendations for smart grid standards for NIST PAPs 3,4 and 9. *[This request will be the subject of a single topic review conference call and single topic WEQ EC conference call for vote on PAP9 and joint WEQ/REQ EC call for vote on PAPs 3 and 4].* |
| | a. WEQ Request for Comments, Due April 9, 2010: http://www.naesb.org/pdf4/weq_030910_reqcom.doc |
| | b. REQ Request for Comments, Due April 9, 2010: http://www.naesb.org/pdf4/req_030910_reqcom.doc |
| | c. Recommendation 2010 WEQ Annual Plan Item 6(a): Requirements Specifications for Common Electricity Product and Pricing Definition for NIST PAP03, (Same for REQ): http://naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc |
| | d. Recommendation 2010 WEQ Annual Plan Item 6(b): Requirements Specifications for Common Scheduling Mechanism for Energy Transactions for NIST PAP04 (Same for REQ): http://naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc |
| | e. Recommendation 2010 WEQ Annual Plan Item 6(c): Requirements Specifications for Wholesale Standard DR Signals for NIST PAP09: http://naesb.org/pdf4/weq_2010_ap_6c_rec.doc |
| | f. Recommendation 2010 REQ Annual Plan Item 9(c): Requirements Specifications for Wholesale Standard DR Signals for NIST PAP09: http://naesb.org/pdf4/retail_2010_ap_9c_rec.doc |
| | g. Comments Due April 9, 2010:<br>PAP 03 (WEQ/REQ):<br>Comments submitted by Standards Review Subcommittee -http://naesb.org/pdf4/weq_req_030910_pap03_weq_srs.doc |

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**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING**
**WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA**
**Tuesday, May 4, 2010 – 10:00 am to 4:00 pm E**
**Pennsylvania Public Utility Commission in Harrisburg, PA**

| # | Agenda Item |
|---|---|

Comments submitted by B. Rehman, BPA - http://naesb.org/pdf4/weq_req_030910_pap03_bpa.doc
Comments Submitted by K. York, TVA: http://naesb.org/pdf4/weq_req_030910_pap03_tva.doc
Cover Letter Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap03_honeywell_cover.pdf
Comments Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap03_honeywell.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/weq_req_030910_pap03_irc.doc
Comments Submitted by Midwest ISO: http://www.naesb.org/pdf4/weq_req_030910_pap03_miso_late.doc

PAP04 (WEQ/REQ):
Comments submitted by Standards Review Subcommittee - http://naesb.org/pdf4/weq_req_030910_pap04_weq_srs.doc
Comments submitted by B. Rehman, BPA - http://naesb.org/pdf4/weq_req_030910_pap04_bpa.doc
Comments Submitted by K. York, TVA: http://naesb.org/pdf4/weq_req_030910_pap04_tva.doc
Cover Letter Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap04_honeywell_cover.pdf
Comments Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap04_honeywell.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/weq_req_030910_pap04_irc.doc
Comments Submitted by Midwest ISO: http://www.naesb.org/pdf4/weq_req_030910_pap04_miso_late.doc

PAP09 (WEQ):
Comments submitted by Standards Review Subcommittee - http://naesb.org/pdf4/weq_030910_pap09_weq_srs.doc
Comments submitted by B. Rehman, BPA - http://naesb.org/pdf4/weq_030910_pap09_bpa.doc
Comments Submitted by K. York, TVA: http://naesb.org/pdf4/weq_030910_pap09_tva.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/weq_030910_pap09_irc.doc
Comments Submitted by Midwest ISO: http://www.naesb.org/pdf4/weq_030910_pap09_miso_late.doc

PAP09 (Retail):
Cover Letter Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/req_030910_pap09_honeywell_cover.pdf
Comments Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/req_030910_pap09_honeywell.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/req_030910_pap09_irc.doc

7. Discussion and Possible Action (Simple Majority Vote) on Minor Correction

   a. MC10019: Joint NAESB WEQ Version 002.1 Standard WEQ-014-A and WGQ Version 1.9 Standard No. 11.4.1 (Implementation Guide for Electronic Tariff Filing), Submitted by D. Davis, Williams Gas Pipeline - http://naesb.org/pdf4/weq_ec050410w1.doc - for WGQ and WEQ EC consideration.

8. Subcommittee Updates (meeting materials for updates will be provided by leadership as they are available):

   a. Triage Subcommittee: http://www.naesb.org/pdf4/tr040210agenda.doc (Requests), http://www.naesb.org/pdf4/tr040210disposition.doc (Disposition)

   b. Business Practices Subcommittee (BPS) TLR and Parallel Flow Visualization

   c. Demand Side Management – Energy Efficiency (DSM-EE) Subcommittee

   d. OASIS Subcommittee and Scoping Task Force

   e. Joint Electric Scheduling Subcommittee (JESS) and eTag Testing

   f. Standards Review Subcommittee (SRS)

   g. Glossary Efforts

   h. Smart Grid Standards Task Force (SGSTF)

   i. Publication Schedule: WGQ Publication Schedule (April 12, 2010): http://naesb.org/misc/wgq_pub_schedule_041210.doc, WEQ Publication Schedule (April 12, 2010): http://naesb.org/misc/weq_pub_schedule_041210.doc, Retail Publication Schedule (April 12, 2010): http://naesb.org/misc/retail_pub_schedule_041210.doc (Retail and WGQ provided for context)

9. Review, discuss, identify changes and vote to approve changes to the 2010 Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/pdf4/weq_2010_annual_plan.doc (simple majority vote for EC endorsement of proposed changes to be forwarded for Board approval)

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**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING**
**WHOLESALE ELECTRIC QUADRANT DRAFT AGENDA**
**Tuesday, May 4, 2010 – 10:00 am to 4:00 pm E**
**Pennsylvania Public Utility Commission in Harrisburg, PA**

| # | Agenda Item |
|---|---|
| 10. | Board of Directors, Board Committee and Regulatory Updates (no votes or action to be taken): |
| | a. Board Updates – Board Meeting March 25, 2010: http://www.naesb.org/pdf4/bd032510dm.doc |
| | b. Advisory Council Updates: http://naesb.org/pdf4/advisory021310notes.doc |
| | c. Board Critical Infrastructure Committee – Meeting March 22, 2010: http://www.naesb.org/pdf4/bd_cic_032210notes.doc |
| | d. Monthly Update Meeting on March 10: http://www.naesb.org/pdf4/update031010mn.pdf |
| | e. Quadrant Updates: Wholesale Gas and Retail key activities – WGQ Annual Plan, Retail Annual Plan http://www.naesb.org/pdf4/wgq_2010_annual_plan.doc (WGQ), http://www.naesb.org/pdf4/retail_2010_annual_plan.doc (Retail) |
| | f. Regulatory Efforts: |
| | April 28, 2010 - NAESB Comments on "Time Error Correction Reliability Standard" (Docket No. RM09-13-000) WEQ-006 Business Practice Standards - Version 002.1 : http://www.naesb.org/pdf4/ferc042810.pdf |
| | April 15, 2010 - FERC Final Rule - WEQ Phase 1 DR M&V - Standards for Business Practices and Communication Protocols for Public Utilities - (Docket No. RM05-5-017; Order No. 676-F): http://www.naesb.org/pdf4/ferc041510_final_rule_dr_phase1_mv_standards.doc |
| | April 8, 2010 – NAESB Comments on "Draft National Action Plan on Demand Response" (Docket No. AD09-10-000): http://www.naesb.org/pdf4/ferc040810_NAESB_Comments_dr_natl_action_plan.pdf |
| | March 26, 2010 – NAESB Comments to the FERC Notice of Inquiry (Docket No. RM10-9-000): http://www.naesb.org/pdf4/ferc032610_NAESB_NOI_Comments.pdf |
| | March 24, 2010 - FERC Final Rule - Standards for Business Practices for Interstate Natural Gas Pipelines (WGQ Version 1.9) (Docket Nos. RM96-1-030 and RM96-1-036; Order No. 587-U): http://www.naesb.org/pdf4/ferc032410.pdf |
| | g. EIR Administrator RFP: http://www.naesb.org/pdf4/tsin_registry_rfp_022210.pdf |
| 11. | Other Business |
| | 2010 Schedule: http://www.naesb.org/misc/2010_schedule.pdf |
| 12. | Adjourn |

*Attire – Business Casual*

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**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING**
**RETAIL QUADRANTS DRAFT AGENDA**
**Wednesday, March 5, 2010 – 10:00 am to 4:00 pm E**
**Pennsylvania Public Utility Commission in Harrisburg, PA**

| # | Agenda Item |
|---|---|

1. Welcome
   a. Antitrust Guidelines http://www.naesb.org/misc/antitrust_guidance.doc (Guidance)
   b. Welcome to members and attendees
   c. 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)
   d. Adoption of Retail Agenda (simple majority) http://www.naesb.org/pdf4/ec050410a.doc
2. Adopt Retail Quadrants February 3, 2010 Draft Minutes (simple majority to approve): http://www.naesb.org/pdf4/retail_ec020310dm.doc
3. **TO START AT 10:30 am E**
   Presentation on NAESB Retail Activities
4. Review and Discuss for Possible Notational Vote in mid-May: REQ/RGQ Request for Formal Comments on 2009 Retail Annual Plan Item No. 10 (a) and (c): Service Request, Disconnection and Reconnection in the Registration Agent Model: http://www.naesb.org/pdf4/retail_040710_reqcom.doc (request for comments, due May 7, 2010), http://www.naesb.org/pdf4/retail_2009_ap_10a_10c_rec.doc (Recommendation)

   Comments Due May 7, 2010:

   Comments submitted by J. Cargas, City of Houston - http://naesb.org/pdf4/retail_040710cityofhouston.doc
5. Update on WEQ/REQ Recommendations for smart grid standards for NIST PAPs 3,4 and 9. *[This request will be the subject of a single topic review conference call and single topic WEQ EC conference call for vote on PAP9 and joint WEQ/REQ EC call for vote on PAPs 3 and 4].*
   a. REQ Request for Comments, Due April 9, 2010: http://www.naesb.org/pdf4/req_030910_reqcom.doc
   b. WEQ Request for Comments, Due April 9, 2010: http://www.naesb.org/pdf4/weq_030910_reqcom.doc
   c. Recommendation 2010 WEQ Annual Plan Item 9(a): Requirements Specifications for Common Electricity Product and Pricing Definition for NIST PAP03, (Same for REQ): http://naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc
   d. Recommendation 2010 WEQ Annual Plan Item 9(b): Requirements Specifications for Common Scheduling Mechanism for Energy Transactions for NIST PAP04 (Same for REQ): http://naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc
   e. Recommendation 2010 REQ Annual Plan Item 9(c): Requirements Specifications for Wholesale Standard DR Signals for NIST PAP09: http://naesb.org/pdf4/retail_2010_ap_9c_rec.doc
   f. Recommendation 2010 WEQ Annual Plan Item 6(c): Requirements Specifications for Wholesale Standard DR Signals for NIST PAP09: http://naesb.org/pdf4/weq_2010_ap_6c_rec.doc
   g. Comments Due April 9, 2010:

      PAP 03 (WEQ/REQ):
      Comments submitted by Standards Review Subcommittee -http://naesb.org/pdf4/weq_req_030910_pap03_weq_srs.doc
      Comments submitted by B. Rehman, BPA - http://naesb.org/pdf4/weq_req_030910_pap03_bpa.doc
      Comments Submitted by K. York, TVA: http://naesb.org/pdf4/weq_req_030910_pap03_tva.doc
      Cover Letter Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap03_honeywell_cover.pdf
      Comments Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap03_honeywell.doc
      Comments Submitted by the IRC: http://naesb.org/pdf4/weq_req_030910_pap03_irc.doc
      Comments Submitted by Midwest ISO: http://www.naesb.org/pdf4/weq_req_030910_pap03_miso_late.doc

      PAP04 (WEQ/REQ):
      Comments submitted by Standards Review Subcommittee - http://naesb.org/pdf4/weq_req_030910_pap04_weq_srs.doc
      Comments submitted by B. Rehman, BPA - http://naesb.org/pdf4/weq_req_030910_pap04_bpa.doc
      Comments Submitted by K. York, TVA: http://naesb.org/pdf4/weq_req_030910_pap04_tva.doc
      Cover Letter Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap04_honeywell_cover.pdf

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**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING**
**RETAIL QUADRANTS DRAFT AGENDA**
**Wednesday, March 5, 2010 – 10:00 am to 4:00 pm E**
**Pennsylvania Public Utility Commission in Harrisburg, PA**

| # | Agenda Item |
|---|---|

Comments Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/weq_req_030910_pap04_honeywell.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/weq_req_030910_pap04_irc.doc
Comments Submitted by Midwest ISO: http://www.naesb.org/pdf4/weq_req_030910_pap04_miso_late.doc

PAP09 (WEQ):
Comments submitted by Standards Review Subcommittee - http://naesb.org/pdf4/weq_030910_pap09_weq_srs.doc
Comments submitted by B. Rehman, BPA - http://naesb.org/pdf4/weq_030910_pap09_bpa.doc
Comments Submitted by K. York, TVA: http://naesb.org/pdf4/weq_030910_pap09_tva.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/weq_030910_pap09_irc.doc
Comments Submitted by Midwest ISO: http://www.naesb.org/pdf4/weq_030910_pap09_miso_late.doc

PAP09 (Retail):
Cover Letter Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/req_030910_pap09_honeywell_cover.pdf
Comments Submitted by S. Gabel, Honeywell: http://naesb.org/pdf4/req_030910_pap09_honeywell.doc
Comments Submitted by the IRC: http://naesb.org/pdf4/req_030910_pap09_irc.doc

6. Discuss Retail Version 1.3, scheduled for publication in 1st Q 2011: Publication Schedule: WGQ Publication Schedule (April 12, 2010): http://naesb.org/misc/wgq_pub_schedule_041210.doc, WEQ Publication Schedule (April 12, 2010): http://naesb.org/misc/weq_pub_schedule_041210.doc, Retail Publication Schedule (April 12, 2010): http://naesb.org/misc/retail_pub_schedule_041210.doc (WGQ and WEQ provided for context)

7. Update on Subcommittee Activities (meeting materials for updates will be provided by leadership as they are available):
   a. Triage Subcommittee: http://www.naesb.org/pdf4/tr040210agenda.doc (Requests), http://www.naesb.org/pdf4/tr040210disposition.doc (Disposition)
   b. Business Practices Subcommittee (BPS) and Texas Task Force
   c. DSM-EE Subcommittee
   d. Information Requirements Subcommittee (IR – Not Active)
   e. Technical Electronic Implementation Subcommittee (TEIS)
   f. Glossary Efforts
   g. Smart Grid Standards Task Force

8. Review, discuss, identify changes and vote to approve changes to the 2010 Annual Plan to be proposed to the Board of Directors: http://www.naesb.org/pdf4/retail_2010_annual_plan.doc (simple majority vote for EC endorsement of proposed changes to be forwarded for Board approval)

9. Board of Directors, Board Committee and Regulatory Updates (no votes or action to be taken):
   a. Board Updates – Board Meeting March 25, 2010: http://www.naesb.org/pdf4/bd032510dm.doc
   b. Advisory Council Updates: http://naesb.org/pdf4/advisory021310notes.doc
   c. Board Critical Infrastructure Committee – Meeting March 22, 2010: http://www.naesb.org/pdf4/bd_cic_032210notes.doc
   d. Monthly Update Meeting on March 10: http://www.naesb.org/pdf4/update031010mn.pdf
   e. Wholesale Gas and Wholesale Electric key activities – WGQ Annual Plan, WEQ Annual Plan - http://www.naesb.org/pdf4/wgq_2010_annual_plan.doc (WGQ), http://www.naesb.org/pdf4/weq_2010_annual_plan.doc (WEQ)

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**NORTH AMERICAN ENERGY STANDARDS BOARD EXECUTIVE COMMITTEE MEETING**
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| # | Agenda Item |
|---|---|

f. Regulatory Actions:

April 28, 2010 - NAESB Comments on "Time Error Correction Reliability Standard" (Docket No. RM09-13-000) WEQ-006 Business Practice Standards - Version 002.1 : http://www.naesb.org/pdf4/ferc042810.pdf

April 15, 2010 - FERC Final Rule - WEQ Phase 1 DR M&V - Standards for Business Practices and Communication Protocols for Public Utilities - (Docket No. RM05-5-017; Order No. 676-F): http://www.naesb.org/pdf4/ferc041510_final_rule_dr_phase1_mv_standards.doc

April 8, 2010 – NAESB Comments on "Draft National Action Plan on Demand Response" (Docket No. AD09-10-000): http://www.naesb.org/pdf4/ferc040810_NAESB_Comments_dr_natl_action_plan.pdf

10. Other Business
    - 2010 Schedule: http://www.naesb.org/misc/2010_schedule.pdf
11. Adjourn

*Attire – Business Casual*

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February 26, 2010

**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**
**February 3, 2010**
**DRAFT MINUTES**

## 1. Welcome

Mr. Novak called the meeting to order at 10:00 am Mountain and welcomed the Retail Electric (REQ) and Retail Gas (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. Ms. Kiselewich reviewed the agenda. An update on the Smart Grid Task Force was added to agenda item five. Mr. Minneman moved to adopt the agenda and Mr. Jones seconded the motion. The motion passed without opposition.

## 2. Retail Quadrant Draft Minutes

The October 28, 2009 Retail EC meeting minutes were reviewed. Mr. Precht had capitalization changes and requested that he send a corrected version of the minutes to the NAESB office to be approved via notational ballot. Other clarifying edits were made throughout the document.

## 3. Review, Discuss, and Vote on 2009 Retail Annual Plan Item 1/R05016 – Develop Technical Electronic Implementation Standards and Data Dictionaries (Book 9: Customer Billing and Payment Notification via Uniform Electronic Transaction)

Mr. Precht reviewed the recommendation. This recommendation previously went out for comments and Southern Company submitted several. The IR/TEIS reviewed the comments and made adjustments according to Southern Company's comments. Mr. Minneman moved to adopt the recommendation and Ms. Teel seconded the motion. The motion passed a super majority vote.

## 4. Discussion on Retail Version 1.2, published December 31, 2009

Ms. McQuade provided the update. Retail Version 2.1 was published in December and provided to NARUC. Ms. Lunt has distributed it to states upon request. It has been posted and no minor corrections have been received to date. She noted that a retail publication will be difficult in 2010. The WEQ has a publication scheduled for second quarter and the WGQ will publish in the fourth quarter. Mr. Novak reserved the first quarter of 2011 for the next retail publication.

## 5. Subcommittee Updates and Plan Updates

Triage Subcommittee: Ms. McQuade noted that there were no triage requests for the retail quadrants. Comments on the triage items are due February 15.

Business Practice Subcommittee: Mr. Jones provided the update. The BPS is currently working on annual plan item 4 for billing and payments with a second quarter deadline. Their goal is to vote this item out of the subcommittee by late March. After that, the subcommittee will focus on the Model Business Practice User Guide, annual plan item 5. Annual plan items 6(a) and (b) have also been completed.

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DSM-EE Subcommittee: Mr. Precht provided the update. The Retail DR work group has begun its phase II efforts, which consists of the formal comments the Retail Electric EC voted to send back to the subcommittee.

The wholesale demand response work group created three task forces to address the glossary, the performance evaluation methodologies and the business practice standards. The glossary task force presented a work paper at the last wholesale DR work group meeting, which compared the retail and wholesale DR terms and made modifications to the wholesale definitions. Two definitions sparked further discussion and the glossary task force will meet again to review those items prior to sending their work product to the full DSM-EE subcommittee.

The wholesale and retail energy efficiency groups met for the first time since the scoping task force completed their work. There was discussion on the scope of the work product. Ms. Kirn has volunteered to lead the retail energy efficiency work group. They will meet offline to begin the discussion of their work product. The wholesale energy efficiency group will begin their standards development process by reviewing the standards created by ISO New England and PJM.

Technical Electronic Implementation Subcommittee (TEIS) and Information Requirements Subcommittee (IR): There is a body of work that should be reviewed by IR/TEIS but volunteers are needed to do this work. Mr. Precht volunteered to work with Ms. Teel offline to determine the correct contacts. Ms. Ray noted that Mr. Holladay volunteered to participate.

Glossary Subcommittee: Mr. Eynon provided the update. The subcommittee has met once since the last EC meeting. During that meeting they defined six new terms for Book 14.

Smart Grid Task Force: Ms. McQuade provided the review. The task force is currently working on four of the Priority Action Plans (PAPs), 3, 4, 9 and 10. They comprise approximately 25% of the PAPs standards work. NAESB is coordinating with OASIS, EPRI, FIX, CalConnect and several other groups. The work being done to date is specific to user cases, the actor's list and the framework for requirements that will comprise the first stage of the business practice standards that the EC will be asked to approve. The task force will be voting on the PAPs throughout February. She encouraged EC members to join the task force discussion in an effort to familiarize themselves with the work products they will be voting on in the future. She emphasized that all groups should provide transparency not only in standards development but also in decisions made and in who is making the decisions. She also noted that some of the other, non-NAESB work products have less of a delineation between the wholesale and retail work products, which raises concerns on who the regulatory audience should be – federal or state or both.

**6. Review, Discuss, Identify Changes and Vote to Approve Changes to the 2010 Annual Plan**

Ms. Munson requested to remove the wording "non-Texas Model" from the first annual plan item to avoid using a state in the description. The term was changed to Distribution Company Registration Model.

Next, the EC reviewed the second annual plan item, the certification checklist criteria for retail quadrants to be used in the NAESB certification program, which was dependent on the Customer Choice efforts. Mr. Novak suggested working on parts of this item prior to the publication upon which it was dependent. He wanted to develop connectivity testing that would allow each state to use the same basic test. This would be especially beneficial to the companies with jurisdictions across multiple states. Ms. Teel noted that different protocols are used between the states for LDC certification so one test across the states would not work. Ms. McKeever asked Mr. Novak to clarify whether he was discussing drafting test scripts or drafting an overview of model business practices for testing. He answered that he was discussing test scripts. He used New York as an example. In New York, a company could demonstrate connectivity to Commission staff in order to be certified. Once a company was certified, the utilities would accept it and not require further testing. He was theorizing a test script that would allow for the same across state lines. Ms. Teel responded that communication testing is individual to a company's system. She suggested creating a checklist of items to be tested rather than create a test script. Mr. Siegle asked if the intent of the question was regarding testing of the data transport communication or of the EDI business processes. Mr. Novak answered that it was regarding the testing of the data transport communication. Mr. Siegle did not have a problem with

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drawing a line between connectivity and EDI, if both parties can mutually agree. Ms. Teel viewed certification testing as more than just certifying that an EDI transaction can be produced. It also certifies that retailers can operate, conduct business and bill customers in that state. She also noted that the way business is conducted varies by state. Ms. McKeever stated that she disagreed with eliminating connectivity testing and noted that purchasing software would not guarantee connectivity.

Ms. McQuade asked Mr. Novak to develop a task force of vendors, regulatory staff and utilities to further discuss the details of this issue. The second annual plan item was changed from to Version 2 and the completion date was changed to 2011. The rest of the annual plan was reviewed and revised. Mr. Minneman moved, seconded by Ms. Munson, to adopt the annual plan as revised. The motion passed unanimously.

**7. Board of Directors, Board Committee and Regulatory Updates**

Board Updates: Ms. McQuade urged participants to review the minutes from the December 10, 2009 Board meeting. She noted the discussion surrounding the WEQ annual plan where one Board member asked that an item be included on the annual plan which me with opposition by other Board members. That item was not added to the annual plan and will be discussed at the March Board meeting. Meetings will be held prior to the March Board meeting in an effort to resolve the item and bring a recommendation to the Board in March. Ms. Lee from NIST provided a presentation on cyber security.

Wholesale Gas Quadrant Update: Ms. McQuade reviewed the WGQ Annual Plan. She noted the recommendation on gas/electric interdependency was out for formal comment.

Wholesale Electric Quadrant Update: Ms. McQuade reviewed the WEQ Annual Plan.

**8. Other Business**

Ms. McQuade noted that the next EC meeting would be held on May 5 in Harrisburg, PA, hosted by the Pennsylvania PUC. Mr. Precht added that the Retail BPS scheduled a meeting on Monday and Tuesday prior to the next EC meeting in Harrisburg.

Ms. McQuade also noted that the NAESB Advisory Council meeting would be held on February 13 in Washington, DC.

**9. Adjourn**

Ms. McKeever moved to adjourn the meeting. The meeting adjourned at 12:47 PM Mountain.

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## 9. Attendance and Vote Record

| RETAIL GAS QUADRANT EXECUTIVE COMMITTEE | | ATTENDANCE | VOTE ON 2009 AP ITEM 1/R05016 |
|---|---|---|---|
| **SERVICE PROVIDERS/SUPPLIERS SEGMENT** | | | |
| Richard Zollars | Dominion Retail, Inc. | | |
| **DISTRIBUTION SEGMENT** | | | |
| Dan Jones | Duke Energy | Phone | In Favor |
| **Michael Novak** | National Fuel Gas Distribution Corporation | Phone | In Favor |
| **END USER SEGMENT/PUBLIC AGENCIES SEGMENT** | | | |
| **RETAIL ELECTRIC QUADRANT EXECUTIVE COMMITTEE** | | **ATTENDANCE** | **VOTE ON 2009 AP ITEM 1/R05016** |
| **SERVICE PROVIDERS/SUPPLIERS SEGMENT** | | | |
| Bill Barkas | Dominion Retail, Inc. | Phone | In Favor |
| Jim Minneman | PPL Solutions, LLC | Phone | In Favor |
| Jennifer Teel | EC Power | In Person | In Favor |
| Susan Munson | Electric Reliability Council of Texas | Phone | In Favor |
| **UTILITIES SEGMENT** | | | |
| Phil Precht | Baltimore Gas and Electric Company | Phone | In Favor |
| Patrick Eynon | Ameren Services | Phone | In Favor |
| Judy Ray | Alabama Power Company | Phone | In Favor |
| D. Kirn for Michael Jesensky | Dominion Virginia Power | Phone | In Favor |
| **END USER/PUBLIC AGENCIES SEGMENT** | | | |
| Annunciata Marino | Pennsylvania Public Utility Commission | Phone | In Favor |

**Other Participant Attendance**

| Participant | Organization | Attendance |
|---|---|---|
| Gary Alexander | MISO | Phone |
| Valerie Crockett | TVA | In Person |
| Cory Cummings | NAESB | In Person |
| Debbie McKeever | Oncor | In Person |
| Rae McQuade | NAESB | In Person |
| Rip Newcomb | Dominion | Phone |
| Brandon Siegel | E:SO | In Person |
| Veronica Thomason | NAESB | In Person |
| Jill Vaughn | Court Reporter | In Person |
| Kathy York | TVA | In Person |

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**via email and posting**

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

**FROM:** James Culliton, Staff Attorney

**RE:** Request for Formal Comments on the Service Request, Disconnection and Reconnection in the Registration Agent Model proposed Model Business Practices

**DATE:** April 7, 2010

Dear NAESB Retail Electric Quadrant (REQ), Retail Gas Quadrant (RGQ) Members and Interested Industry Participants,

An industry formal comment period begins today, April 7, 2010 and ends on May 7, 2010 for the Joint REQ/RGQ Business Practices Subcommittee recommendation below:

| **Recommendation:** |
| --- |
| **2009 Retail Annual Plan Item No. 10 (a) and (c):** Service Request, Disconnection and Reconnection in the Registration Agent Model<br>Recommendation: http://www.naesb.org/pdf4/retail_2009_ap_10a_10c_rec.doc |

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

All comments received by the NAESB office by the end of business, May 7, 2010 will be posted on the Home Page http://naesb.org/retail_request.asp and forwarded to the REQ and RGQ 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

NAESB

cc: Rae McQuade, President

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

## 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 Joint Retail Electric (REQ) and Retail Gas (RGQ) Quadrants' Business Practices Subcommittees (BPS) submit this Rwecommendation for 2009 Retail Annual Plan Item No. 10 (a) and (c) – Service Request, Disconnection and Reconnection in the Registration Agent Model. These Model Business Practices detail the processes in the Registration Agent model for a Service Request as defined within the Model Business Practices, Disconnection for either non-payment or when initiated by the Distribution Company for safety or other reasons, and for Reconnection when Disconnected for non-payment.

### 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.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

## SERVICE REQUEST, DISCONNECTION AND RECONNECTION IN THE REGISTRATION AGENT MODEL

### Tab 1 -Executive Summary

This section presents a summary of the Model Business Practices for Service Request, Disconnection and Reconnection in a competitive energy market where there is a Registration Agent. In this model, alternative energy providers, known as Suppliers, sell gas and/or electricity to end use Customers. The Supplier provides the energy by purchasing it and arranging for its delivery by the Distribution Company to the Retail Customer.

Service Request, Disconnection and Reconnection processing where there is a Registration Agent encompasses a variety of interactions between Suppliers and Distribution Companies.. In a business environment where best practices are voluntary, Model Business Practices such as those included in this documentation may be applied within the context of regulatory or other market requirements and agreements.

### Tab 2 -Version Notes

(Insert initial publication date)

### Tab 3 –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 end-use customers. REQ / RGQ Model Business Practices are intended to provide guidance to Distribution Companies, Suppliers, and other Market Participants involved in providing competitive energy service to end-use Customers. The focus of these Model Business Practices is the processing of Service Requests, Disconnections and Reconnections where there is a Registration Agent.

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**

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**Tab 4 -Business Processes and Practices**

## RXQ.14 Overview

### RXQ.14.1 Principles

**RXQ.14.1.1** The processes for Service Requests, Disconnections and Reconnections where there is a Registration Agent should be efficient to minimize the time and effort needed to accomplish these operational details.

**RXQ.14.1.2** The processes for Service Requests, Disconnections and Reconnections where there is a Registration Agent should be consistent with the requirements set forth by the Applicable Regulatory Authority.

**RXQ.14.1.3** The processes for Service Requests, Disconnections and Reconnections where there is a Registration Agent should minimize the occurrence of unauthorized activity in the marketplace.

**RXQ.14.1.4** 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 shall be resolved according to the provisions of the contract.

**RXQ.14.1.5** These processes do not address contractual obligations between Market Participants and their Customers.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.2 Definitions**

**RXQ.14.2.A Business Definitions**

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

**RXQ.0.2.xxx Disconnection**: The process of turning off energy service to a Customer.

**RXQ.0.2.xxx Disconnection Acknowledgement**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Distribution Company that their Disconnection Notification has been received.

**RXQ.0.2.xxx Disconnection Completion**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that their Disconnection Request has been fulfilled.

**RXQ.0.2.xxx Disconnection Notification**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that a Disconnection has been made by the Distribution Company for safety or other easons.

**RXQ.0.2.xxx Disconnection Rejection**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that their Disconnection Request has been denied.

**RXQ.0.2.xxx Disconnection Request**: The Uniform Electronic Transaction used by the Supplier in the Registration Agent model to initiate a Disconnection for non-payment.

**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.

**RXQ.0.2.45 D-U-N-S® Number**: The D-U-N-S® Number is a 9-digit number assigned to companies by the Dun & Bradstreet Corporation .The D-U-N-S®+4 Number is a 10- to 13-digit number, where characters 10 through 13 are arbitrarily assigned by the owner of the D-U-N-S® Number.

**RXQ.0.2.124 ESI ID (Electric Service Identifier)**: A unique, intelligent alphanumeric identifier assigned by the Distribution Company for a single service delivery point.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.0.2.xxx** **Reconnection**: The process of turning on energy service to a Customer after a Disconnection has been made.

**RXQ.0.2.xxx** **Reconnection Completion**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that their Reconnection Request has been fulfilled.

**RXQ.0.2.xxx** **Reconnection Rejection**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that their Reconnection Request has been denied.

**RXQ.0.2.xxx** **Reconnection Request**: The Uniform Electronic Transaction used by the Supplier in the Registration Agent model to initiate a Reconnection after a Disconnection has been made for non-payment.

**RXQ.0.2.xxx** **Service Request**: The process by which a Supplier communicates to the Distribution Company in the Registration Agent model the need for an investigation of the status of the equipment used to deliver energy and/or measure usage at the Customer's premise.

**RXQ.0.2.xxx** **Service Request Completion**: The Uniform Electronic Transaction used in the Registration Agent model to inform the Supplier that their Service Request Notification has been fulfilled.

**RXQ.0.2.xxx** **Service Request Notification**: The Uniform Electronic Transaction used by the Supplier in the Registration Agent model to initiate a Service Request

**RXQ.0.2.xxx** **Service Request Rejection**: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that their Service Request Notification has been denied.

**RXQ.0.2.39** **Supplier**: Persons engaged in the competitive sale of energy to end-users.

**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.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
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## RXQ.14.3 Model Business Practices

### RXQ.14.3.1 Service Request

**RXQ.14.3.1.1** Either the Customer or Supplier can identify the need for a Service Request. If the Customer identifies the need for a Service Request, the Customer should contact the Supplier.

**RXQ.14.3.1.2** The Supplier should send the Service Request Notification via Uniform Electronic Transaction to the Distribution Company.

**RXQ.14.3.1.3** In addition to the ESI ID, a Service Request Notification should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Customer name;
- Customer service address;
- Customer zip code;
- Contact name;
- Customer contact number;
- Purpose code;
- Meter number;
- Priority code;
- Special needs indicator;
- Service requested date;
- Action code, and;
- Transaction type code.

**RXQ.14.3.1.4** The Distribution Company should send a Service Request Rejection via Uniform Electronic Transaction to the Supplier if any of the following conditions exists:

- The ESI ID in the Service Request Notification does not exist, or:
- The Service Request Notification does not contain the required elements, or:
- The Supplier was not able to be verified as the current Supplier for the ESI ID.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.3.1.5** A Service Request Rejection should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Action or status indicator;
- ESI ID;
- Status reason;
- Purpose code;
- Rejection reason code, and;
- Rejection reason, if applicable.

**RXQ.14.3.1.6** The Distribution Company should process the Service Request Notification and send a Service Request Completion via Uniform Electronic Transaction to the Supplier if all of the following conditions exist:

- The ESI ID exists in the Distribution Company's system, and;
- The Service Request Notification has the required elements, and;
- The Supplier was verified as the current Supplier for the ESI ID.

**RXQ.14.3.1.7** A Service Request Completion should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Action or status indicator;
- ESI ID;
- Meter number;
- Distribution Company service order number;
- Disconnect location, if applicable;
- Actual date and time of completion;
- Last known meter reading, if applicable;
- Status reason, and;
- Purpose code.

**RXQ.14.3.1.8** Once the Supplier receives the Service Request Completion, the Supplier should contact the Customer with the results of the Service Request, if applicable.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.3.2 Disconnection for Non-Payment**

**RXQ.14.3.2.1** If the Supplier determines the Customer should be subject to Disconnection, then the Supplier should send a Disconnection Request via Uniform Electronic Transaction to the Distribution Company.

**RXQ.14.3.2.2** In addition to the ESI ID, a Disconnection Request should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Customer name;
- Customer service address;
- Customer zip code;
- Contact name;
- Customer contact number;
- Purpose code;
- Meter number;
- Priority code;
- Special needs indicator;
- Service requested date;
- Action code, and;
- Transaction type code.

**RXQ.14.3.2.3** The Distribution Company should send a Disconnection Rejection via Uniform Electronic Transaction to the Supplier if any of the following conditions exists:

- The ESI ID in the Disconnection Request does not exist;
- The Disconnection Request does not contain the required elements, or;
- The Supplier was not able to be verified as the current Supplier for the ESI ID.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.3.2.4** A Disconnection Rejection should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Action or status indicator;
- ESI ID;
- Status reason;
- Purpose code;
- Rejection reason code, and;
- Rejection reason, if applicable.

**RXQ.14.3.2.5** The Distribution Company should process the Disconnection Request and send a Disconnection Completion via Uniform Electronic Transaction to the Supplier if all of the following conditions exist:

- The ESI ID exists in the Distribution Company's system, and;
- The Disconnection Request has the required elements, and;
- The Supplier was verified as the current Supplier for the ESI ID.

**RXQ.14.3.2.6** A Disconnection Completion should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Action or status indicator;
- ESI ID;
- Meter number;
- Distribution Company service order number;
- Disconnect location, if applicable;
- Actual date and time of completion;
- Last known meter reading, if applicable;
- Status reason, and;
- Purpose code.

**RXQ.14.3.2.7** If the Customer remedies the reason for Disconnection, then the Supplier should send a Reconnection Request via Uniform Electronic Transaction to the Distribution Company.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.3.2.8** If the Distribution Company receives a Reconnection Request while the Disconnection Request is pending, then the Distribution Company should cancel the Disconnection Request in its system and send a Disconnection Completion with an un-executable status reason via Uniform Electronic Transaction to the Supplier.

**RXQ.14.3.2.9** If the Distribution Company receives a Reconnection Request after the Disconnection Request has been completed, then the Distribution Company should process the Reconnection Request and send a Reconnection Completion via Uniform Electronic Transaction to the Supplier.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.3.3 Reconnection When Disconnected for Non-Payment**

**RXQ.14.3.3.1** If the Customer contacts the Supplier to remedy the reason for Disconnection and the Supplier confirms that the Customer should be reconnected, then the Supplier should send a Reconnection Request via Uniform Electronic Transaction to the Distribution Company.

**RXQ.14.3.3.2** In addition to the ESI ID, a Reconnection Request should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Customer name;
- Customer service address;
- Customer zip code;
- Contact name;
- Customer contact number;
- Purpose code;
- Pole number;
- Meter number;
- Priority code;
- Special needs indicator;
- Service requested date;
- Action code, and;
- Transaction type code.

**RXQ.14.3.3.3** The Distribution Company should send a Reconnection Rejection via Uniform Electronic Transaction to the Supplier if any of the following conditions exists:

- The ESI ID in the Reconnection Request does not exist, or:
- The Reconnection Request does not contain the required elements, or:
- The Supplier was not able to be verified as the current Supplier for the ESI ID.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.3.3.4** A Reconnection Rejection should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Action or status indicator;
- ESI ID;
- Status reason;
- Purpose code;
- Rejection reason code, and;
- Rejection reason.

**RXQ.14.3.3.5** The Distribution Company should process the Reconnection Request and send a Reconnection Completion via Uniform Electronic Transaction to the Supplier if all of the following conditions exist:

- The ESI ID exists in the Distribution Company's system, and;
- The Reconnection Request has the required elements, and;
- The Supplier was verified as the current Supplier for the ESI ID.

**RXQ.14.3.3.6** A Reconnection Completion should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Action or status indicator;
- ESI ID;
- Meter number;
- Distribution Company service order number;
- Reconnect location;
- Actual date and time of completion;
- Meter reading;
- Status reason, and;
- Purpose code.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

### RXQ.14.3.4 Disconnection Initiated by Distribution Company

**RXQ.14.3.4.1** If the Distribution Company identifies a need to disconnect a Customer's service for safety or other reasons, then the Distribution Company should send a Disconnection Notification via Uniform Electronic Transaction to the Supplier.

**RXQ.14.3.4.2** In addition to the ESI ID, a Disconnection Notification should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number;
- Meter number;
- Action code;
- Suspension code, and;
- Service suspension date and time.

**RXQ.14.3.4.3** Upon reciept of a Disconnection Notification from the Distribution Company, the Supplier should send a Disconnection Acknowledgement via Uniform Electronic Transaction to the Distribution Company.

**RXQ.14.3.4.4** In addition to the ESI ID, a Disconnection Acknowledgement should contain the data elements found in RXQ.14.6. At a minimum, the following information should be included:

- Distribution Company name and D-U-N-S® Number;
- Supplier name and D-U-N-S® Number, and;
- Action code.

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

**RXQ.14.4 Models (see attachment link below)**

**RXQ.14.4.1 Service Request Applicable to Registration Agent Model Process Flow**

**RXQ.14.4.2 Disconnection for Non-Payment Applicable to Registration Agent Model Process Flow**

**RXQ.14.4.3 Reconnection When Disconnected for Non-Payment Applivable to Registration Agent Model Process Flow**

**RXQ.14.4.4 Disconnection Initiated by Distribution Company Applicable to Registration Agent Model Process Flow**

**(Attachment Link:** http://www.naesb.org/pdf4/retail_2009_ap_10a_10c_rec_attach.ppt)

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

## 4. SUPPORTING DOCUMENTATION

### a. Description of Request:

2009 Retail Annual Plan Item No. 10 – Additional Registration Agent Processes

a. Review all existing Model Business Practices to determine if the Service Request process is already covered, and if necessary develop any new Model Business Practices required

c. Review all existing Model Business Practices to determine if the disconnection and reconnection processes are already covered, and if necessary develop any new Model Business Practices required

### b. Description of Recommendation:

All existing Model Business Practices were reviewed and BPS determined that the Service Request, Disconnection, and Reconnectin processes were not covered. These Model Business Practices detail the processes in the Registration Agent model for a Service Request as defined within the Model Business Practices, Disconnection for either non-payment or when initiated by the Distribution Company for safety or other reasons, and for Reconnection when Disconnected for non-payment.

### c. Business Purpose:

See above

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

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

| | |
|---|---|
| July 22, 2009 | Conference Call |
| October 26 – 27, 2009 | Face-to-Face Meeting |
| December 3, 2009 | Confercne Call |

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

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

**Requesters: Joint REQ/RGQ Business Practices Subcommittee**
**Request No.: 2009 Retail Annual Plan Item No. 10 (a) and (c)**
**Request Title: Service Request, Disconnection and Reconnection in the Registration Agent Model**

On the December 3, 2009 BPS conference call by a vote of 7 In Favor and 0 Opposed, the Joint REQ/RGQ BPS voted to release the Service Request, Disconnection and Reconnection in the Registration Agent Model Process DFlows (Models) and Model Business Practices to the Joint REQ/RGQ Executive Committee for posting and approval, and to the Information Requirments Subcommittee for development of any technical implementation.

**Comments Submitted by J. Cargas, City of Houston**

---

From: Cargas, James P. – city of Houston
Sent: Wednesday, April 07, 2010 5:03 PM
To: Veronica Thomason
Subject: FW: REQ/RGQ Request for Formal Comments on 2009 Retail AP Item 10(a) and (c) - Due May 7, 2010

Veronica,
Please share this with James Culliton.
Thank you,
Jim

On page 4, there is a typo ...

RXQ.0.2.xxx Disconnection Notification: The Uniform Electronic Transaction used in the Registration Agent model to notify the Supplier that a Disconnection has been made by the Distribution Company for safety or other [r]easons.

James P. Cargas
---
Senior Assistant City Attorney
City of Houston, Legal Department

If you would like to receive periodic emails from Mayor Annise D. parker and the City of Houston on topics of interest to you and your neighborhood, please go to http://www.houstontx.gov and register with CitizensNet.

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-----Original Message-----
From: naesbmail@naesb.org [mailto:naesbmail@naesb.org]
Sent: Wednesday, April 07, 2010 3:41 PM
To: Cargas, James P. - LGL
Subject: REQ/RGQ Request for Formal Comments on 2009 Retail AP Item 10(a) and (c) - Due May 7, 2010

via email and posting

Dear NAESB Retail Electric Quadrant (REQ), Retail Gas Quadrant (RGQ) Members and Interested Industry Participants,

**Comments Submitted by J. Cargas, City of Houston**

An industry formal comment period begins today, April 7, 2010 and ends on May 7, 2010 for the Joint REQ/RGQ Business Practices Subcommittee recommendation below:

Recommendation:

2009 Retail Annual Plan Item No. 10 (a) and (c): Service Request, Disconnection and Reconnection in the Registration Agent Model

Recommendation: http://www.naesb.org/pdf4/retail_2009_ap_10a_10c_rec.doc
All interested parties, regardless of membership status within NAESB, are eligible to submit comments for consideration. The REQ and RGQ Executive Committees will review the recommendation and consider it for vote during an upcoming Executive Committee meeting. The Executive Committees will review all submitted comments.

All comments received by the NAESB office by the end of business, May 7, 2010 will be posted on the Home Page http://naesb.org/retail_request.asp and forwarded to the REQ and RGQ 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
NAESB

cc: Rae McQuade, President

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

**via email and posting**

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

**FROM:** Jonathan Booe, Staff Attorney

**RE:** Request for Formal Comments on the NAESB Smart Grid Standards Task Force Requirements Specifications for NIST Priority Action Plans 3, 4 and 9

**DATE:** March 9, 2010

Dear NAESB REQ Members and Interested Industry Participants,

An industry formal comment period begins today, March 9, 2010, and ends on April 9, 2010 for the Retail Electric Quadrant recommendations below:

| **Recommendations:** |
|---|
| **2010 Retail Annual Plan Item 9(a):** Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03<br>Recommendation: http://naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc |
| **2010 Retail Annual Plan Item 9(b):** Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04<br>Recommendation: http://naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc |
| **2010 Retail Annual Plan Item 9(c):** Requirements Specifications for Retail Standard DR Signals – for NIST PAP09<br>Recommendation: http://naesb.org/pdf4/retail_2010_ap_9c_rec.doc |

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 recommendations and consider them 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, April 9, 2010 will be posted on the Home Page (WEQ Request Page): http://www.naesb.org/weq_request.asp and forwarded to the REQ Executive Committee members for their consideration. If you have difficulty downloading the recommendations, please call the NAESB office at (713) 356-0060.

Best Regards,

*Jonathan Booe*

NAESB

cc: Rae McQuade, President

**North American Energy Standards Board**

1301 Fannin, Suite 2350, Houston, Texas 77002
Phone: (713) 356-0060, Fax: (713) 356-0067, E-mail: naesb@naesb.org
Home Page: www.naesb.org

**via email and posting**

**TO:** NAESB Wholesale Electric Quadrant (WEQ) Members and Interested Industry Participants

**FROM:** Jonathan Booe, Staff Attorney

**RE:** Request for Formal Comments on the NAESB Smart Grid Standards Task Force Requirements Specifications for NIST Priority Action Plans 3, 4 and 9

**DATE:** March 9, 2010

Dear NAESB WEQ Members and Interested Industry Participants,

An industry formal comment period begins today, March 9, 2010, and ends on April 9, 2010 for the Wholesale Electric Quadrant recommendations below:

| **Recommendations:** |
|---|
| **2010 WEQ Annual Plan Item 6(a):** Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03<br>Recommendation: http://naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc |
| **2010 WEQ Annual Plan Item 6(b):** Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04<br>Recommendation: http://naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc |
| **2010 WEQ Annual Plan Item 6(c):** Requirements Specifications for Wholesale Standard DR Signals – for NIST PAP09<br>Recommendation: http://naesb.org/pdf4/weq_2010_ap_6c_rec.doc |

All interested parties, regardless of membership status within NAESB, are eligible to submit comments for consideration. The Wholesale Electric Quadrant Executive Committee will review the recommendations and consider them 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, April 9, 2010 will be posted on the Home Page (WEQ Request Page): http://www.naesb.org/weq_request.asp and forwarded to the WEQ Executive Committee members for their consideration. If you have difficulty downloading the recommendations, please call the NAESB office at (713) 356-0060.

Best Regards,

*Jonathan Booe*

NAESB

cc: Rae McQuade, President

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)** |
| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

## 1. RECOMMENDED ACTION:

- X Accept as requested
- ___ Accept as modified below
- ___ Decline

## EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

- X Change to Existing Practice
- ___ Status Quo

## 2. TYPE OF DEVELOPMENT/MAINTENANCE

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

## 3. RECOMMENDATION

### SUMMARY:

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)** |
| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

New WEQ-016 Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 are included below for reference *(previously added in Recommendation 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b))*

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## 000-1 ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
**Requesters:** NAESB Smart Grid Task Force (SGTF)
**Request No.:** 2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)
**Request Title:** Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

## 000-2 DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)**
**Requesters:** **NAESB Smart Grid Task Force (SGTF)**
**Request No.:** **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)**
**Request Title:** **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03**

| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)**
**Requesters:** **NAESB Smart Grid Task Force (SGTF)**
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| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

## New Business Practice Standards WEQ-016 – Smart Grid Activities

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## RECOMMENDED STANDARDS:

### Executive Summary

### Specifications for Common Electricity Product and Pricing Definion

The following addresses the business objectives and context for capturing the attributes associated with electricity price and product signals as part of the Smart Grid implementation, which is called for by National Institute of Standards and Technology (NIST) Priority Action Plans (PAP) 03. The North America Energy Standards Board (NAESB) Smart Grid Task Force (SGTF) in cooperation with UCA International Users Group (UCAIug) Open Smart Grid (OpenSG) Task Force, the Independent System Operator/Regional Transmission Organization Council (ISO/RTO Council), and other organizations, has developed the use cases that provide requirements for electricity price and product signal standards.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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Because the NAESB Smart Grid Task Force is involved in activities related to several of NIST's Priority Action Plans, the SGTF has developed a standard list of actors and related objects for all Priority Action Plan work coming out of the group. This document also contains an overview of the most common retail rate structures and price-related use cases. Finally, a representative list of price and product attributes is provided.

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

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

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

## Introduction

## Specifications for Common Electricity Product and Pricing Definion

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

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

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

**Assumptions:**

- Wholesale market price signals may have different characteristics than retail market signals.
- Attempts to standardize pricing signals must not hinder regulatory changes or market innovations.

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**Business Practice Standards**

**016-3 Specifications for Common Electricity Product and Pricing Definition**

**016-3.1** Price signals should be flexible enough to accommodate regulatory changes or market innovations.

**016-3.2** ACTORS

The actors used in the use cases are role-based, with the Market Participant and Utility Customer business entities taking on one or more roles. This table contains only actors referenced by use cases in this document.

| Actor Name | Proposed Definition | Acronym | Actor ID[1] | Examples |
|---|---|---|---|---|
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. | UC | 2.4 | Residential, Industrial |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. | | 5.5 | |
| Control | The role associated with the control of an End Device. | | 5.2 | Facility EMS, Energy Services Interface (ESI) or Gateway |
| End Device | A physical end-use device that consumes or supplies electricity. | ED | 4.5 | HAN, Electric Vehicle, or Smart Appliance, Display |
| Facility | The location at which connection to the transmission or | | 4.3 | Electricity Consumer |

[1] Actor IDs refer to the identifiers associated with NAESB's Smart Grid Task Force Actors List. http://www.naesb.org/pdf4/smart_grid_ssd012810a1.xls

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| Actor Name | Proposed Definition | Acronym | Actor ID[1] | Examples |
|---|---|---|---|---|
| | distribution system is made. | | | |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. | LSE | 3.2 | |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. | | 5.1 | Meter |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. | | 4.1 | Supplier, Distributed Energy Resource (DER) |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. | SP | 3.1 | Retail Service Provider, Demand Response Provider, Dynamic Price Service Provider |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. | SO | 2.1 | Market and System Operators |

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| Actor Name | Proposed Definition | Acronym | Actor ID[1] | Examples |
|---|---|---|---|---|
| Transmission/ Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. | TDSP | 3.5 | Utility Distribution Company |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. | UDO | 2.3 | Distribution Operator |

**016-3.3** CONVENTIONS

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

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

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**016-3.4** USE CASE OVERVIEW

A tariff establishes the prices paid for the services received, and is based on a variety of factors including wholesale prices, quality and type of service and costs associated with transmission and distribution grid infrastructure and operation. The use cases in this document illustrate the high-level activities associated with publishing prices and how the information is used to evoke a change in consumption.

The table below provides information on common types of energy supply rate structures.

| Tariff Rate Type | Target Customers | Description |
|---|---|---|
| Block Rate | C&I, Residential | An energy supply rate structure in which the per unit energy price increases or decreases for each successive block of energy consumed. |
| Critical Peak Price (CPP) | C&I, Residential | An energy supply rate structure whereby "Time of Use Pricing" is in effect with the exception of certain "peak days" at which time electric prices may reflect the costs of electricity at the wholesale level. |
| Demand Rate | Mainly for C&I Customers, Pilot for Residential Customers | A component of an energy supply rate structure based on the highest demand for electricity measured in a billing period. |
| Day Ahead Market Rate (DAMR) | C&I, Residential | An energy supply rate structure, typically hourly, based on the day-ahead wholesale market price. |
| Market Clearing Price for Energy (MCPE) | C&I | An energy rate structure that allows for price changes every 15 minutes based on real-time wholesale market prices. |
| Peak Time Rebate (PTR) | C&I, Residential | An incentive rate in which the utility pays Customers to reduce demand during peak periods on critical days. |

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| Tariff Rate Type | Target Customers | Description |
|---|---|---|
| Real Time Price Rate (RTP) | C&I | An energy supply rate structure in which prices can vary, typically on an hourly basis, based on forecast (day-ahead) or actual (real-time) market conditions. |
| Time of Use Rate (TOU) | C&I, Residential | An energy supply rate structure where the per unit charge (kWh or kW) varies according to the time of day. Time-of-Use rates may have daily and seasonal variations. |
| Variable Peak Pricing (VPP) | C&I, Residential | An energy supply rate structure that combines features of TOU and RTP structures to include the flexibility of market price variation and the fixed time periods of a time of use rate. |

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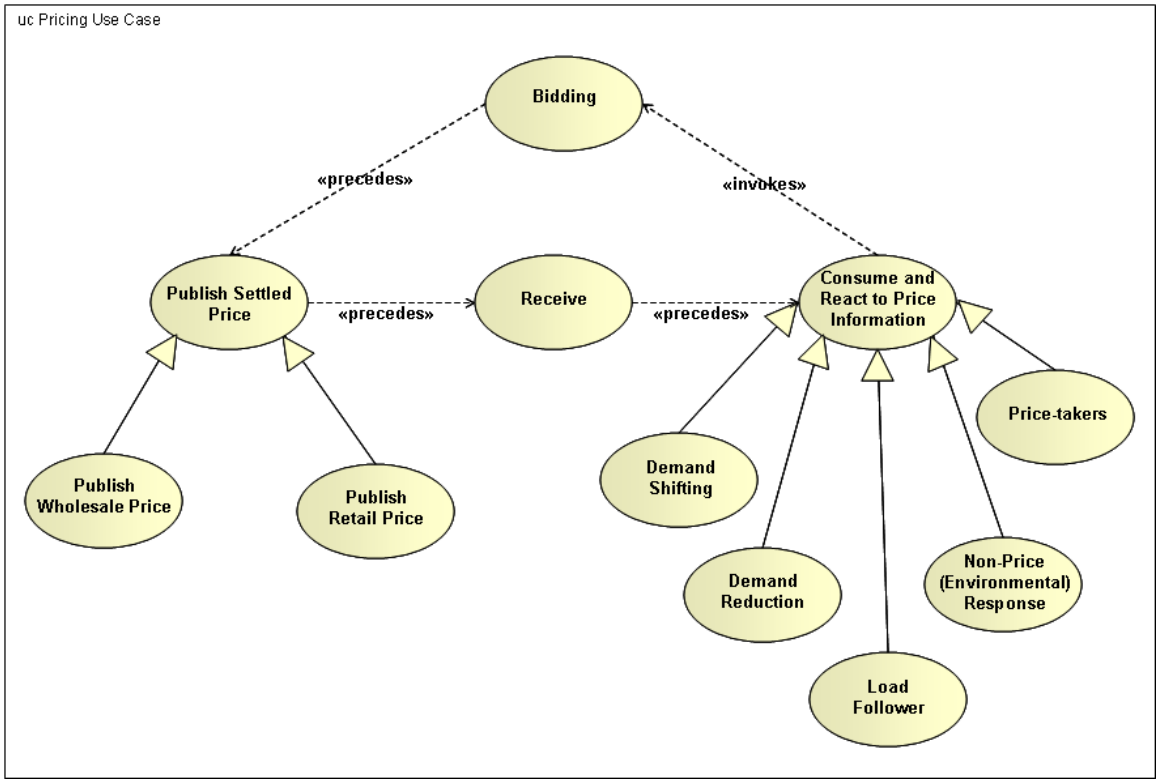
The Pricing Use Case below provides an overview of the specific use cases described in this document. The results of Bidding produce the Settled Price which is published and then received. The recipient reacts to the price, which affects the next bidding cycle. The following use cases where electricity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

- Demand Shifting
- Demand Reduction
- Non-Price (Environmental) Response
- Load-Follower
- Price-takers



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**016-3.5** SPECIFIC USE CASES

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

| Use Case | Actors | Description | SAMPLE Scenarios |
|---|---|---|---|
| Demand Shifting | Service Provider End Device Facility | Pricing signals are used as a tool to influence when consumers use electricity. | The System Operator published day-ahead prices which are statistically higher than average between 2:30 and 5:30 in the afternoon. Illustrate how different End Devices will respond to a forward energy price signal including:<br>• An Energy Management System (EMS) requests Building Automation System (BAS) to “pre-cool” until 2:30 PM.<br>• Home-based intelligent device is programmed to operate at a time when electricity is cheaper.<br>• An electric plug-in vehicle is programmed to charge when electricity is cheaper. |

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| Use Case | Actors | Description | SAMPLE Scenarios |
|---|---|---|---|
| Demand Reduction | Control Facility | Pricing signals are used as a tool to influence the quantity of electricity that consumers use. | A Utility Distribution Company's fixed time-of-day tariffs indicates higher price during day, and lower price after 11:00 PM. Demonstrate how different End Devices will response to price differentials:<br>• Time-insensitive building systems schedule their run-time programs after 11:00 PM.<br>• Homeowner starts appliance at 5:10. The appliance notifies that by waiting 20 minutes to run, the consumer will get lower cost electricity. Homeowner acknowledges. |
| Environmental Response | Resource End Device Facility | Product characteristics (other than price) are used to influence either the quantity or the time at which the customer uses electricity. | Customer set a price threshold at which "green" power is desirable. Above the "green price" the customer will take any power, below the "green price" the customer will choose suppliers with renewable portfolios.<br>Test the scenario where, at 5:00 PM wind power picks up such that the price of power from renewable sources falls below the "green price" set by the customer.<br>Utility delivers blend of 20% wind, 80% coal during this time of day at .10/kWh. 25% of customers indicate preference to buy pure wind, an over-subscription. Prices for pure wind are bid up to .15/kWh as the wind-sensitive market decreases. 20% of consumers pay the 50% premium to get only wind-only power. |

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| Use Case | Actors | Description | SAMPLE Scenarios |
|---|---|---|---|
| | | | 1) Local PUC requires that segmentation be revenue-neutral, so bidding for Wind Power reduces undifferentiated power to .0875 kWh.<br>2) No bidding was required for undifferentiated power, so provider is incentivized to find additional sources of Wind Power.<br>3) Consumers unable to buy desired Wind Power reduce their aggregate demand.<br>Consumers have programmed non-time-sensitive systems and appliances to not run when Wind Power is not available, time-shifting some demand until Wind Power is available at the desired price.<br>Wind Power always commands a premium over coal power because of higher cost of production. Local regulatory policy requires pass-through of actual market costs for differentiated power. Consumers who buy coal power must buy carbon credits as well. If the [low] cost of coal is combined with the cost of the credit, renewable energy sources become more competitive. |

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

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## 016-3.6 PRICING AND PRODUCT ATTRIBUTES

The following initial attributes were presented early in the PAP-03 meetings and will serve as the initial starting point for further refinement.

### 016-3.6.1 Product Identification

| Attribute | Description | Considerations |
|---|---|---|
| Product Identifier | Energy, although largely a non-storable and transitory commodity, is nonetheless still a tradable and sellable entity. Any commodity benefits from having a unique identifier (external) that can unambiguously be used by consumers to identify what it is that they are purchasing. | Examples of product identification scheme used in the financial world is the ISIN (International Security Identifier Number), and Stock ticker symbols used by exchanges.<br>This not a transaction identifier – this would be an industry agreed upon identifier for a particular energy product offering. |
| Identifier source | Identification of the source of the product identifier. | In most systems there are competing or alternative product identification schemes. The Identifier source reference the product identification scheme for the Product Identifier. |
| Product Type | A product type. | Attempt to fit the product type within already in place ontologies or product classifications used within industry for trading energy. See 5.1 for suggestions. |
| Product Sub-Type | The sub-type of product | Products may be further divided into subtypes, for example Reserve products may be 10-minute or 30-minute response. |
| Unit of Measure for Product | Unit of measure the product. | The unit of measure such as MWh or kWh. |

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## 016-3.6.2 Pricing Attributes

| Attribute | | Description | Considerations |
|---|---|---|---|
| Total Price | | Total Price of the product at point of delivery | Price is expressed as currency per Unit of Measure, i.e. quantity is not required, e.g. $/MWh<br>Total Price = Sum (Price Components) |
| Set of 1..n Price Components | | | |
| | Price Component | A component of the price. | Price may have one or more components. The sum of all Price Components must equal the Total Price |
| | Price Component Type | The type of Price Component | A standard set of price component types shall be enumerated, such as:<br>• Wholesale electricity cost<br>• Transmission costs<br>• Distribution costs |
| Price Type | | Type of price | A standard set of price types will need to be defined Real Time, 5 minute, day ahead, as examples for price types |
| Override Unit of Measure for the Product | | Unit of measure which is used to determine the price | Alternative Unit of Measure used in calculating the price. |
| Currency | | The Currency of the Total Price and Price Components | Currency is required to determine the units of measure of the Total Price and Price Components. The Energy Units of Measure are defined by the Product Type. |

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| Attribute | Description | Considerations |
|---|---|---|
| Time and Interval | Interval of energy delivery | Timezone conventions and use need to be unambiguously defined and agreed upon.<br>Daily blocks, hourly markets, 5 minute markets.<br>A decision in how basic product information will reference and interact with the WS-Calendar initiative being completed as part of PAP-04. |
| Source Location Identifier | Location of the source of the electric energy | Electrical energy cost and value are greatly impacted by the distance between generation and consumption. Indicating the source of the generation is important in terms of pricing decisions on part of consumers and intermediaries.<br>The use of source location would mainly be used for bilateral transactions. |
| Source Location Identifier Type | Type of location. | The mechanism used to identify location can be defined in multiple sources based upon specific usage from control areas to GPS coordinates it is anticipated that there may need to be more than one method to identify a geographical location.<br>Where possible existing industry standards should be adopted to identify geographic locations. |

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## 016-3.7 SUPPLEMENTAL MATERIAL

### 016-3.7.1 Product Types and Sub Type Enumerations

The following values are suggested for use in classification of electrical energy.[2] NERC document (see section 1.2). These would be in addition to ENERGY and CAPACITY.

| Value | Description |
|---|---|
| REGULATION | The provision of generation and load response capability, including capacity, energy, and MANEUVERABILITY, that responds to automatic controls issued by the OPERATING AUTHORITY. |
| LOAD FOLLOWING | The provision of generation and load response capability, including capacity, energy, and MANEUVERABILITY, that is dispatched within a scheduling period by the OPERATING AUTHORITY. |
| CONTINGENCY RESERVE | The provision of capacity deployed by the OPERATING AUTHORITY to reduce AREA CONTROL ERROR to meet the Disturbance Control Standard (DCS) and other NERC and Regional Reliability Council contingency requirements. CONTINGENCY RESERVES are composed of CONTINGENCY RESERVE–SPINNING and CONTINGENCY RESERVE–SUPPLEMENTAL. |
| REACTIVE POWER SUPPLY FROM GENERATION SOURCES | The provision of reactive capacity, reactive energy, and responsiveness from IOS RESOURCES, available to control voltages and support operation of the BULK ELECTRIC SYSTEM. |

[2] NERC Reference Document Interconnected Operations Services, 1.2 Definition of Terms.

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| Value | Description |
|---|---|
| FREQUENCY RESPONSE | The provision of capacity from IOS RESOURCES that deploys automatically to stabilize frequency following a significant and sustained frequency deviation on the INTERCONNECTION. |
| SYSTEM BLACK START CAPABILITY | The provision of generating equipment that, following a system blackout, is able to: 1) start without an outside electrical supply; and 2) energize a defined portion of the transmission system. SYSTEM BLACK START CAPABILITY serves to provide an initial startup supply source for other system capacity as one part of a broader restoration process to re-energize the transmission system. |

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## 016-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor/object classes and sub-classes as illustrated in the entity-relationship model in Figure 1 of Appendix A. Abbreviations/Acronyms correspond to the IDs shown in the figure.

### ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

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## DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

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| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
**Requesters:** NAESB Smart Grid Task Force (SGTF)
**Request No.:** 2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)
**Request Title:** Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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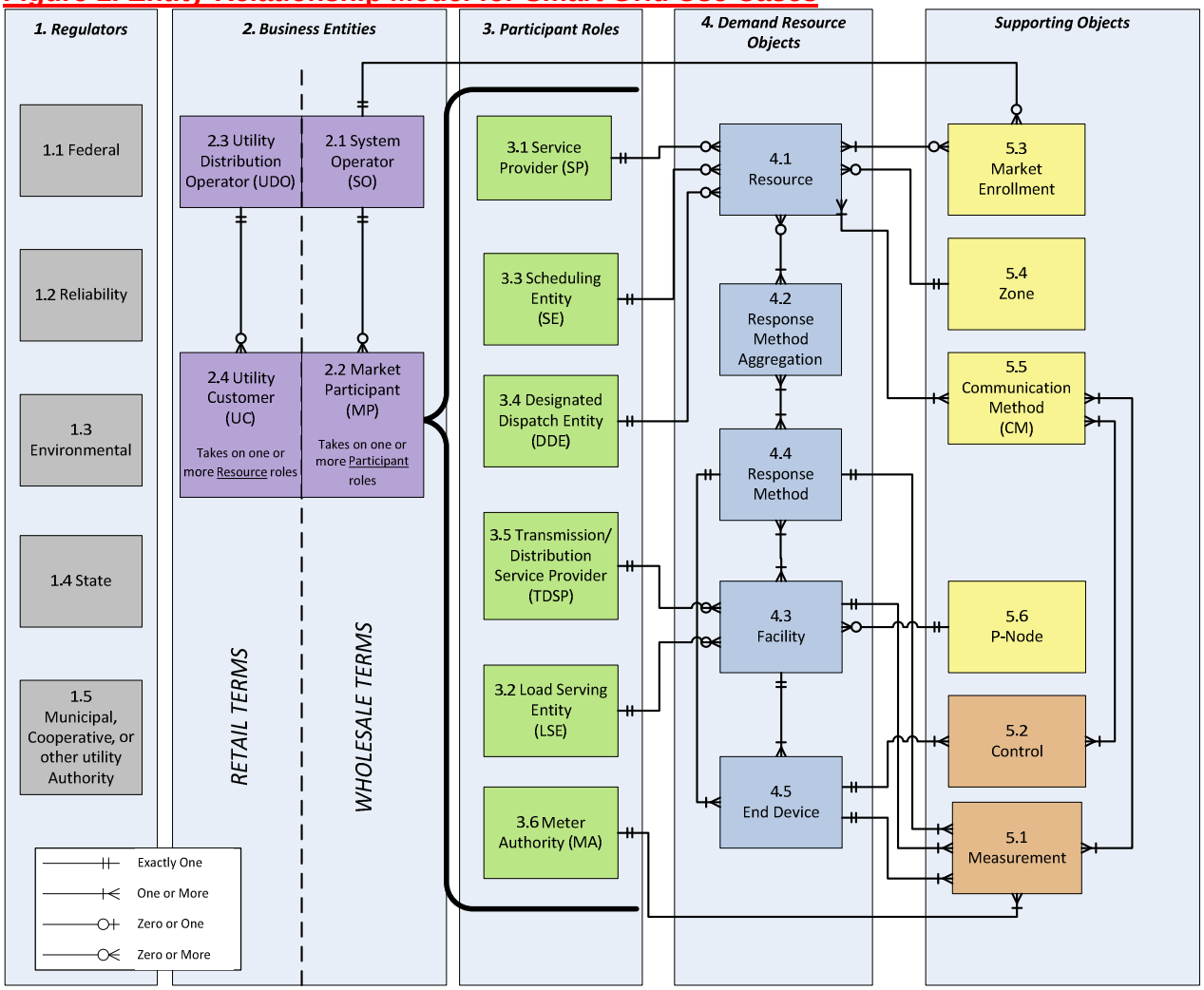
**Figure 1. Entity-Relationship Model for Smart Grid Use Cases**



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**4.** Supporting Documentation

**a. Description of Request:**

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

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

**b. Description of Recommendation:**

See Section 3 Summary

**c. Business Purpose:**

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

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

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

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

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

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

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

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

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## 1. RECOMMENDED ACTION:

- [X] Accept as requested
- [ ] Accept as modified below
- [ ] Decline

## EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

- [X] Change to Existing Practice
- [ ] Status Quo

## 2. TYPE OF DEVELOPMENT/MAINTENANCE

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

## 3. RECOMMENDATION

### SUMMARY:

The NAESB Smart Grid Task Force (SGTF) submits this Recommendation to define the range of information required to establish the breadth of the communication requirement. There is no need for the cases to be exhaustive, merely illustrative of the full scope.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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# New WEQ-016 Abbreviations/Acronyms and Defined Terms to be added to WEQ-000

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## 000-1 ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## 000-2 DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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**Request No.:** 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)
**Request Title:** Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

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| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

## New Business Practice Standards WEQ-016 – Smart Grid Activities

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## RECOMMENDED STANDARDS:

### Executive Summary

### Requirements Specification for Common Scheduling Mechanism for Energy Transactions

The following contains a set of requirements relating to the use of date and time based data elements that are used in transactions for Demand Response Programs. This information is being provided to NIST in order to aid in the development of a standard representation for date/time based data elements derived from an XML representation of iCalendar[1].

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
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Although there are many other areas where date/time based data elements are used in energy industry transactions this recommendation is limited in scope to only those date/time based data elements that are utilized in Demand Response Programs.

## Introduction

## Requirements Specification for Common Scheduling Mechanism for Energy Transactions

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

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

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

Smart grid transactions communicate three classes of information. They describe events used within the power management and distribution of the grid. They invoke financial or business transactions concerning those transactions. They communicate schedules and interval information for the flows of energy. Per agreement, all semantics relating to Power Management will use the Common Information Model (CIM) from IEC TC57. All financial and market semantics will be based upon the definitions found in ISO 20022 (Financial Documents) and in their most common expression, FIX. All elements relating to schedule and interval will be expressed in the notation of the IETF iCalendar (RFC 5545) standard, as defined in the XML representation of iCalendar developed by CalConnect. The purpose of this approach is to increase interoperation and understanding between domains.

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
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The purpose of this action is to define the requirements for standard communication of date, time, schedule, and interval by smart grid actors, with particular attention to demand response (DR). These requirements will be submitted to the OASIS and CalConnect technical committee to define the applicable communication standards to support them.

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

**Assumptions**: We assume as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

## Business Practice Standards

### 016-1 REQUIREMENTS SPECIFICATION FOR COMMON SCHEDULING MECHANISM FOR ENERGY TRANSACTIONS

#### 016-1.1 USE CASE OVERVIEW

##### 016-1.1.1 Requirements for Date and Time Usage

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## 016-1.2 SPECIFIC USE CASES

### 016-1.2.1 Date and Time Based Data Elements Utilized in Demand Response Programs

The representative instances named in the table below are representative of those used in smart grid transactions. Although some instances may have be seen under other names in different markets, standardizing those names is beyond the scope of this activity, which is limited to standardizing communication of date, time, schedule, and interval. These instances are sufficiently diverse to define the range of communications that the standard must support.

| Representative Instances | Description |
|---|---|
| Adjustment Window | The period prior to a Demand Response Event used for calculating a Baseline Adjustment. |
| Advance Notification | One or more communications to Demand Resources of an impending Demand Response Event transmitted in advance of the actual event. |
| Baseline Window | The window of time preceding and optionally following, a Demand Response Event over which electricity consumption data is collected for the purpose of establishing a Baseline. |
| Demand Response Event | The periods, deadlines, and transitions during which Demand Resources perform. The Program Administrator should specify the duration and applicability of a Demand Response Event. Not all deadlines, periods, and transitions may be applicable to all Demand Response products or services. |
| Deployment | The time at which a Demand Resource begins reducing Demand on the system in response to an instruction. |

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| Representative Instances | Description |
|---|---|
| Deployment Period | The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall |
| Meter Data Recording Interval | The time between electricity meter consumption recordings |
| Meter Data Reporting Deadline | The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data submission is required for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month). |
| Normal Operations | The time following Release/Recall at which a Program Administrator may require a Demand Resource to have returned its Load consumption to normal levels, and to be available again for Deployment |
| Performance Window | The period in a Demand Response Event analyzed by the Program Administrator to measure and verify the Demand Reduction Value for a Demand Resource. |
| Ramp Period | The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand |
| Recovery Period | The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load. |
| Reduction Deadline | The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation |
| Release/Recall | The time when a Program Administrator notifies a Demand Resource that the Deployment Period has ended or will end |

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| Representative Instances | Description |
|---|---|
| Sustained Response Period | The time between Reduction Deadline and Release/Recall, representing the window over which a Demand Resource is required to maintain its reduced net consumption of electricity |
| Telemetry Interval | The time unit between communications between a Demand Resource or Demand Response Provider and a Program Administrator |

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## 016-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor/object classes and sub-classes as illustrated in the entity-relationship model in Figure 1 of Appendix A. Abbreviations/Acronyms correspond to the IDs shown in the figure.

### ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

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## DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

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| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

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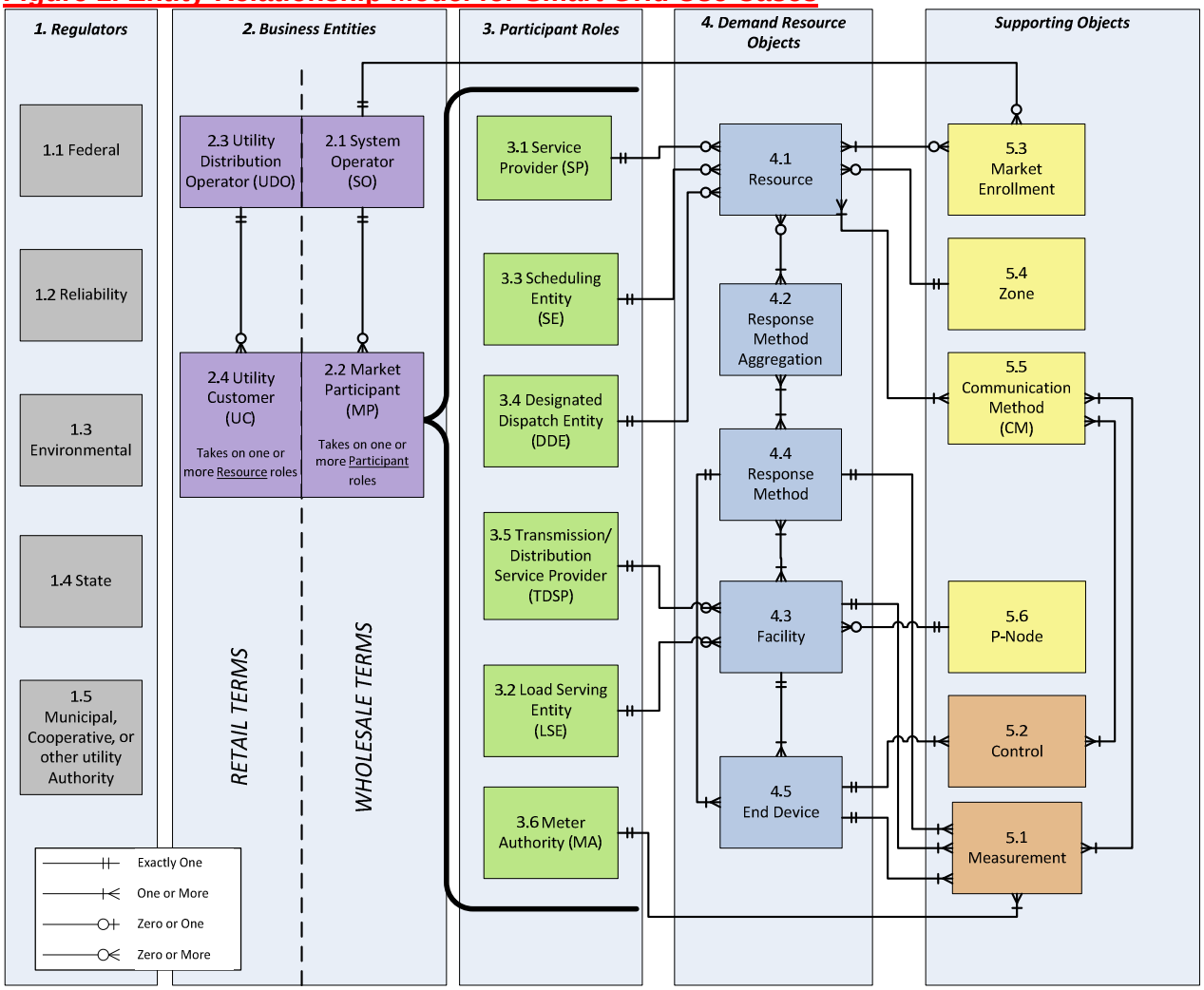
| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)** |
| **Request Title:** | **Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04** |

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



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
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| **Request Title:** | **Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04** |

## 4. SUPPORTING DOCUMENTATION

### a. Description of Request:

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

This recommendation specifically pertains to PAP 04[2], "A Common Scheduling Mechanism for Energy Transactions".

### b. Description of Recommendation:

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

### c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the use of dates/times within a broad spectrum of energy transactions. The scope of this effort has been limited to Demand Response Programs in order to meet NIST's deadline for this effort.

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

Assumptions - We assume as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

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

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

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

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## 1. RECOMMENDED ACTION:

| | |
|---|---|
| X | Accept as requested |
| | Accept as modified below |
| | Decline |

## EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

| | |
|---|---|
| X | Change to Existing Practice |
| | Status Quo |

## 2. TYPE OF DEVELOPMENT/MAINTENANCE

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

## 3. RECOMMENDATION

**SUMMARY:**

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

**RECOMMENDED STANDARDS:**

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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New Model Business Practices REQ.14 – Smart Grid Activities

## RECOMMENDED STANDARDS:

### Executive Summary

### Specifications for Retail Standard Demand Response Signals

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

According to the Framework Document findings:

1. DR signals standardization must support all four market types; i.e. regions with a) no open wholesale and no retail competition, b) open wholesale market only, c) open retail competition only, d) open wholesale and open retail competition. It must also consider key differences that exist and will continue to exist in all four market types.
2. Wholesale market DR and pricing signals have different characteristics than retail market DR and pricing signals, although commonality in format is feasible.
3. Most Customers (with a few exception of Commercial and Industrial (C&I) Customers) will not interact directly with wholesale market when it comes to DR and pricing signals.
4. Retail pricing models are complex, due to the numerous tariff rate structures that exist in both regulated and un-regulated markets. Attempts to standardize DR control and pricing signals must not hinder regulatory changes or market innovations when it comes to future tariff or pricing models.
5. New business entities (Energy Service Providers (ESP), Demand Response Providers (DRP), Service Providers, and Energy Information Service Providers (ESIP)) will play an increasing role in DR implementation.
6. DER may play an increasingly important role in DR, yet the development of tariff and/or pricing models that support DER's role in DR is still in its infancy.
7. The Customer's perspective and ability to react to DR control and pricing signals must be a key driver during the development of DR standards.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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| **Request No.:** | **2010 Retail Annual Plan Item 9(c)** |
| **Request Title:** | **Requirements Specifications for Retail Standard DR Signals - for NIST PAP09** |

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

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

## Introduction

## Specifications for Retail Standard Demand Response Signals

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

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

**Assumptions**: The following and its content have been developed with the consideration of the following key assumptions:

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

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

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

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

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

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

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

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New REQ.14.2.B Technical Abbreviations/Acronyms and Defined Terms to be added to REQ.14 are included below for reference *(previously added in Recommendation 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b))*

## REQ.14.2.B Technical Definitions

### Abbreviations and Acronyms

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device' |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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**REQ.14.2.1t** **Business Entity**: The wholesale or retail entity that interacts with other entities in its market.

**REQ.14.2.2t** **Communication Method**: The method by which an object communicates with another object to instruct, measure or control.

**REQ.14.2.3t** **Control**: The role associated with the control of an End Device.

**REQ.14.2.4t** **Demand Response Objects**: Physical and logical types of demand response resource objects.

**REQ.14.2.5t** **Designated Dispatch Entity**: A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.

**REQ.14.2.6t** **End Device**: A physical end-use device that consumes or supplies electricity.

**REQ.14.2.7t** **Environmental Authority**: A regulatory authority responsible for the development, reporting and enforcement of environmental activities.

**REQ.14.2.8t** **Facility**: The location at which connection to the transmission or distribution system is made.

**REQ.14.2.9t** **Federal Regulator**: A Federal regulatory authority.

**REQ.14.2.10t** **Load Serving Entity**: A role which carries the responsibility of serving end-users and selling electric energy to end-users.

**REQ.14.2.11t** **Local Authority**: A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.

**REQ.14.2.12t** **Market Enrollment**: The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service.

**REQ.14.2.13t** **Market Participant**: An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules.

**REQ.14.2.14t** **Measurement**: The role associated with the device or algorithm that measures the consumption or supply of an End Device.

**REQ.14.2.15t** **Metering Authority**: A role which carries the responsibility of providing data necessary to determine the performance of a Resource.

**REQ.14.2.16t** **P-Node**: The price location of the Facility in the transmission and/or distribution network.

**REQ.14.2.17t** **Participant**: The entity that represents resources to a market or distribution operator.

**REQ.14.2.18t** **Regulator:** A rule-making and enforcement entity.

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**REQ.14.2.19t** **Reliability Authority:** A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities.

**REQ.14.2.20t** **Response Method:** A measurable action taken in response to an instruction to change consumption.

**REQ.14.2.21t** **Response Method Aggregation:** A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers.

**REQ.14.2.22t** **Resource:** A market-dependent group of Response Method Aggregations that represents a dispatchable entity.

**REQ.14.2.23t** **Scheduling Entity:** A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards.

**REQ.14.2.24t** **Service Provider:** A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.

**REQ.14.2.25t** **State Regulator:** A regulatory authority responsible for the oversight and administration of electric utilities.

**REQ.14.2.26t** **Support Operator:** Objects that support the interaction of Business Entities and Demand Response Objects.

**REQ.14.2.27t** **System Operator:** An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation.

**REQ.14.2.28t** **Transmission/Distribution Service Provider:** A role which carries the responsibility of operating a local electricity transmission and/or distribution system.

**REQ.14.2.29t** **Utility Customer:** An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource.

**REQ.14.2.30t** **Utility Distribution Operator:** An entity which carries the responsibility of operating an electricity distribution system.

**REQ.14.2.31t** **Zone:** A physical or electrical region.

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## Model Business Practices

### REQ.14.3.2 Specifications for Retail Standard Demand Response Signals

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

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

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| # | Name | Description | Rationale | Implication |
|---|---|---|---|---|
| 3 | Platform Independence, Vendor Neutral | Requirements and design artifacts shall be platform independent. Implementation technology shall be chosen due to its level of acceptance at the marketplace as open standards. | There is an expectation of differentiation and innovation in the marketplace. With greater dependence on a specific platform, there may be less architectural flexibility. | To achieve both technical and semantic interoperability, certain lower level technologies will need to be chosen. For example, Web Services technology is widely used for integration, and UML is widely used for modeling. |
| 4 | Cyber Secure | Architecture must incorporate latest secure computing techniques. | The integrity of the electric grid and market depend on preventing unauthorized actors from manipulating the DR and DER system. | Architecture must comply with the latest security guidance from the NIST SGIP Architecture Committee and CyberSecurity Task Group, when it comes to Web Services security related implementation. |
| 5 | Interoperability | DR signaling standards should utilize open, interoperable industry standard control and communication technologies to integrate with both common energy management and control systems that can conduct DR activities | Interoperability across different domains of Smart Grid is key to the success of DR signaling standards as it ensures level playing field for innovative solutions for all participants of the Smart Grid. | DR signaling standards must be developed in harmonization with others relevant standards as identified by the NIST SGIP. |
| 6 | Automatic Demand Response | The DR program (analysis, notification, event, action, monitoring, verification, settlement) should be automatic. DR signaling standards should provide secure, reliable communications with consumers for DR operations | Automation is the only way to ensure large scale and repeatable demand response implementation. | Security, reliability and testability must be ensured for DR automation. |

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| # | Name | Description | Rationale | Implication |
|---|---|---|---|---|
| 7 | Cover All Market Types | DR signaling standards should be supported and implementable in all four market types listed in this document | Standards development shall not get in the way of regulatory policy decisions. | DR signals design need to support a wide range of programs and tariff/pricing structures. |

**REQ.14.3.2.1** ACTORS

The following actor roles and actors are defined and used across NAESB documents related to NIST PAP03, 04 and 09 (Wholesale and Retail).

**Actor Roles**

| Term | Acronym | Definition |
|---|---|---|
| Service Provider | SP | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| Designated Dispatch Entity | DDE | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| Load Serving Entity | LSE | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Metering Authority | MA | A role which carries the responsibility of providing data necessary to determine the performance of a ***Resource.*** |
| Scheduling Entity | SE | A role which carries the responsibility of submitting bids/offers and receives ***Schedules*** and ***Awards***. |
| System Operator | SO | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | TDSP | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |

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## Actors List

| **Regulator** | A rule-making and enforcement entity. |
|---|---|
| Federal Regulator (FR) | A Federal regulatory authority. |
| Reliability Authority (RA) | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related |
| Environmental Authority (EA) | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| State Regulator (SR) | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Local Authority (LA) | A regulatory authority responsible for the administration of utility service-related functions within its jurisdiction. |

| **Business Entity** | The wholesale or retail entity that interacts with other entities in its market. |
|---|---|
| System Operator (SO) | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Market Participant (MP) | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's |
| Utility Distribution Operator (UDO) | An entity which carries the responsibility of operating an electricity distribution system. |
| Utility Customer (UC) | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |

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| **Participant Role** | The entity that represents resources to a market or distribution operator. |
|---|---|
| Service Provider (SP) | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| Load Serving Entity (LSE) | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Scheduling Entity (SE) | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Designated Dispatch Entity (DDE) | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information |
| Transmission/Distribution Service Provider (TDSP) | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Metering Authority (MA) | A role which carries the responsibility of providing electric usage data necessary to determine the performance of a Resource. |

| **Resource Objects** | Physical and logical types of resource-related objects. |
|---|---|
| Resource | A group of Response Method Aggregations that represents a dispatchable entity. ***Also referred to as DR Resource in this document.*** |
| Response Method Aggregation (RMA) | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. ***Also referred to as DR Asset in this document.*** |
| Facility | The location at which connection to the transmission or distribution system is made. |

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| **Resource Objects** | Physical and logical types of resource-related objects. |
|---|---|
| Response Method (RM) | A measurable action taken in response to an instruction to change consumption. |
| End Device (ED) | A physical end-use device that consumes or supplies electricity. |

| **Supporting Objects** | Objects that support the interaction of Business Entities and Resource Objects |
|---|---|
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Control | The role associated with the control of an End Device. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |
| Zone | A physical or electrical region. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |

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## REQ.14.3.2.2 Conventions

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

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

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

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## REQ.14.3.2.3 Use Case Overview

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

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

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

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

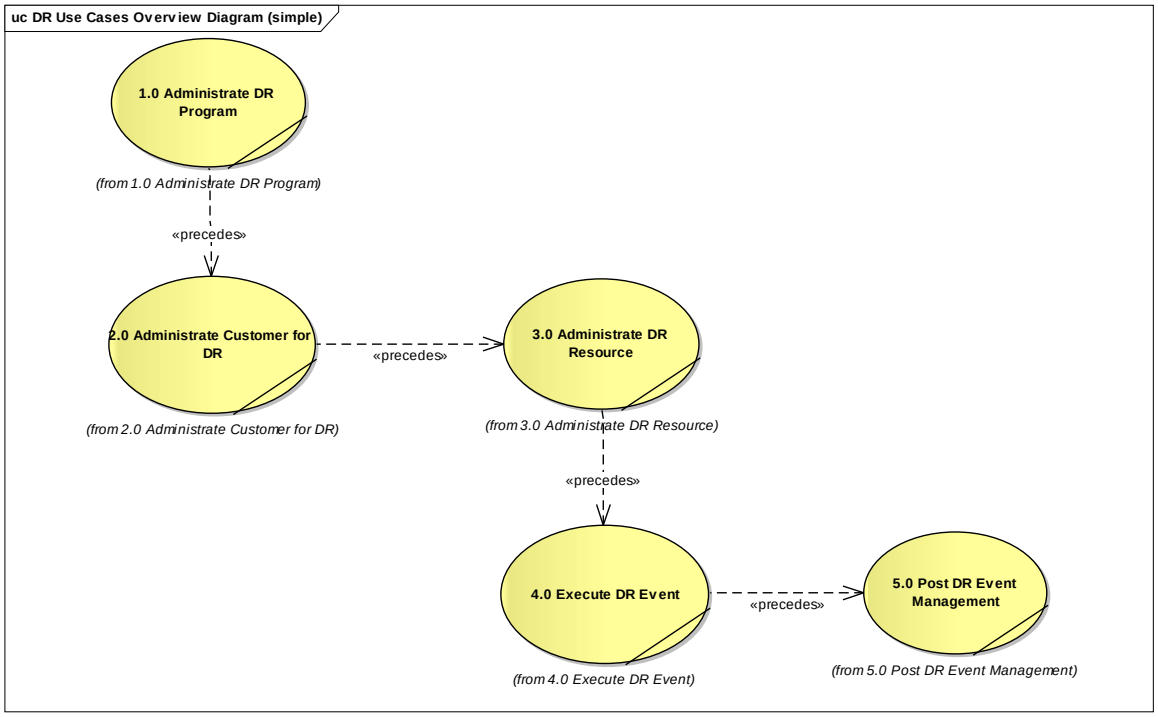


**Figure 1. Retail Market DR Use Case Overview**

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## REQ.14.3.2.4 Specific Use Cases

### REQ.14.3.2.4.1 Administrate DR Program

Typically DR programs are created for specific business needs of demand side management. However, it is not required to affect demand behavior. It is also likely that DR programs will evolve over time. Figure 2 shows the actors and use cases involved in administrating DR programs. Following are the three main use cases concerning the creation, update and removal of DR programs. It is unlikely that this step of the DR management will be automated.

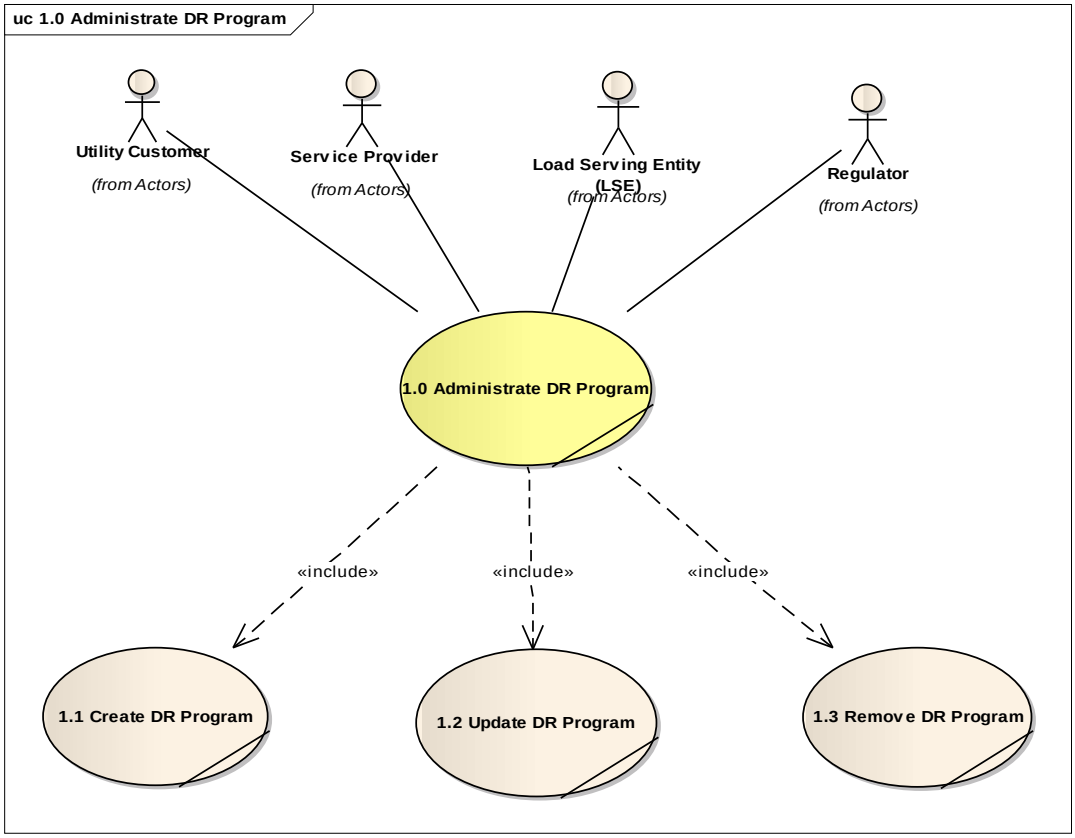


**Figure 2. Administrate DR Program**

### REQ.14.3.2.4.1.2 Create DR Program

**Description**

A DR program is created to meet one of two, or both, situations. A DR program is created to meet a reliability need, i.e., a projected insufficient energy supply, and/or for economic purposes, i.e., when market prices are peaking.

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A properly designed DR program will have a clearly stated goal or objective, Program Administrator, activation and operational protocols, and responsibilities and obligations. The items that should be considered include, but are not limited to:

- The type and size of the target Customer;
- The type of program to be implemented, e.g., Direct Load Control, Firm Service Level, Guaranteed Load Drop, etc.;
- The type and level of granularity of metering and telemetry to be used/required;
- Any regulatory requirements;
- Method of communication;
- Activation protocol;
- Marketing and Sales activities;
- Customer Education activities;
- Duration;
- Delivery Period;
- LSE/UDO Compensation;
- Data Exchange Protocols;
- Customer Authorization;
- Third Party Participation;
- Registration / Enrollment Process;
- Approval Process;
- Baseline Calculations;
- Settlement Process;
- Payment Process;
- DR Resource enablement, including incentives;
- DR Resource deployment process;
- M&V Methodology;
- Contractual Agreements;
- Dispute Resolution Process;
- Phase-in or Roll-out Plan;
- Product type offering to the ISO/RTO; energy only, ancillary service (regulation up/down, spinning/non-spinning, etc.);
- If offering to ISO/RTO, specific metering/telemetry or other requirements needed to actively participate ;
- Address multiple participation in other DR programs (retail and wholesale);
- Include/Exclude full/partial co-generation system, back-up generation, DER, etc…;
- UDO verifying DR resource physical electric grid location.

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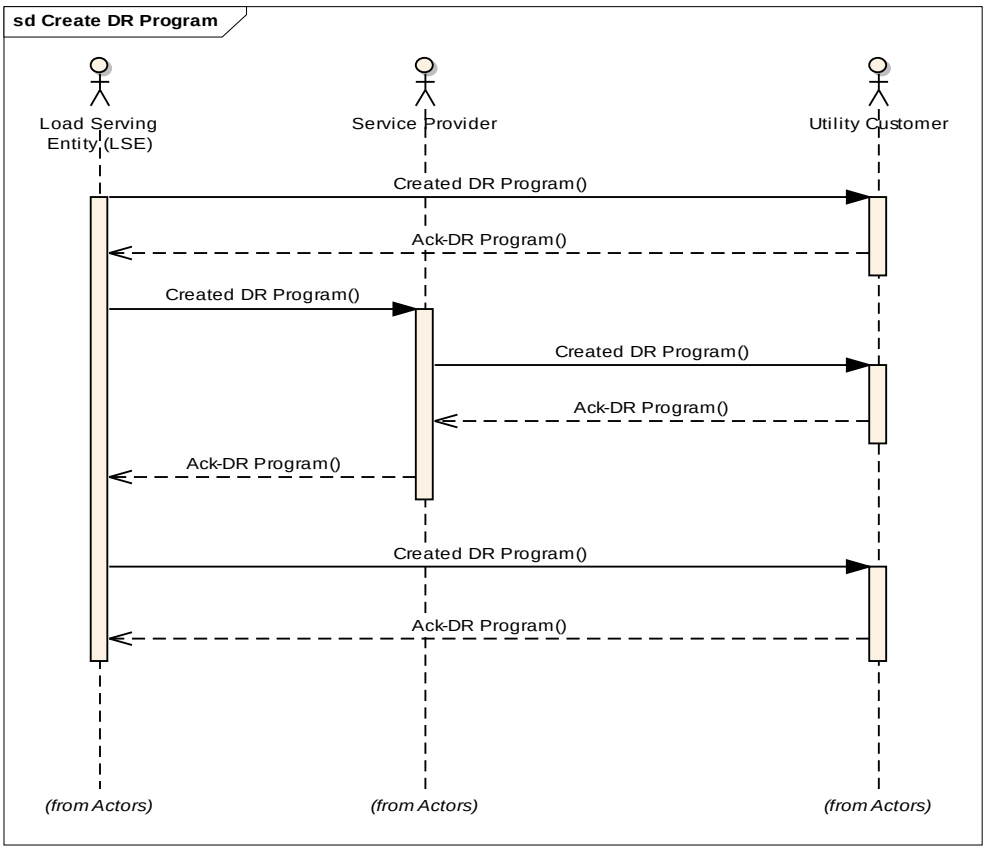
Once the DR program is developed, it should be certified prior it implementation. Such testing may be accomplished through a pilot program. The results of the test/pilot should then be compared against the goal/objective of the program and any needed modifications made. Upon satisfactory results, the DR program should be filed with and approved by the Applicable Regulatory Authority, if any. Depending on which Entity is creating the DR program, it must also be submitted to and approved by the System Operator. Finally, the DR program must be implemented. Upon activation of a DR program, an observable demand reduction should occur.

**Sequence Diagram**

The following DR Program interaction assumes the initial steps of regulatory process are completed for the approval of a DR program. This shows the potential automation of the creation of DR programs from systems perspective.



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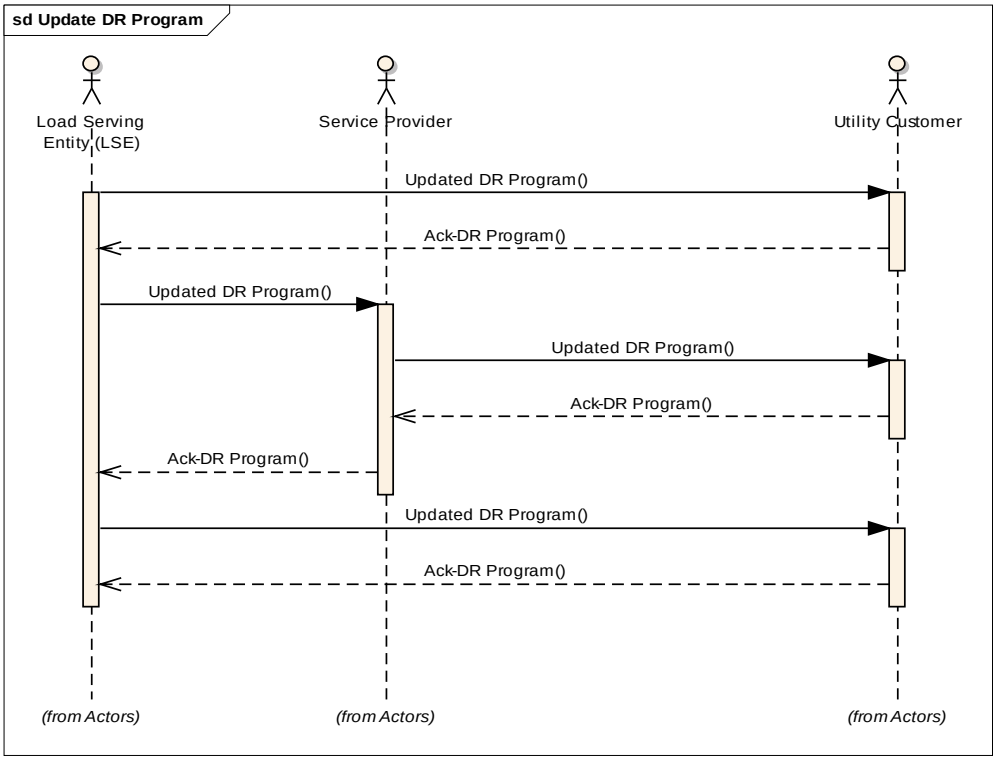
## REQ.14.3.2.4.1.3 Update DR Program

Once a DR program is initiated, changes in various elements of the program may be required or desired. After identifying the specific modification required, each of the considerations identified in the "Create" step should be investigated to insure that no unintended impacts occur as a result of the modification. If such unintended impacts occur, further investigation of the modification is required prior to implementation.

A regulated Entity must then present the modifications to the Applicable Regulatory Authority for approval and, then to the System Operator for approval. Once approved, the modifications must be communicated to Customers.

### Sequence Diagram



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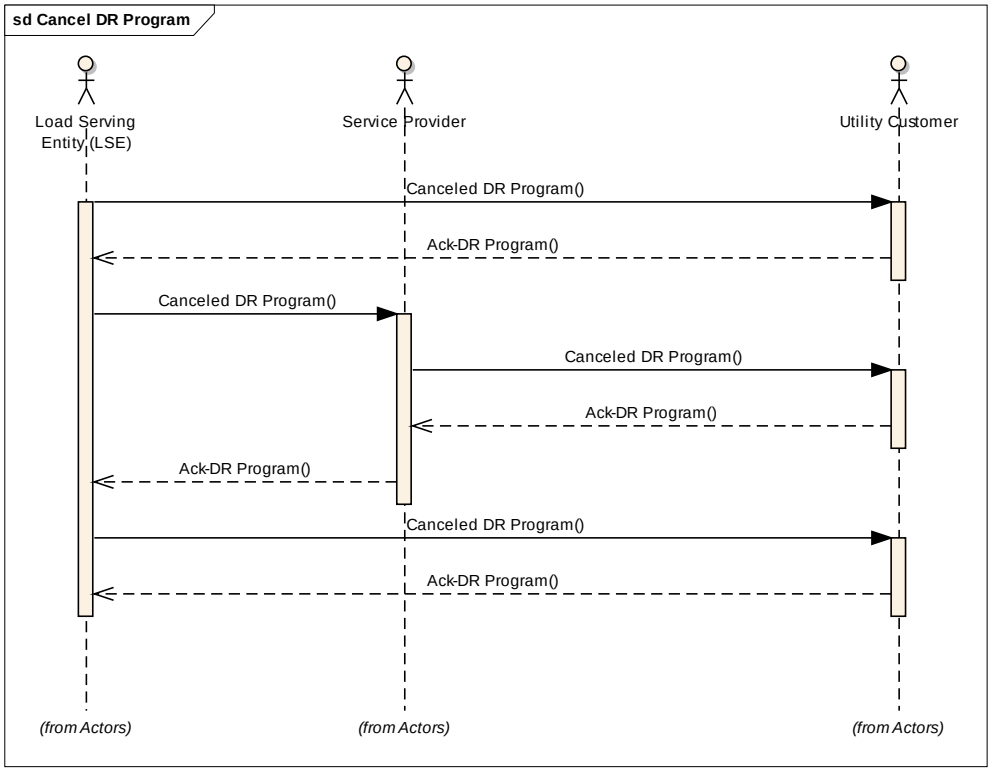
## REQ.14.3.2.4.1.4 Remove DR Program

Termination of a DR program must take into account any DR resource long term commitments in System Operator programs and contractual obligations with Service Provider (Service Providers, Energy Service Provider) or Load Serving Entities. In addition, State and or Federal regulatory agency filings and approvals must be considered prior to terminating a DR program. Termination of a DR program may involve the removal of DR infrastructure, such as Direct Load Control Devices and advanced metering and pulse devices used in the Measurement and Verification of the program. All outstanding payments to the DR resources should be completed prior to the termination of the DR program.

### Sequence Diagram



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## REQ.14.3.2.4.2 Administrate Customer for DR

Once the DR programs are established, there will be campaigns from Service Provider to get customers enrolled into the programs. Figure 3 shows the actors and use cases involved in administrating customers into DR programs. Following are the three main use cases concerning the creation, update and removal of customers for a DR program. Enrollment may affect how a customer is compensated for demand responses. It is unlikely that this step of the DR management will be automated.

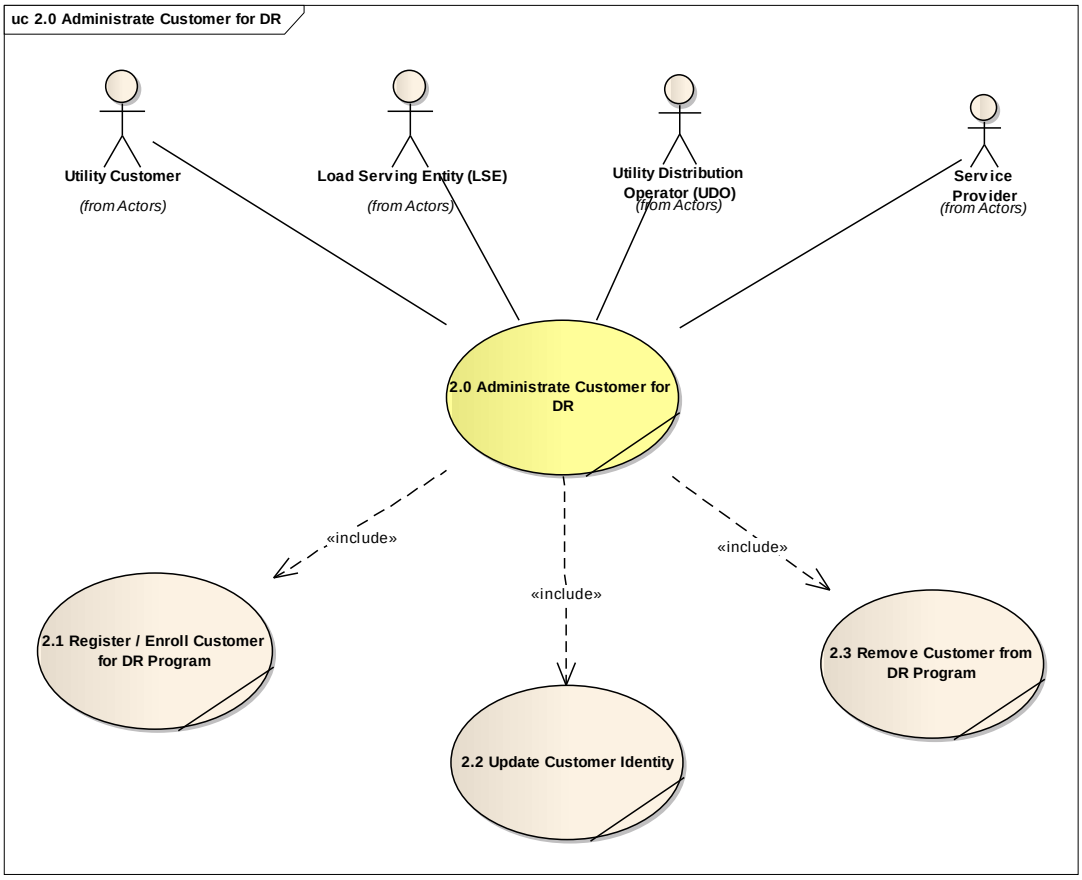


**Figure 3. Administrate Customer for DR**

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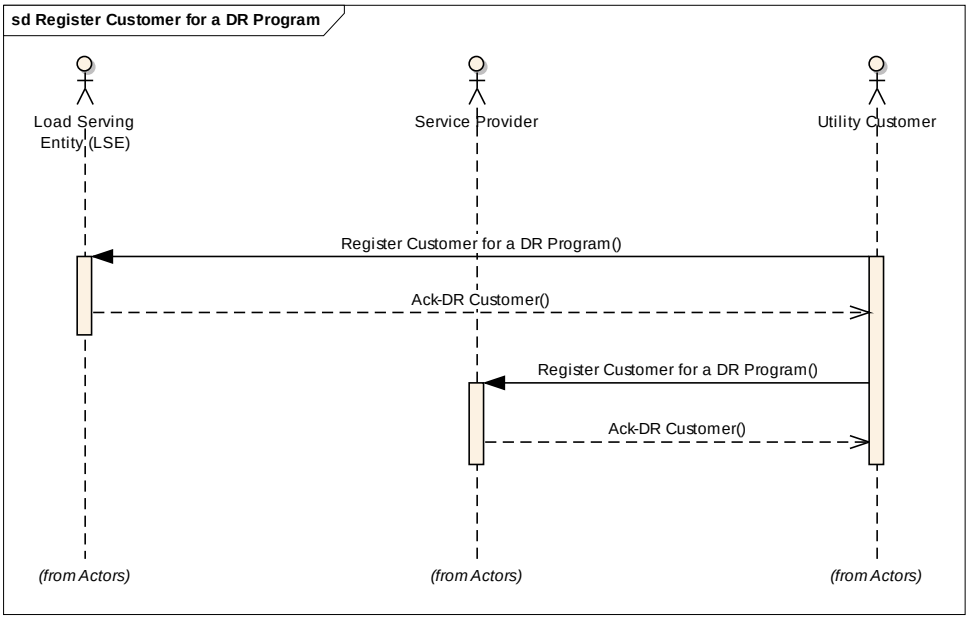
## REQ.14.3.2.4.2.1 Register / Enroll Customer for DR Program

### Description

The registration/enrollment process must capture the key identifiers in order to enable accurate accounting and classification of DR resources, as well as to ensure customer understanding of the type and specific requirements of demand response service they are providing. A registration process to track registrations of System Operators or facilitating agencies and the movement of DR resources from one Service Provider to another as may occur from time to time is necessary. Internet-based applications for the registration/enrollment process are ideal for this type of program administration. There may be different applications for various service types and customer types.

### Sequence Diagram



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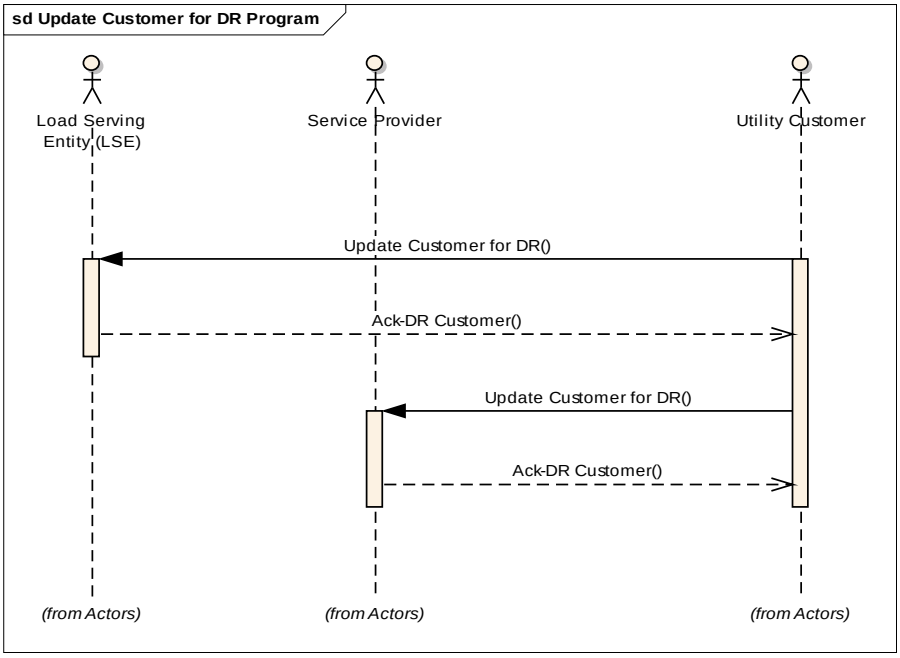
## REQ.14.3.2.4.2.2 Update Customer Identity

### Description

Once a DR registration is completed, changes in various elements of the registration may be required or desired. After identifying the specific modification required, each of the considerations identified in the register/enroll step should be investigated to ensure that it is accurate and complete.

All parties (Utility, Aggregators, Energy Consultants, DR resources, Regulatory Agencies) affected by the update should be given reasonable time to review, dispute, and approve/disapprove the update(s).

### Sequence Diagram



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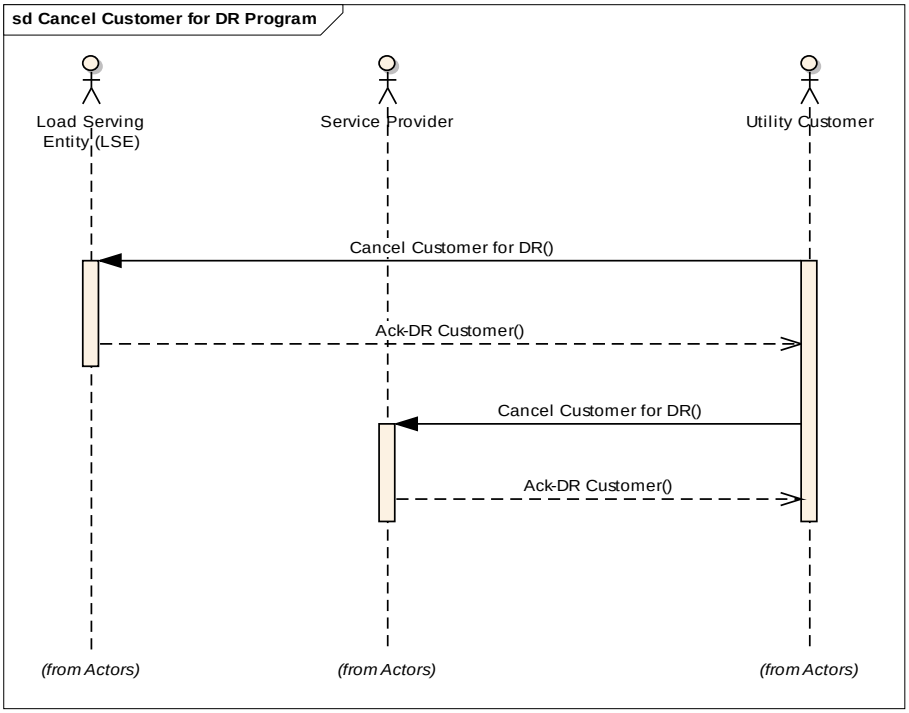
## REQ.14.3.2.4.2.3 Remove Customer from DR Program

### Description

Removing a Customer Entity from a DR Program enrollment must take into account any DR resource long term commitments in System Operator programs, and contractual obligations with Service Provider or Load Serving Entities. In addition, State and/or Federal regulatory agency filings and approvals must be considered prior to removing a customer enrollment from a DR program.

### Sequence Diagram



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## REQ.14.3.2.4.3 Administrate DR Resource

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

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

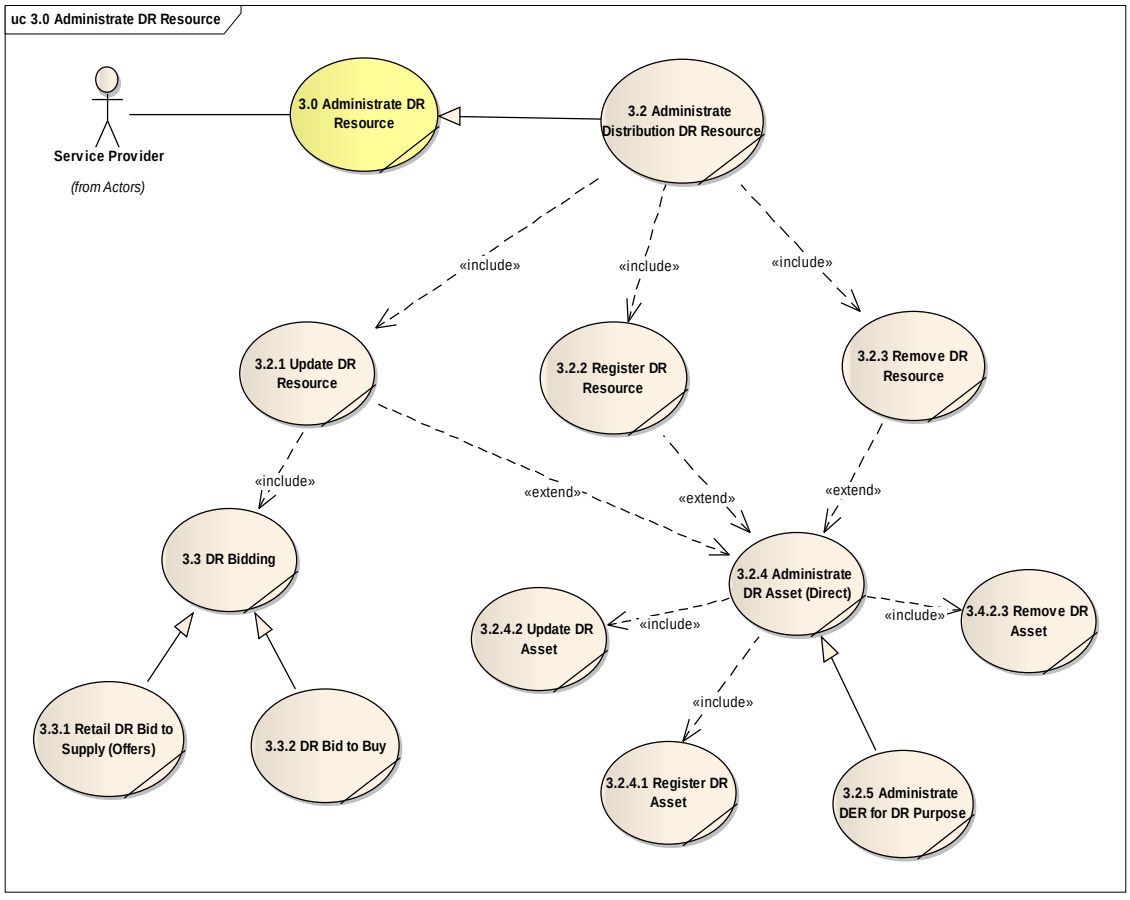


**Figure 4. Administrate DR Resources and/or Assets into DR Programs**

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### REQ.14.3.2.4.3.1 Administrate Distribution DR Resource

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

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

### REQ.14.3.2.4.3.2 Update DR Resource

#### Description

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

#### Data Requirements

| Attribute Name | Description |
|---|---|
| Asset-ID | This uniquely identifies a DR Asset |
| DR Resource Operational Constraints | These are constraints that define the amount load that can be made available during a DR event, including the following:<br>• Minimum load<br>• Maximum load. |
| DR Resource Bid | This is a bid from the DR Resource. See the DR Bidding use case for a description of the information requirements. |

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| Attribute Name | Description |
|---|---|
| DR Resource Schedule Constraints | These are a set of constraints that specify when the DR Resource will be available. It may contain such information as:<br>• Time of day schedule constraints<br>• Black out dates<br>• Maximum consecutive days of participation<br>• Maximum duration of DR event participation<br>• Minimum duration of DR event participation<br>• Max number of times per day the DR Resource may be called<br>• Minimum advanced notification necessary.<br>Provide details if DR asset or DR resource is in any other DR programs (wholesale and retail) |
| DR Resource Identifier | This identifies the DR Resource. |
| DR Resource Qualification | This shows the qualification of a DR resource for certain type(s) of DR programs |
| Effective-Start-Date | The date and time when the declared capabilities will be in effect. |
| Hourly-Capacity-Availability | The amount of capacity available for interruption by hour for the period defined by the effective start/end date, expressed in kW or MW with appropriate precision. |
| Message-Exchange-Pattern | The means by which price information is communicated to any party that is interested in this information. The following are valid options:<br>• In-Only<br>• Robust In-Only<br>• In-Out.<br>Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions. |
| Monthly-Capacity-Availability | The average capacity available for interruption by month for the period defined by the effective start/end date, expressed in Megawatts with appropriate precision. |

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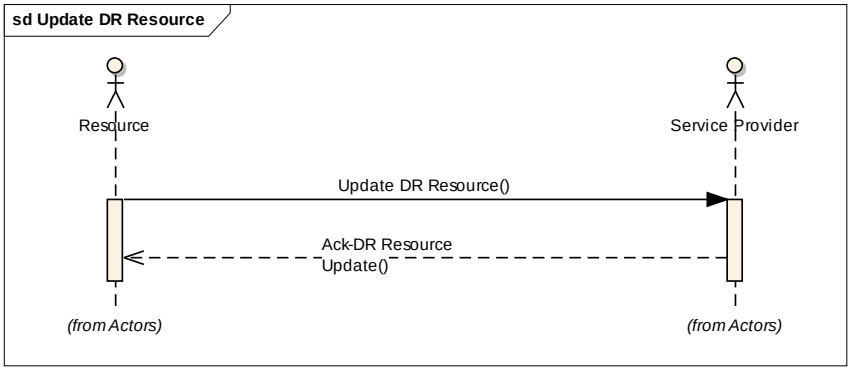
| Attribute Name | Description |
|---|---|
| Source-Authentication | The recipient must have some assurance that the message was produced by a reliable, authoritative party. This requires some ability to validate the authenticity of the source and integrity of the data (e.g., digital signature applied to a price message). |
| Temporary Opt-Out | This is used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria:<br>• All events in a program indefinitely<br>• Specific DR Event<br>• All events in a specific time period.<br>• Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity) |

**Sequence Diagram**




### REQ.14.3.2.4.3.3 Register DR Resource

**Description**

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

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## Data Requirements

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

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| Attribute Name | Description |
|---|---|
| Location | An identifier to indicate the location of the asset/resource. |
| Location-type | A value used to interpret the value contained in the Location element. Examples of Location-type include:<br>• Zone<br>• Node<br>• Zip-code. |
| Maximum-Duration | The maximum amount of time the asset/resource is capable of delivering power (megawatts), this may be expressed in hours using decimal notation. For example, a value of 0.5 indicates a maximum duration of 30 minutes which the asset/resource can reduce power consumption by the level indicated in Available Capacity. |
| Message-Exchange-Pattern | The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options:<br>• In-Only<br>• Robust In-Only<br>• In-Out.<br>Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions. |
| Minimum-Duration | The minimum amount of time that an Asset/Resource Owner is willing to allow the resource/asset to be utilized during a DR event. It may be expressed in decimal format representing hours. For example, a value of 1.5 indicates that an asset/resource must be utilized for no less than one hour and 30 minutes during any DR event. |
| Parent-Resource ID | This is used by an Asset to indicate that it "belongs to" a particular Resource. Assets may be aggregated into a Resource, but are not required to be so aggregated. Resources are autonomous and may not be aggregated. |

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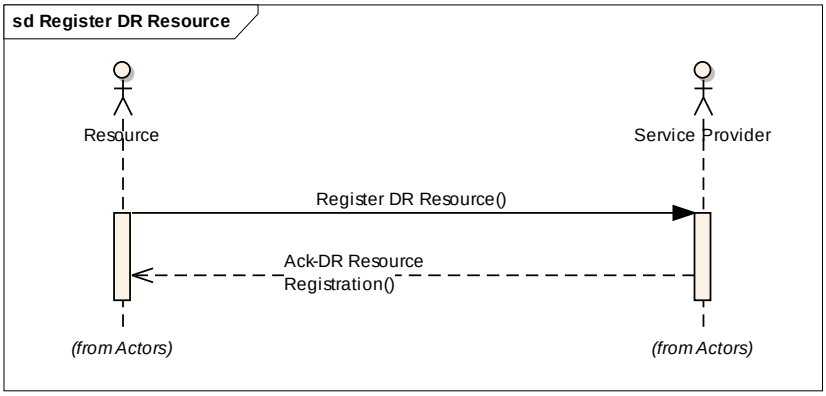
| Attribute Name | Description |
|---|---|
| Report-type | This indicates the type of report being issued by the Asset or Resource Owner. This is an enumerated value containing one of the following:<br>• REGISTRATION (to register a new asset/resource)<br>• CHANGE (refers to permanent changes)<br>• RETIREMENT.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

## Sequence Diagram



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#### REQ.14.3.2.4.3.4 Remove DR Resource

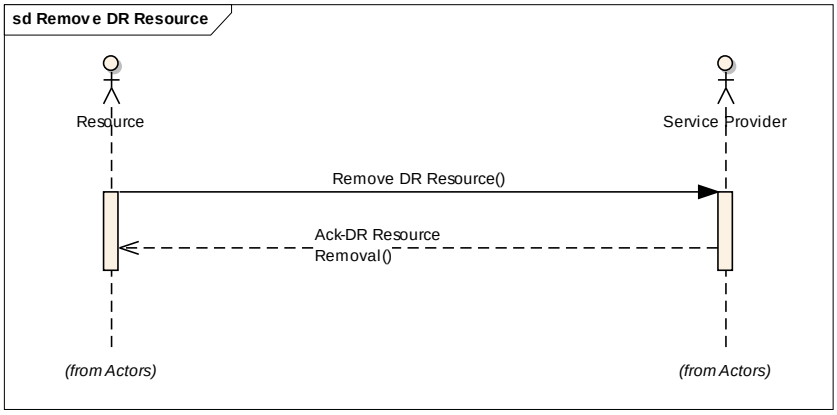
**Description**

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

**Data Requirements**

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

**Sequence Diagram**




### REQ.14.3.2.4.4 Administrate DR Asset (Direct)

#### REQ.14.3.2.4.4.1 Register DR Asset

**Description**

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## Data Requirements

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

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## Sequence Diagram

### REQ.14.3.2.4.4.2 Update DR Asset

#### Description

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

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

#### Data Requirements

| Attribute Name | Description |
|---|---|
| Asset Operator | The business entity that operates the DR assets |
| Asset Owner | The business entity that owns the DR assets |
| Asset Physical Location | The location of where the DR assets reside |
| Authorized Asset Servicers | The authorized service providers of the operation and maintenance of DR assets |
| Date of Registration and Last Update | Date of which the DR Assets registered for DR purpose. |

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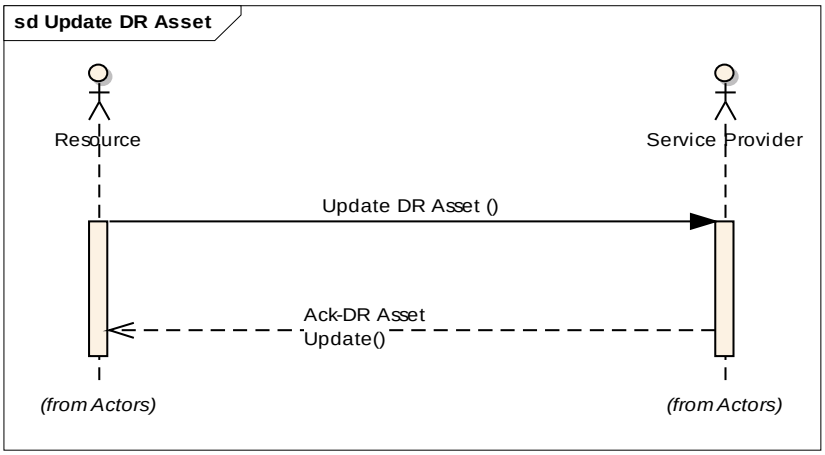
**Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09**

| Attribute Name | Description |
|---|---|
| DR Asset Administrator | • System and Operator<br>• Distribution Utility<br>• Load Serving Entity<br>• Service Providers |
| DR Asset Availability and Status | Run Status, Set point, Override status, etc. |
| DR Asset Identifier | The unique identifier and name of the DR Assets. |
| DR Asset Physical Capabilities | Ramp Up/Down Rate, Maximum Capacity |
| DR Asset Product | Manufacturer, Model, Version, Date of Manufacturer |
| DR Asset Type | (DG, renewable, storage, curtailable or interruptible load) |
| DR Resources | The identifier of DR resources that the DR Assets belong to |
| State of Registration Process | The state/status of the registration process of the DR assets. |

## Sequence Diagram



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**For Quadrant:** Retail Electric Quadrant (REQ)
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## REQ.14.3.2.4.4.3 Remove DR Asset

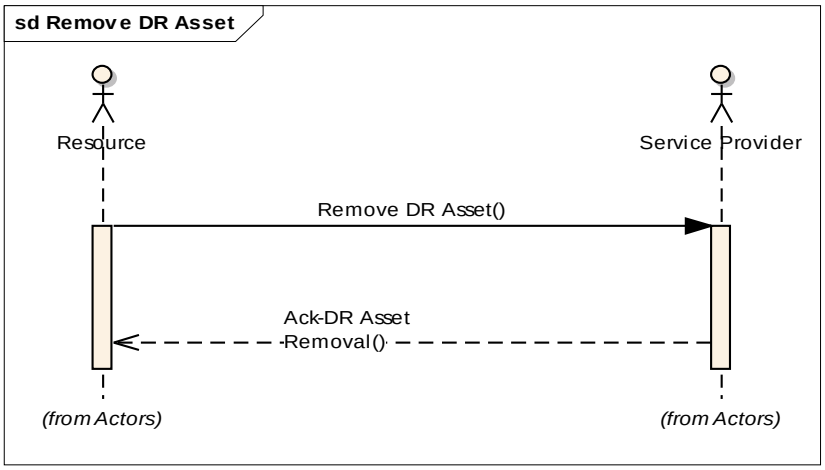
### Description

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

### Data Requirements

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

### Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
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| **Request Title:** | **Requirements Specifications for Retail Standard DR Signals - for NIST PAP09** |

## REQ.14.3.2.4.5 DR Bidding

### Description

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

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

Examples of retail DR Bidding programs include:

- Demand Bidding
- Capacity Bidding

Examples of types of ISO/RTO products that may be (or become) eligible for DR bidding include:

- Installed Capacity;
- Day-ahead Energy;
- Real-time Imbalance Energy;
- Ancillary Service Operating Reserve;
- Regulation

The above are wholesale products that retail DR capabilities may be (or become) aggregated to bid into. Required advances to establish linkages between purely retail DR bidding and ISO/RTO DR bidding programs are works in progress, and beyond the scope of this document.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.5.1 DR Bid to Supply (Retail Offers)

### Description

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

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

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

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

### Data Requirements (Generalized)

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

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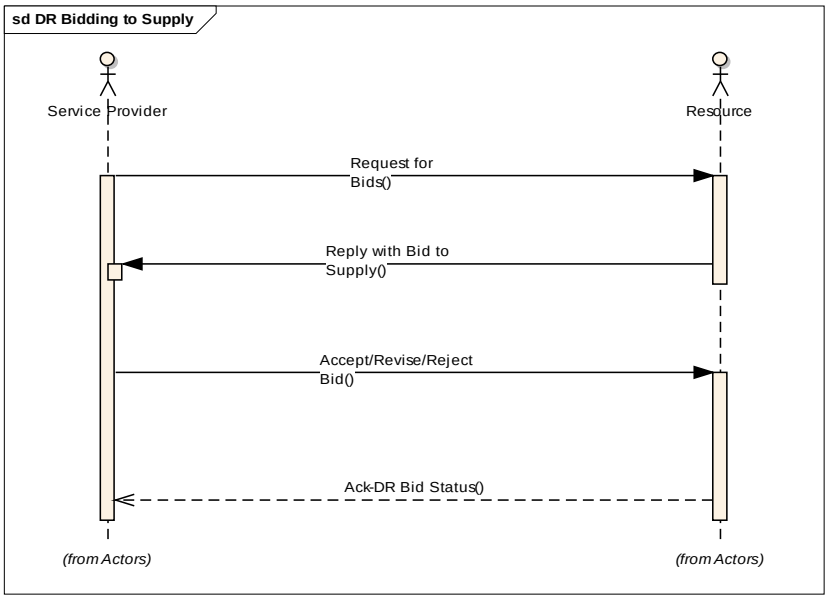
| Attribute Name | Description |
|---|---|
| Timestamp of Bid | The effective date(s) of an offer. |

## Data Requirements (Simplified Example of Retail DR Bidding)

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

## Sequence Diagram



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## REQ.14.3.2.4.5.2 DR Bid to Buy

### Description

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

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

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

### Data Requirements

| Attribute Name | Description |
|---|---|
| Bidder Identity | Identification of entity submitting a bid |
| Identity of Resource(s) | Identification of resources that physically support a bid |
| Bid structure | Prices and/or quantities in a bid to buy a service, or a demand schedule |
| Product/Service type | The Product/Service type being bid for purchase |
| Resource Availability | Instantaneous amount of demand response available for dispatch |
| Resource Capacity (Rated) | Rated or maximum demand of a resource |

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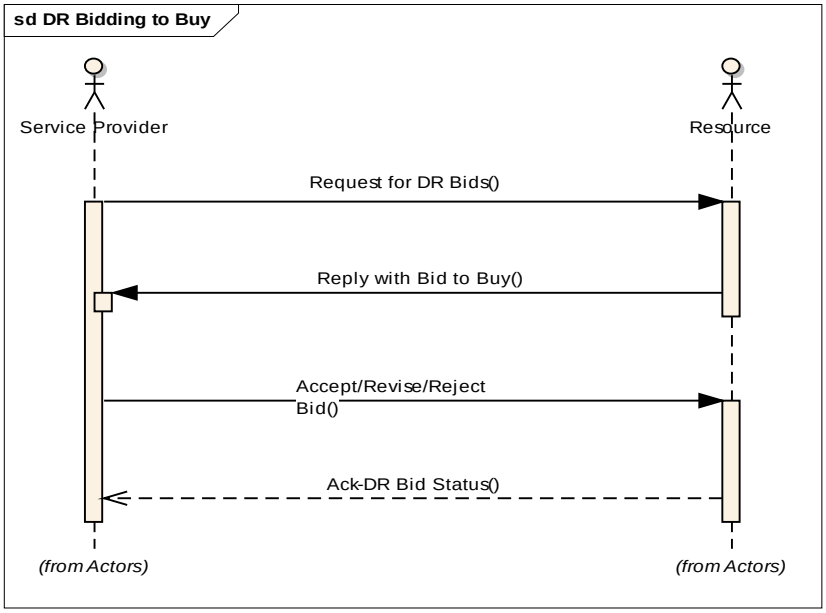
| Attribute Name | Description |
|---|---|
| Resource Physical Operating Capability | Ramp up/down rate and other resource-specific operating characteristics and constraints |
| Resource Type | Type of distributed resource |
| Timestamp of Bid | Timing associated with a bid |
| Trade Date or Period | The effective date(s) of a bid. |

## Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.6 Execute DR Event

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

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

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

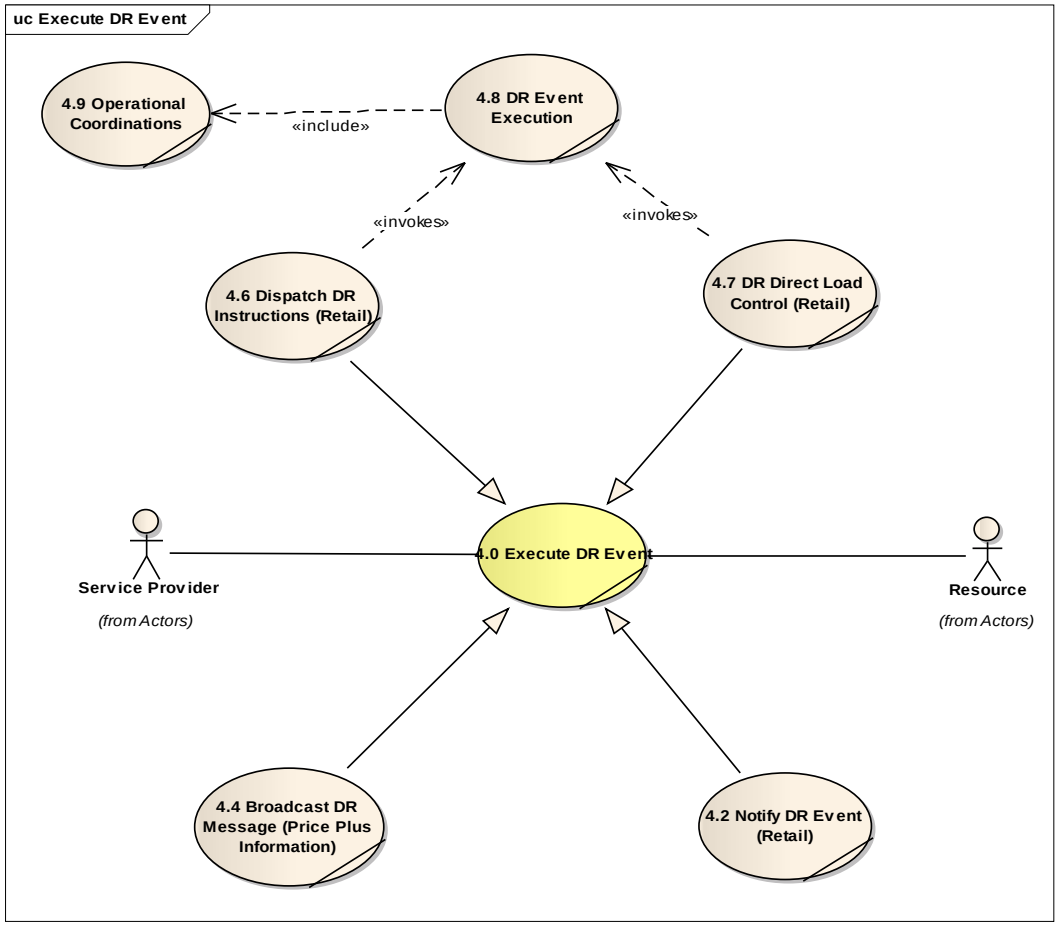


**Figure 5. Execute DR Events**

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Retail Electric Quadrant (REQ)
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## REQ.14.3.2.4.7 Notify DR Event (Retail)

### REQ.14.3.2.4.7.1 Advanced Notification for DR (Retail)

#### Description

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

#### Data Requirements

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

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| Attribute Name | Description |
|---|---|
| DR Resource Specifications | This specifies which DR Assets within a DR Resource should be used, and can be specified in the following fashion:<br>• Geographic location<br>• Grid location<br>• DR Asset group ID. |
| DR Resource Type ID | A program specific field that can be used to identify a type of DR Resource within a DR program. |
| Event Data | A collection of information that is associated with a DR event. An instance of such information represents a specific type of information that was defined to exist for DR events when the program was first developed and implemented. For example, a DR program may have been developed and implemented to use real-time pricing as the values that are sent when DR events are issued. In that case, the information would be prices. Furthermore, each type of information may have a schedule of values that are valid across the entire period for which the DR event is active. Therefore, a single type of information may have multiple values, each of which are valid during a different time period during the event. Each type of information has the following attributes when it is defined:<br>• name<br>• data type.<br>The following data types should be supported:<br>• PRICE_ABSOLUTE - Price number<br>• PRICE_RELATIVE - Change in price<br>• PRICE_MULTIPLE - Multiple of current price<br>• LOAD_LEVEL - Amount of load based on an enumeration, i.e. moderate, high, etc<br>• LOAD_AMOUNT - Fixed amount of load to shed in kW<br>• LOAD_PERCENTAGE - Percentage of load to shed, i.e. 10% |

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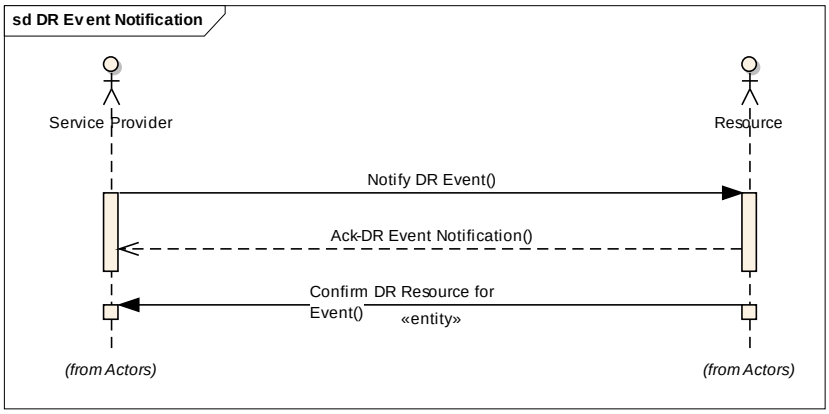
| Attribute Name | Description |
|---|---|
| | • GRID_RELIABILITY - Number signifying the reliability of the grid. |
| Event ID | An identifier for the DR Event that was created when the DR event was first issued. This should be a globally unique identifier for each Service Provider. |
| Event Schedule | A Schedule for the DR Event periods that includes the following:<br>• Notification date/time<br>• Event start date/time<br>• Ramp time (potentially randomized)<br>• Event end date/time (possibly specified as the duration). |
| Test Event Flag | This attribute signifies whether this is a test event or not. Test events may be issued by the Utility/ISO like other DR audit events. |

## Sequence Diagram



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## REQ.14.3.2.4.7.2 Update a DR Event (Retail)

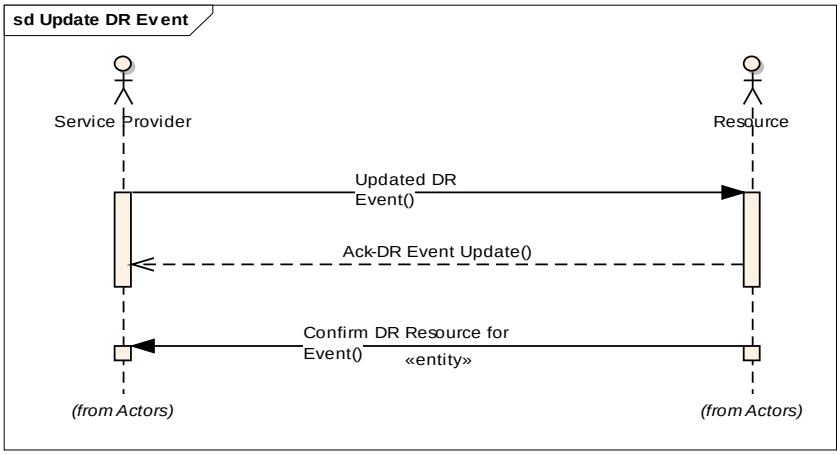
### Description

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

### Data Requirements

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

### Sequence Diagram



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## REQ.14.3.2.4.7.3 Cancel a DR Event (Retail)

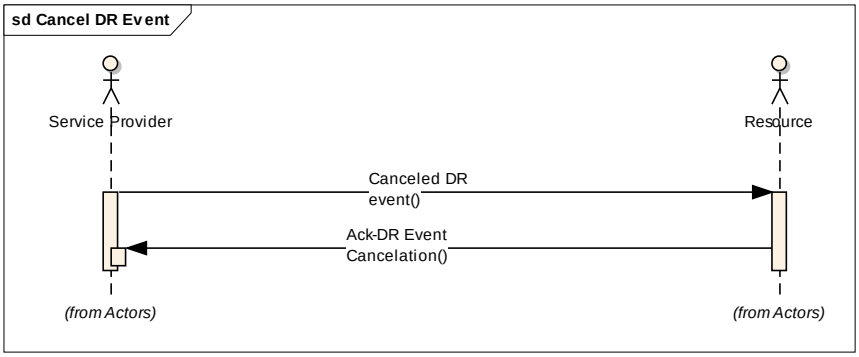
### Description

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

### Data Requirements

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

### Sequence Diagram



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**For Quadrant:** Retail Electric Quadrant (REQ)
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## REQ.14.3.2.4.7.4 DR Resource Confirmation (Retail)

### Description

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

### Data Requirements

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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| **Request No.:** | **2010 Retail Annual Plan Item 9(c)** |
| **Request Title:** | **Requirements Specifications for Retail Standard DR Signals - for NIST PAP09** |

**Sequence Diagram**

## REQ.14.3.2.4.8 Broadcast DR Message (Price Plus Information)

### Description

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

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

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

### DR Source of Power/Generation

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

Precondition:

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

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Post Condition:

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

## Data Requirements

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

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

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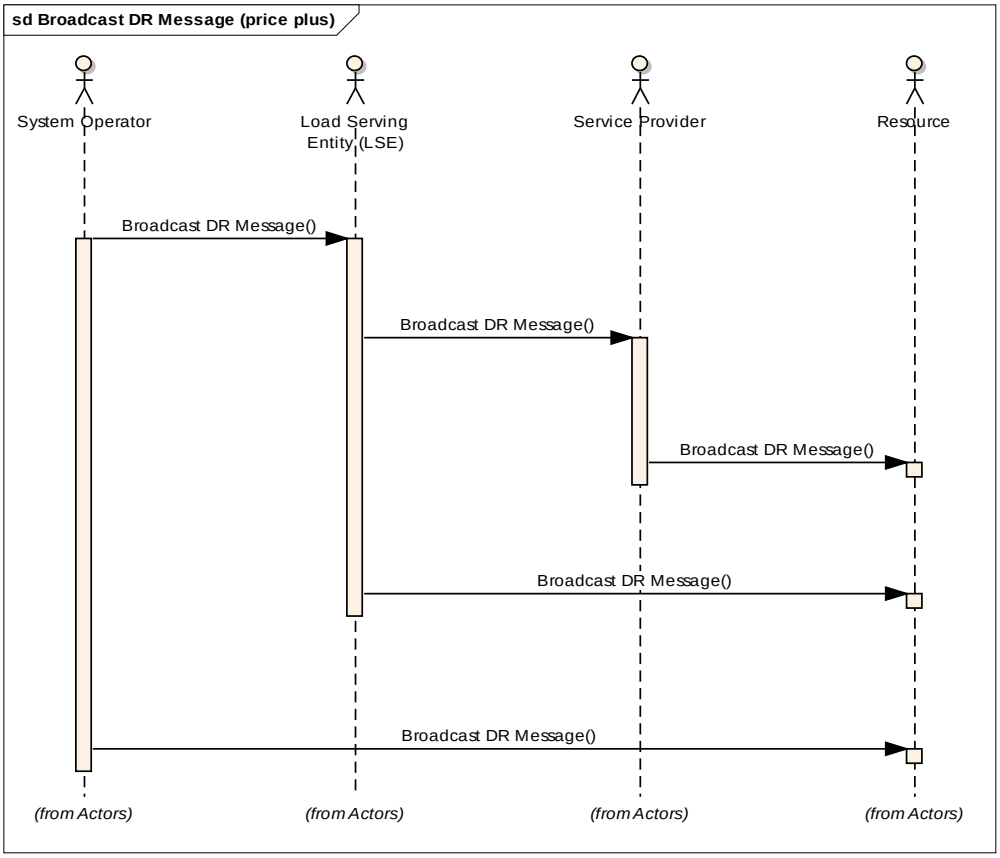
## Sequence Diagram




## REQ.14.3.2.4.9 Dispatch DR Instructions (Retail)

### Description

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

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

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## Data Requirements

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

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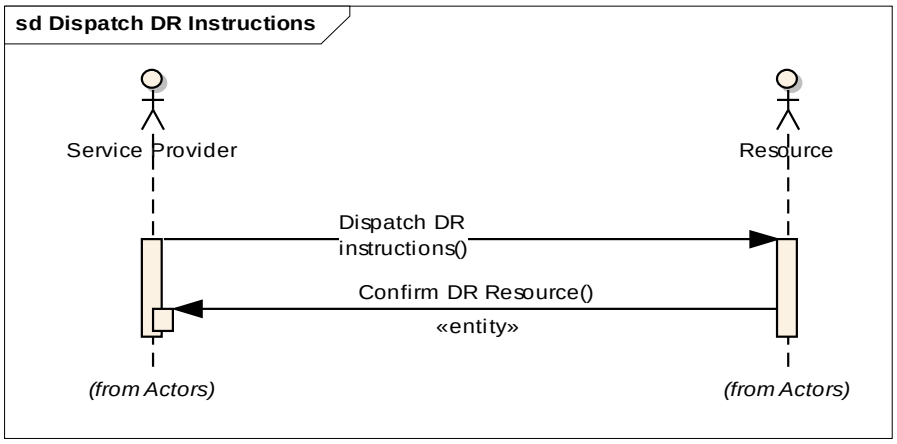
## Sequence Diagram



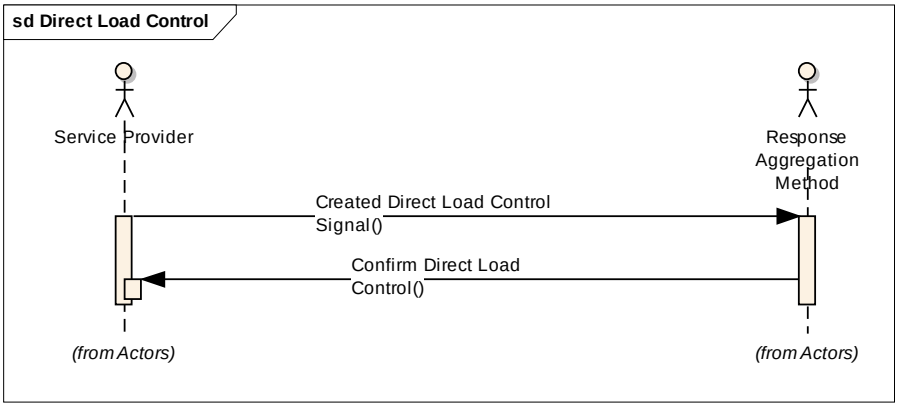

## REQ.14.3.2.4.10 DR Direct Load Control (Retail)

### Description

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

See REQ.14.3.2.4.11.3, DR Execution - Direct Load Control (DLC) for more details.

### Sequence Diagram



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## REQ.14.3.2.4.10.1 Monitor DR Event (DR Resource)

### Description

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

### Data Requirements

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

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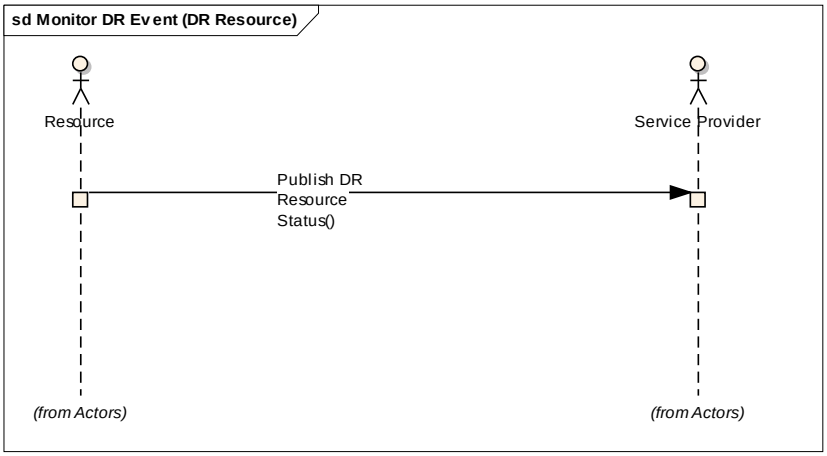
| Attribute Name | Description |
|---|---|
| Response Duration – Time Out or Held Until Released | Examples: Variable with Signal Up or Down (Regulation), 20 Minutes with Dispatched Release (Responsive Reserve), 1 or 2 Hour Time Out (Emergency Interruption), Multiple Hours (Peak Shifting) |

### Sequence Diagram




## REQ.14.3.2.4.10.2 Monitor DR Event (DR Asset)

### Description

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

### Data Requirements

| Attribute Name | Description |
|---|---|
| Exception Conditions | This is used to report that the load controller may not behave as commanded because of a variety of conditions including:<br>• Faults in device<br>• Customer override. |
| Load Control State | The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed. |

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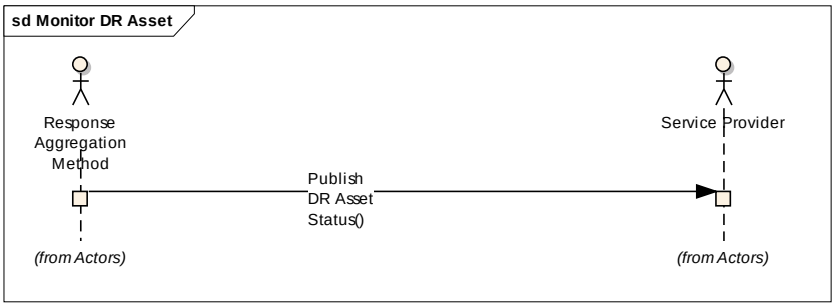
| Attribute Name | Description |
|---|---|
| Operational Constraints | Constraints on how the load may be controlled. This may include limits on the state of the load controller as well as schedules upon those constraints. |

**Sequence Diagram**




## REQ.14.3.2.4.11 DR Event Execution

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

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

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

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response may also be initiated by a customer in response to a market pricing signal

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

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

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

**REQ.14.3.2.4.11.1 DR Execution – Retail Time Pricing (RTP)**

**Description**

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

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

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charges are typically subject to a regulatory review and approval.

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

**Data Requirements**

The real-time DR price (RTP) signal requirements are similar to those specified in the DR signal specified in REQ.14.3.2.4.8.

**RTP Price Data**

| Attribute Name | Description |
|---|---|
| Effective-Date-Time Interval | The date and time interval which the price is in effect. |
| Price | Single of multiple valued price (e.g., for energy, demand, etc.) Expressed in decimal notation with a precision up to 6 decimal places. Prices MAY be either positive or negative |
| Currency | Identifier used to interpret the price element. |
| Unit-of-Measure | Indicates the unit of measure for which the price pertains (e.g., kW). |
| Product-Identifier | Identifies the type of product (e.g. energy, spinning reserve, etc.) which this price pertains. |
| Location | Location Identifier for the applicable price. |
| Location-type | A value used to interpret the value contained in the Location element. Examples of Location-type include:<br>• Zone (Load Aggregation Point)<br>• Zip-code<br>• USNG |
| Time Stamp | Indicates the Date and Time when this information was published. |
| Duration | The amount of time for which this price is valid, commencing at the Effective-Date- |

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| Attribute Name | Description |
|---|---|
| | Time specified. |
| Source-Authentication | The recipient of a "Price Message" must have some assurance that the message was produced by a reliable, authoritative party. |
| Message-Exchange-Pattern | The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options:<br>• In-Only<br>• Robust In-Only<br>• In-Out<br>Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions. |
| Unique-Identifier | An identifier used to identify the message. Should be expressed as a URI in accordance with http://www.w3.org/TR/uri-clarification/#uri-schemes |

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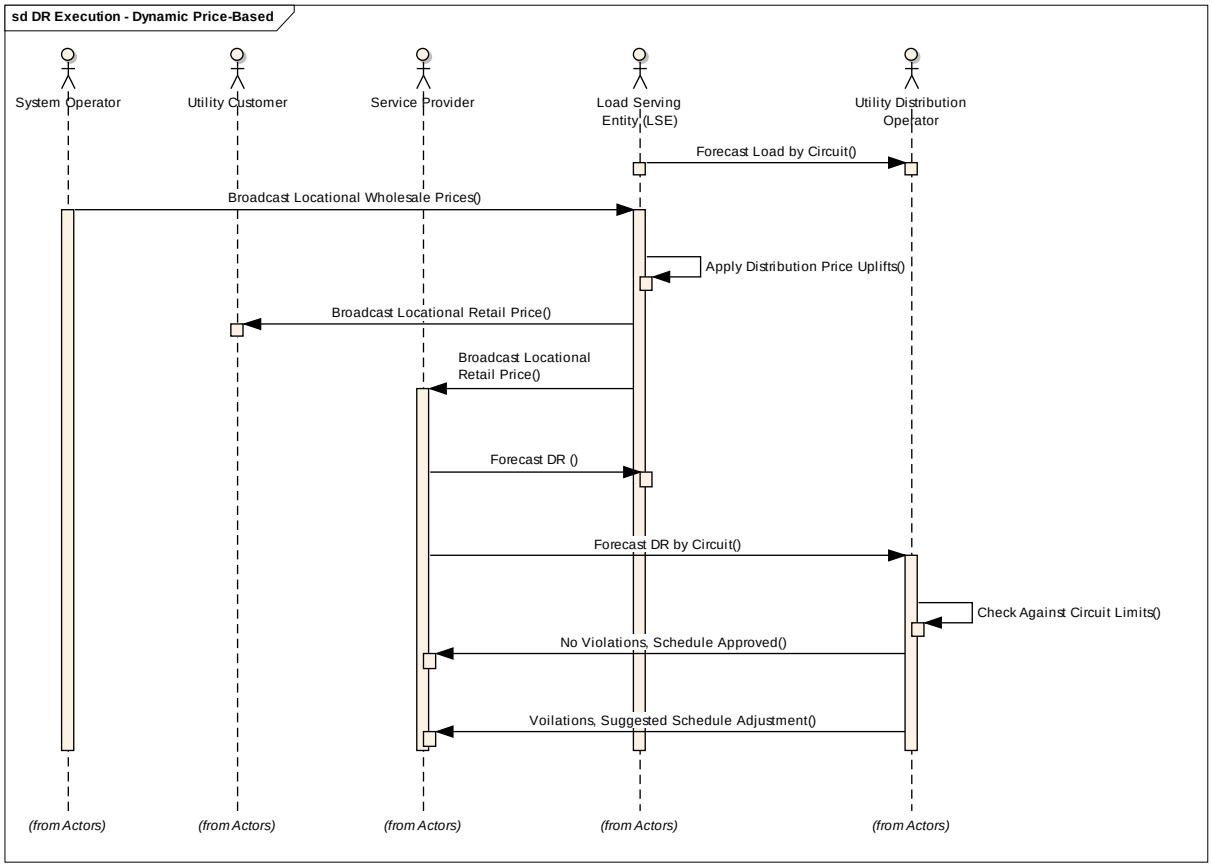
## Sequence Diagram




## REQ.14.3.2.4.11.2 DR Execution – Notification Based

### Description

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

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

At high penetration levels, the DR operation, especially on a day-ahead or hour ahead basis, need to be coordinated with the overall operations and supply scheduling process. As is shown in the Sequence Diagram below, this may require a

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timely update of the "locational" load forecast and an up-to-date nomination of the DR capabilities. This information may be supplied to the "system" and/or market operator to be incorporated in the overall supply and demand scheduling process. The DR capabilities are specified by the DR Provider to the System Operator based on a DR Program, a price curve, or other nomination protocol. The DR Provider may also inform the Load Serving Entity (LSE) of the locational available DR capabilities.

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

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

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

**Data Requirements**

The notification data elements are described in more detail in REQ.14.3.2.4.9.

| Attribute Name | Description |
|---|---|
| Dispatch Instructions | A collection of dispatch instructions that is associated with a DR event. This will include the amount of load to be reduced (or increased – in the cases of very low load levels and excess generation, e.g., wind ) |

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| Attribute Name | Description |
|---|---|
| DR Program Name | An identifier of the program for which a DR event was issued. |
| DR Resource ID | An identifier of the DR Resource for which a dispatch is intended. |
| Event ID | An identifier for the DR event that was created when the DR event was first issued. |
| Event Modification Number | A modification number for the DR event. |
| Event Schedule | Schedule for the DR Event periods, which includes the following:<br>• Notification date/time<br>• Event start date/time<br>• Event end date/time. |
| Test Event Flag | This attribute signifies whether this is a test event or not. |
| Source-Authentication | This is for authentication of the notification signal. |

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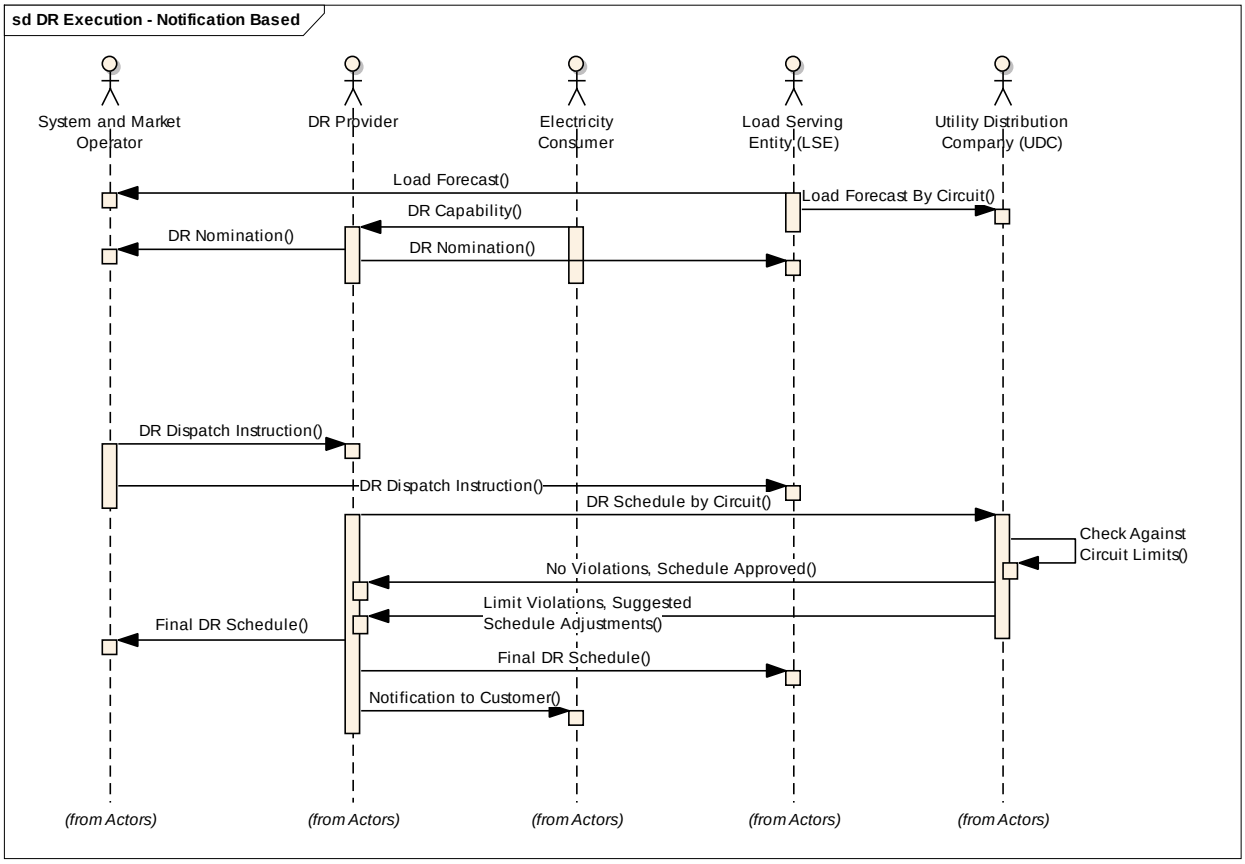
## Sequence Diagram




## REQ.14.3.2.4.11.3 DR Execution – Direct Load Control (DLC)

### Description

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

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

Direct Load Control is typically called for by a system operator, a transmission or distribution operator. It could be also issued by a Market Operator based on an ancillary service DR award,

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or by an LSE or DRP for an economic purpose. At high penetration levels, DLC operation needs to be coordinated with the distribution grid operator, the UDO.

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

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

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

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

**Data Requirements**

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

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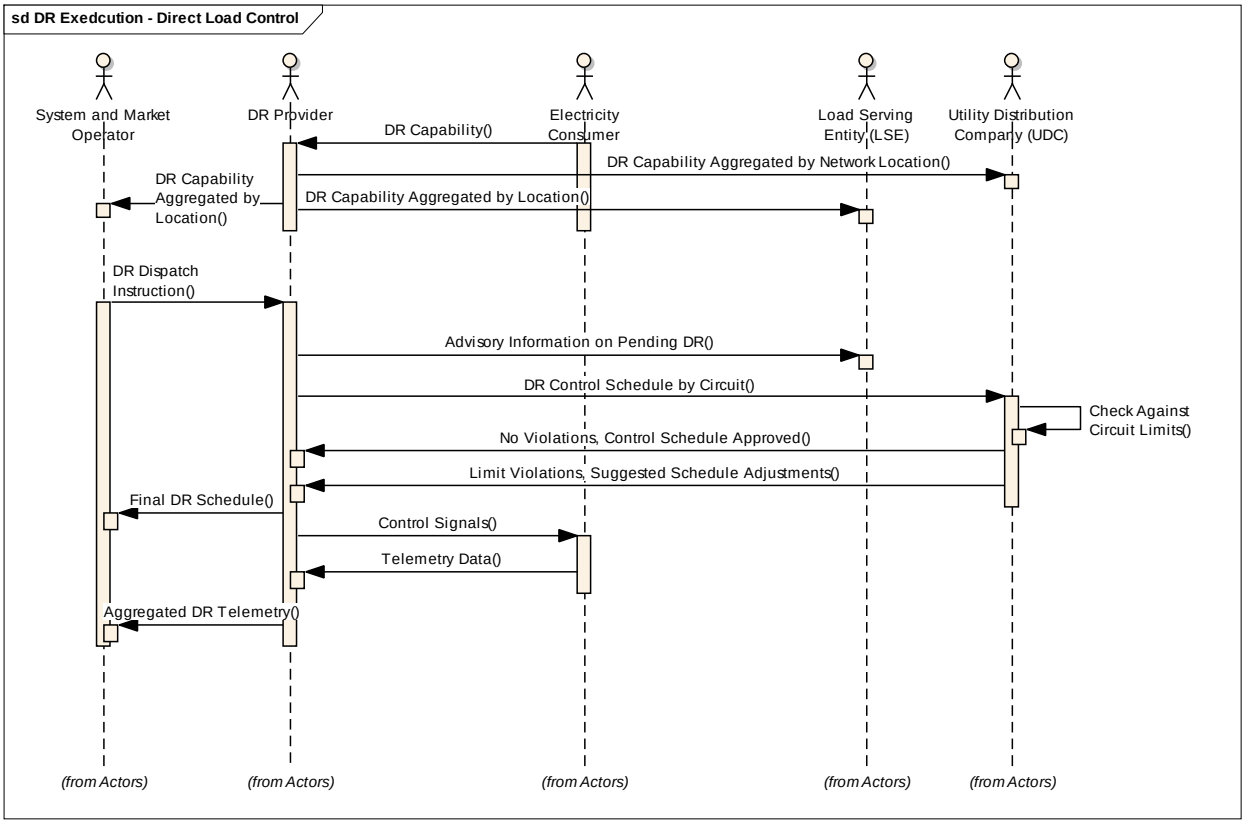
| Attribute Name | Description |
|---|---|
| DR Control Command | This may include multiple parameters Schedule for the DR initiation, or termination, and type/level of control. Please note that the control signal may be sent to a building EMS or a smart device with a multi-function control capability.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

## Sequence Diagram




## REQ.14.3.2.4.12 Operational Coordination

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

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

| Stake Holder | Key Responsibilities |
|---|---|
| Wholesale Market Operator | • Establish, administer, and operate wholesale demand response programs and markets;<br>• Determine and publish locational prices for wholesale demand response products;<br>• Improve energy market efficiencies (economics) by integrating demand response products and capabilities;<br>• Monitor compliance to wholesale DR instructions and financially settle with the participating stakeholders. |
| Transmission Grid / System Operator - Balancing Authority | • Monitor and maintain transmission grid reliability, and call upon wholesale demand-side (demand response) capabilities to address contingency/emergency conditions;<br>• Dispatch demand-side capabilities to balance supply and demand, e.g., mitigating impact of variable generation (e.g., wind).<br>• In regions with no organized wholesale energy market, economically dispatch available generation and demand resources including demand response to optimize supply economics. |
| Distribution Grid Operator – Utility Distribution Company | • Monitor and maintain the distribution grid reliability and the quality of power supply (e.g., voltage levels). Call upon DR to mitigate the distribution contingencies and reliability concerns.<br>• Review and approve the integration of distributed energy resources with the distribution grid.<br>• Assess the operational impact of distributed resources and demand response (DR/DER) on power quality and reliability of the distribution grid, approve high-penetration DR schedules (especially cold-load pickup operation).<br>• Coordinate with the respective Load Serving Entity and Energy Service Providers for the assessment of distribution service and loss compensation charges to retail customers. |
| Load Serving Entity | • Forecast load and economically schedule supply to meet demand at all times. Incorporate |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

| Stake Holder | Key Responsibilities |
|---|---|
| | demand response capabilities to improve load factor, reducing/shifting peak load.<br>• Establish and obtain regulatory approval for a fair and unbiased retail tariff for all customer classes. For real-time dynamic pricing (RTP) tariff, apply distribution service, loss compensation and other uplifts to the wholesale locational prices.<br>• Establish and administer demand response and distributed resource management programs including DR tariff.<br>• Meet regional requirements for Renewable Portfolio Standards compliance for power delivery.<br>• Aggregate and schedule DR capabilities in wholesale markets, manage DR programs.<br>• Manage customer metering and billing process. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Retail Electric Quadrant (REQ)
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**Request No.:** 2010 Retail Annual Plan Item 9(c)
**Request Title:** Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

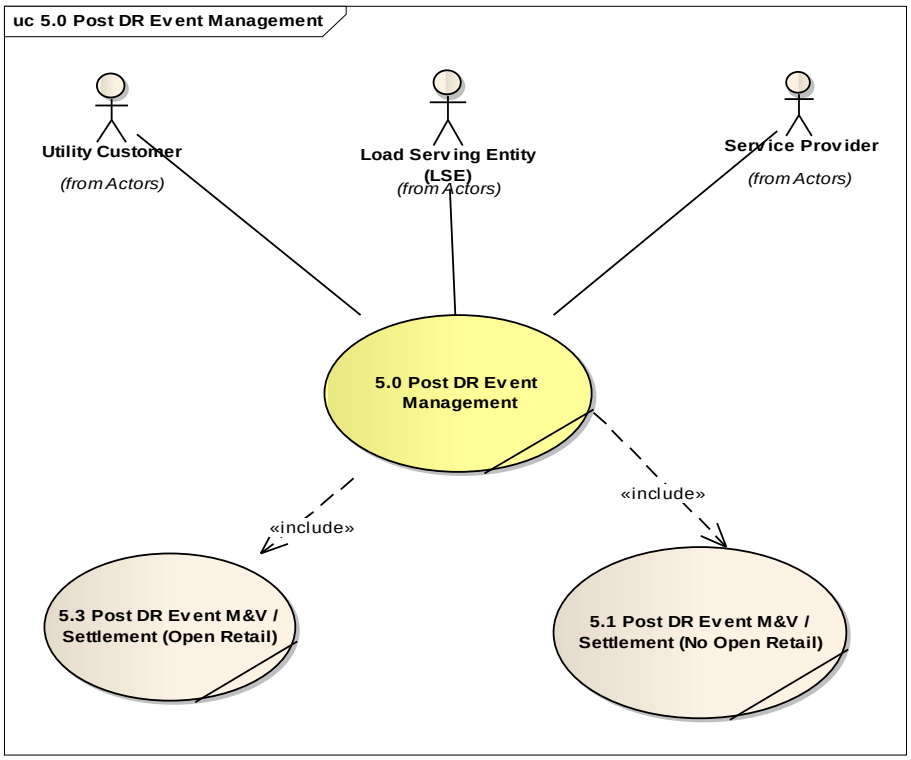
| Stake Holder | Key Responsibilities |
|---|---|
| Demand Response Provider | • Offer competitive demand response services to the end-use customers.<br>• Design and manage DR programs, establish pricing structure and signals for DR operation<br>• Aggregate demand and demand-side capabilities; and offer/schedule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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.13 Post DR Event Management

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



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

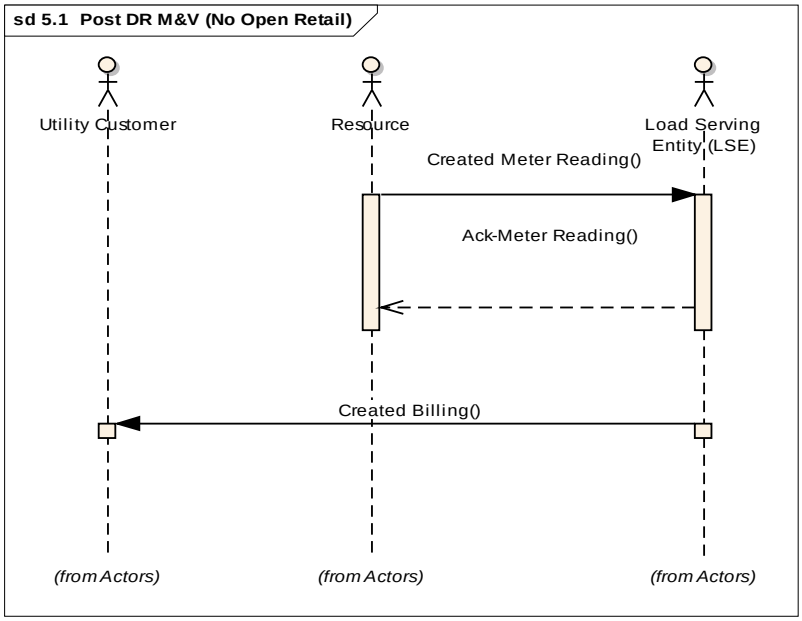
| | |
|---|---|
| **For Quadrant:** | **Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 Retail Annual Plan Item 9(c)** |
| **Request Title:** | **Requirements Specifications for Retail Standard DR Signals - for NIST PAP09** |

## REQ.14.3.2.4.13.1 Post DR Event M&V / Settlement (No Open Retail)

### Description

After DR Event has been completed, then Measurement and Verification (M&V) can confirm whether action has been taken or to measure the impact of the response. After the M&V, then the Financial Settlement is calculated and sent to the Electricity Customer[1]. This Use Case covers the scenarios with no Open Retail Markets.

### Sequence Diagram




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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

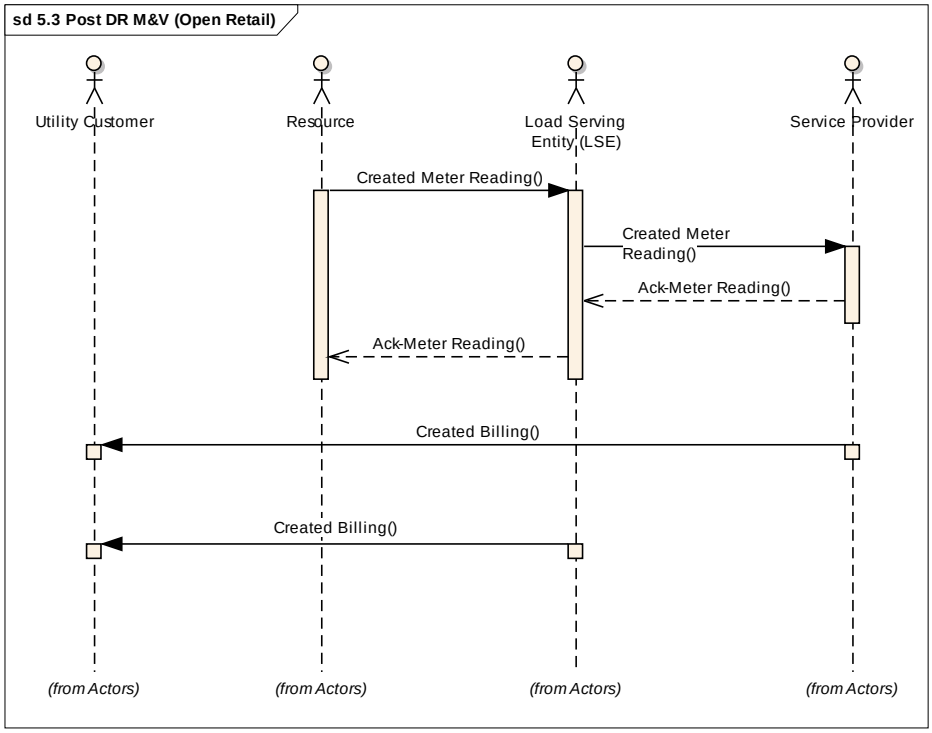
| | |
|---|---|
| **For Quadrant:** | **Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 Retail Annual Plan Item 9(c)** |
| **Request Title:** | **Requirements Specifications for Retail Standard DR Signals - for NIST PAP09** |

## REQ.14.3.2.4.13.2 Post DR Event M&V / Settlement (Open Retail)

### Description

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

### Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor/object classes and sub-classes as illustrated in the entity-relationship model in Figure 1 of Appendix A. Abbreviations/Acronyms correspond to the IDs shown in the figure.

### ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

| Term | Definition |
|---|---|
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

| Term | Definition |
|---|---|
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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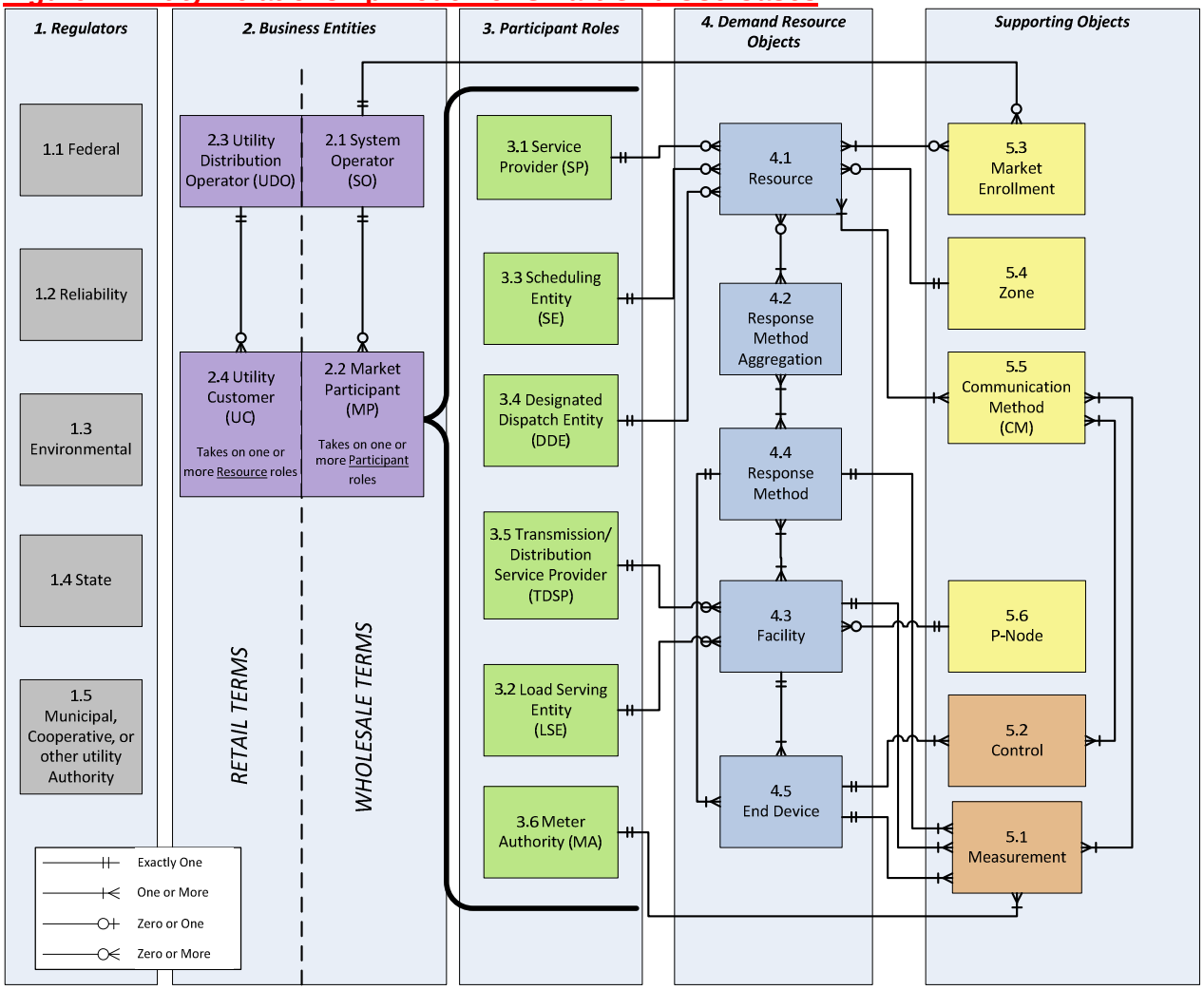
**Request No.:** 2010 Retail Annual Plan Item 9(c)
**Request Title:** Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

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



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## 4. Supporting Documentation

### a. Description of Request:

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

This recommendation specifically pertains to PAP 09[2], "Standard DR and DER Signals".

### b. Description of Recommendation:

See Section 3 Summary

### c. Business Purpose:

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

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

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

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

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

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

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

**1. RECOMMENDED ACTION:**

X Accept as requested
___ Accept as modified below
___ Decline

**EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:**

X Change to Existing Practice
___ Status Quo

**2. TYPE OF DEVELOPMENT/MAINTENANCE**

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

**3. RECOMMENDATION**

**SUMMARY:**
The business process flows and use cases presented in this document illustrate the standard interactions between a System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets.

**RECOMMENDED STANDARDS:**
In response to NIST's Priority Action Plan 9, this document contains draft requirements specifications, in the form of business process flows and use cases, to support the standardization of the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand response resources in organized wholesale electric markets. Common terminology from the NAESB Measurement and Verification Standards for Demand Response has been incorporated into the development of the business process flows and use cases. As a result of the development of this document, a standard set of actors and additional terminology will expand the existing NAESB documentation of associated terms and definitions for demand response.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

New WEQ-016 Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 are included below for reference *(previously added in Recommendation 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b))*

## 000-1 ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

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

## 000-2 DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |

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

| Term | Definition |
|---|---|
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |

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

| Term | Definition |
|---|---|
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

## New Business Practice Standards WEQ-016 – Smart Grid Activities

### RECOMMENDED STANDARDS:

**Executive Summary**

**Specifications for Wholesale Standard Demand Response Signals**

The following addresses the business objectives and context for standardizing control and pricing signals for Demand Response (DR) and Distributed Energy Resources (DER)[1] as part of the Smart Grid implementation, which is called for by National Institute of Standards and Technology (NIST) Priority Action Plans (PAP) 09. The North America Energy Standards Board (NAESB) Smart Grid Task Force (SGTF) in cooperation with UCA International Users Group (UCAIug) Open Smart Grid (OpenSG) Task Force, the Independent System Operator/Regional Transmission Organization Council (ISO/RTO Council), and other organizations, have developed DR use cases that provide requirements for developing consistent DR control and pricing signal standards.

The business process flows and use cases contained in this Recommendation address the requirements for standardizing the information exchanged during interactions between the System Operator and various Market Participants for the administration and deployment of demand

[1] DERs are small, modular, energy generation and storage technologies that provide electric capacity or energy where it is needed. DERs may be either connected to the local electric power grid (e.g., for voltage support) or isolated from the grid in stand-alone applications, such as part of a MicroGrid. Definition of DER provided by the Department of Energy, http://www1.eere.energy.gov/femp/pdfs/31570.pdf

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

response resources in organized wholesale electric markets. Additional documents under development through the NAESB Smart Grid Task Force will focus on other aspects of the PAP 09 objectives. To maintain consistency throughout materials developed by the NAESB Smart Grid Task Force, a common set of actors, terms and definitions have been adopted.

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

## Introduction

## Specifications for Wholesale Standard Demand Response Signals

**Purpose**: To accelerate the development of standards for Smart Grid Interoperability, NIST is working with all stakeholders of Smart Grid and has developed a set of PAPs[2]. A number of PAPs (03, 04, and 09) are related to the use of Smart Grid technologies to enable DR and the integration of DER for DR purposes.

Specifically for PAP 09, NAESB, with support from UCAIug OpenSG task forces and the ISO/RTO Council, have responsibility to collect, analyze, and consolidate use cases and develop Unified Modeling Language (UML) based use case models for DR. Such responsibility now falls under the NAESB Smart Grid Task Force.

NIST Smart Grid Interoperability[3] Roadmap leverages the GridWise Architecture Council (GWAC) interoperability framework . This framework calls for the establishment of business objectives, procedures and context before technical interoperability standards can be established. To apply this framework to the development of interoperability standards for DR Signals, it is clear that the industry needs an overarching business framework to guide the development of technical standards, given the complexity and range of DR programs.

The purpose of the following is to provide standards developers with a context for understanding the range of scenarios to which DR programs and DERs may be applied and implemented across

[2] http://collaborate.nist.gov/twiki-sggrid/bin/view/_SmartGridInterimRoadmap/PriorityActionPlans

[3] Interoperability is the capability of two or more networks, systems, devices, applications, or components to share and readily use information securely and effectively with little or no inconvenience to the user. The characteristics of interoperability as set forth in the GridWise® Interoperability Context- Setting Framework are (1) exchange of meaningful, actionable information between two or more systems across organizational boundaries, (2) a shared understanding of the exchanged information, (3) an agreed expectation for the response to the information exchange, and (4) a requisite quality of service: reliability, fidelity, and security. The result of interoperability is that interfaces, systems, and devices are capable of being integrated, scalable, adaptable, and upgradable and utilize open standards to promote competitive technology and to avoid stranded investments. Interoperability can only be achieved if there is a seamless, end-to-end coordination and exchange of data between many organizations, interfaces, systems, and devices resulting in behavior changing information given to the consumer.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

the various electricity systems and jurisdictions in the United States of America with some overlaps to Canada. A major objective in producing this document is to emphasize the importance of interoperability at all levels of the GWAC Interoperability Framework.

**Scope**: There are certain principles and boundaries that have been established. These include:

1. Demand Response practices must be consistent with NERC and applicable regional reliability authority requirements.
2. All involved entities are registered through the applicable ISO/RTO market participant registration process, which may include credit checks. However, the specifics related to the business processes associated with registration are not documented in these requirements.
3. Settlement input parameters are defined as an output to the Measurement & Performance business process. However, specific business processes associated with settlements are not documented in these requirements.
4. Intra-system operator information exchanges and specific system operators market rules, calculations, algorithms, and Performance Evaluation models are excluded.
5. Planning functions are not documented in these requirements. This includes, but is not limited to, long-term load forecasting and transmission planning.
6. Capacity auctions, awards processes, and resource certification are not documented in these requirements.

**Assumptions**: The following has been developed with the consideration of the following key assumptions:

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

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## Business Practice Standards

### 016-2 Specifications for Wholesale Standard Demand Response Signals

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

Conventions:

- Glossary terms are shown in bold + italics.
- Implementation does not require every communication flow shown in the process flows.

### 016-2.1 ACTORS

The actors for the wholesale use cases are role-based, with the registered Market Participant business entity therefore taking on one or more roles. It is possible that a single Market Participant may take on all six Market Participant roles; six Market Participants take on one role each, or any combination in-between. Rules for how Market Participants qualify for various roles are specific to market rules and regional reliability requirements. The System Operator role is unique and must be taken by the System Operator business entity.

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**Table 1 - Actor Roles**

| Term | Acronym | Definition |
|---|---|---|
| Service Provider | SP | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| Designated Dispatch Entity | DDE | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| Load Serving Entity | LSE | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Metering Authority | MA | A role which carries the responsibility of providing data necessary to determine the performance of a ***Resource.*** |
| Scheduling Entity | SE | A role which carries the responsibility of submitting bids/offers and receives ***Schedules*** and ***Awards***. |
| System Operator | SO | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | TDSP | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |

**016-2.2** WHOLESALE ENTITY RELATIONSHIP MODEL

The Entity Relationship Diagram in Appendix A, **Error! Reference source not found.** shows the Business Entities and other objects used in the demand response use cases. The definitions of objects not used in use cases are included in this document's glossary. The lines among the elements illustrate the cardinality amount the entities and objects (see inset for cardinality key).

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**016-2.3** USE CASE OVERVIEW

The use cases presented in this document represent a combination of three dimensions of demand response participation in wholesale markets: product, deployment, and performance evaluation method. As shown in the table below, product and deployment dimensions are identified by a single alphabetic character and performance evaluation methods are indicated by a numeric identifier; each character is separated by a dash (-). For example, use case E-R-1 refers to the use case for the Energy (Economic) product with a Resource-specific deployment and performance evaluated using a Baseline.

**Table 2 - Use Case Dimensions**

| **Product** | **-** |
|---|---|
| Energy (Economic) | E |
| Energy (Reliability) | R |
| Capacity | C |
| Reserve | V |
| Regulation | G |
| **Deployment** | **-** |
| Bulk | B |
| Resource | R |
| Self | S |
| **Performance Evaluation** | **-** |
| Baseline | 1 |
| MB/MA | 2 |
| MBL | 3 |
| MGO | 4 |

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

**Table 3 - Sample Use Case List**

| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **E-R-1** | Energy (Economic) | Resource | Baseline |
| **E-R-2** | Energy (Economic) | Resource | MB/MA |
| **E-R-3** | Energy (Economic) | Resource | MBL |
| **E-R-4** | Energy (Economic) | Resource | MGO |
| **E-S-1** | Energy (Economic) | Self | Baseline |
| **E-S-2** | Energy (Economic) | Self | MB/MA |
| **E-S-3** | Energy (Economic) | Self | MBL |
| **E-S-4** | Energy (Economic) | Self | MGO |

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

The wholesale Demand Response end-to-end business process flow for the communications between the System Operator (SO) and the Service Provider (SP) is comprised of four major functions: Enrollment & Qualification, Scheduling & Award Notification, Deployment & Real-Time Communications, and Measurement & Performance. Two additional processes, Market Participant Registration and Settlements, are shown in the high-level business process flow, but are considered outside the scope of what is required for the communications flow for demand response.

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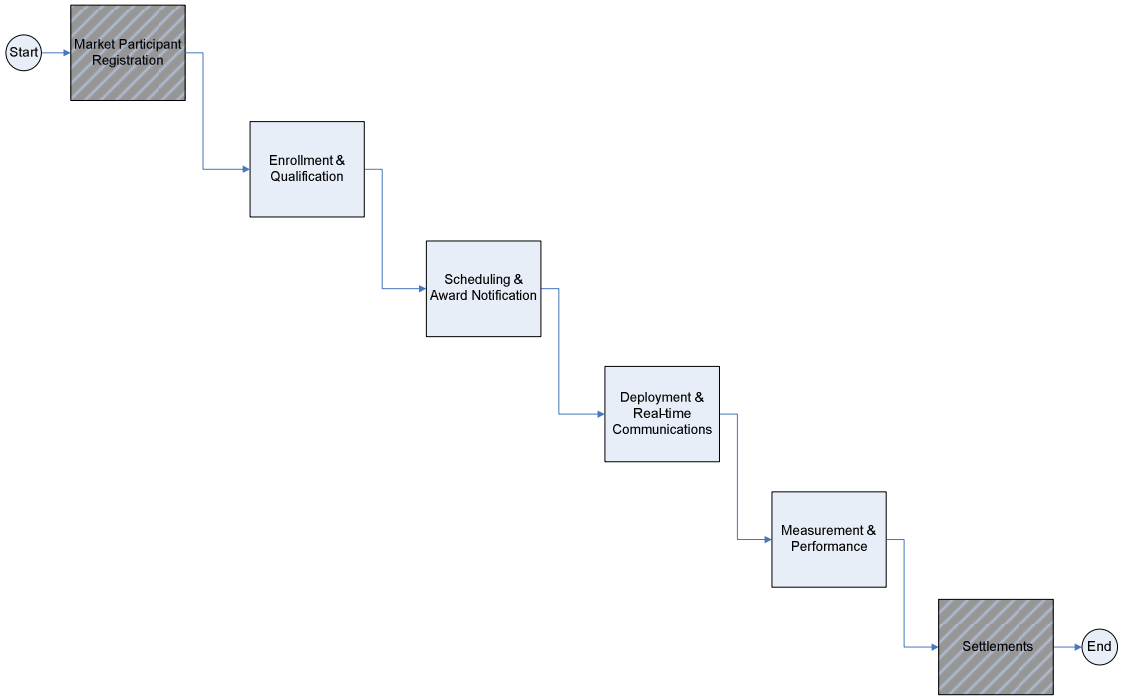
**Figure 1 - Demand Response**



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**016-2.4** SPECIFIC USE CASES

## 016-2.4.1 Enrollment and Qualification

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

Use Cases: All valid Use Cases defined in this document

- The process begins when the ***SP*** submits an enrollment request to the ***SO***.
- The ***SO*** processes the enrollment request, which may include interactions with the ***TDSP***, ***LSE***, ***MA*** and/or ***SE***.
- The ***SO*** evaluates the enrollment request, which may include verification information from the ***TDSP***, ***LSE***, ***MA*** and/or ***SE***.
- The result of the evaluation is the approval or rejection of the enrollment request.
  - If the enrollment request has been rejected, the ***SO*** sends information to the ***SP***, indicating the rejection details.
  - If the enrollment request has been approved, a determination is made by the ***SO*** as to whether qualification of the ***resource***'s capability is required prior to final approval.
    - If no qualification is required, the ***SO*** sends information to the ***SP***, indicating the approval of the enrollment.
    - If qualification is required, the ***SO*** coordinates the qualification procedure with the ***SP***.
      - If the ***resource*** has failed to qualify, the ***SO*** sends information to the ***SP***, indicating the qualification rejection details.
      - If the ***resource*** achieves qualification, the ***SO*** sends information to the ***SP*** and enrollment is finalized.
- At the end of the Enrollment and Qualification process, the ***SO*** finalizes enrollment, notifies the ***SP*** and may also notify the ***TDSP***, ***LSE***, ***MA*** and/or ***SE***.

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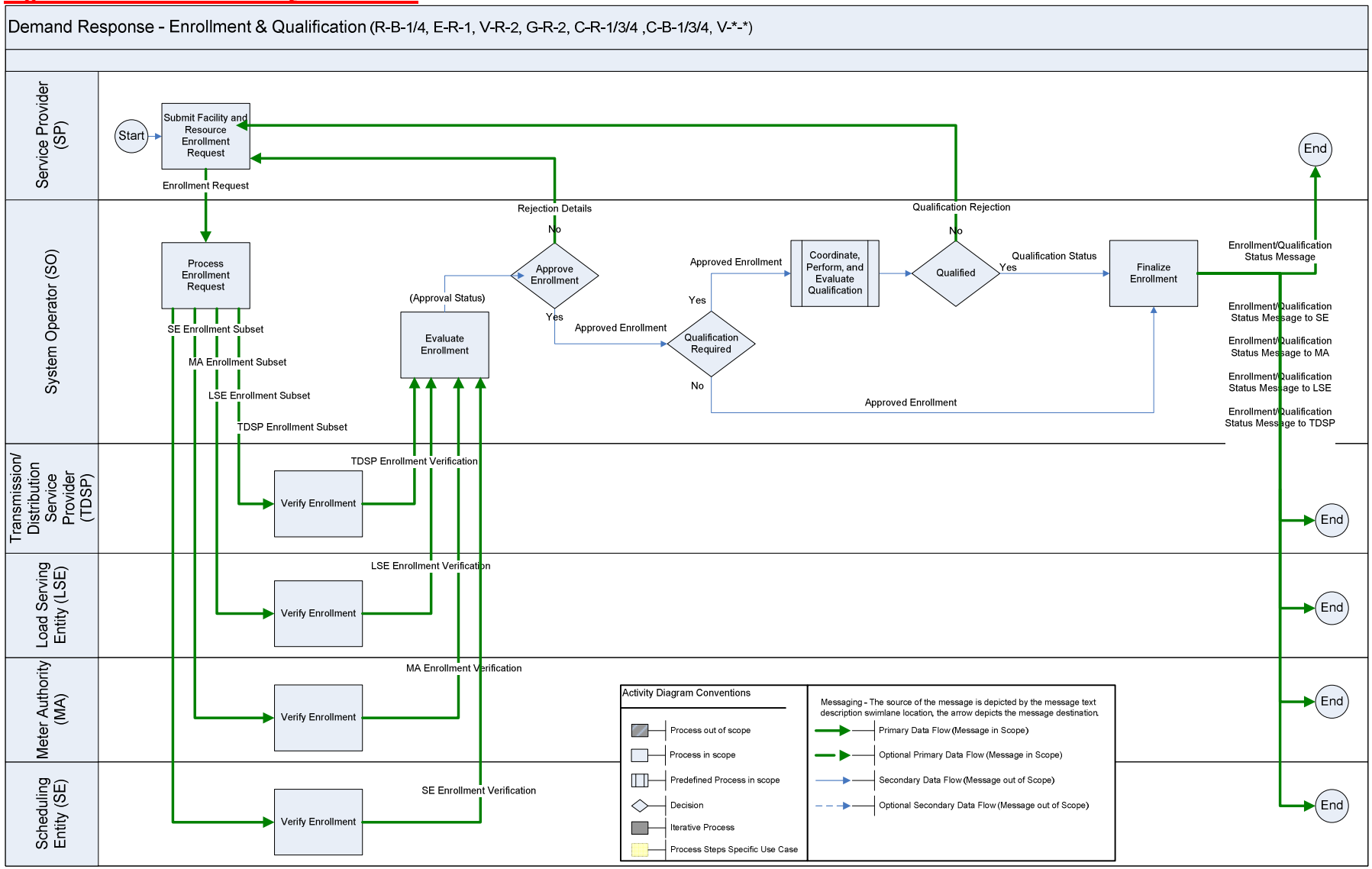
## Activity Diagram and Data Flow:

## Figure 2 - Enrollment and Qualification



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## 016-2.4.2 Scheduling and Award Notification – Economic

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

### Table 4 - Use Cases

| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **C-R-1** | Capacity | Resource | Baseline |
| **C-R-2** | Capacity | Resource | MB/MA |
| **C-R-3** | Capacity | Resource | MBL |
| **C-R-4** | Capacity | Resource | MGO |
| **E-R-1** | Energy (Economic) | Resource | Baseline |
| **E-R-2** | Energy (Economic) | Resource | MB/MA |
| **E-R-3** | Energy (Economic) | Resource | MBL |
| **E-R-4** | Energy (Economic) | Resource | MGO |
| **G-R-1** | Regulation | Resource | Baseline |
| **G-R-2** | Regulation | Resource | MB/MA |
| **G-R-3** | Regulation | Resource | MBL |
| **G-R-4** | Regulation | Resource | MGO |
| **V-R-1** | Reserve | Resource | Baseline |
| **V-R-2** | Reserve | Resource | MB/MA |
| **V-R-3** | Reserve | Resource | MBL |
| **V-R-4** | Reserve | Resource | MGO |

- The process begins when the ***SE*** submits a supply offer to the ***SO***.
- The ***SO*** evaluates the offer through its market clearing process.
- The resulting resource-specific dispatch information is transformed into dispatch instructions by the ***SO***.
- The ***SO*** makes the schedule available.
- The ***SE*** collects the forward schedule.

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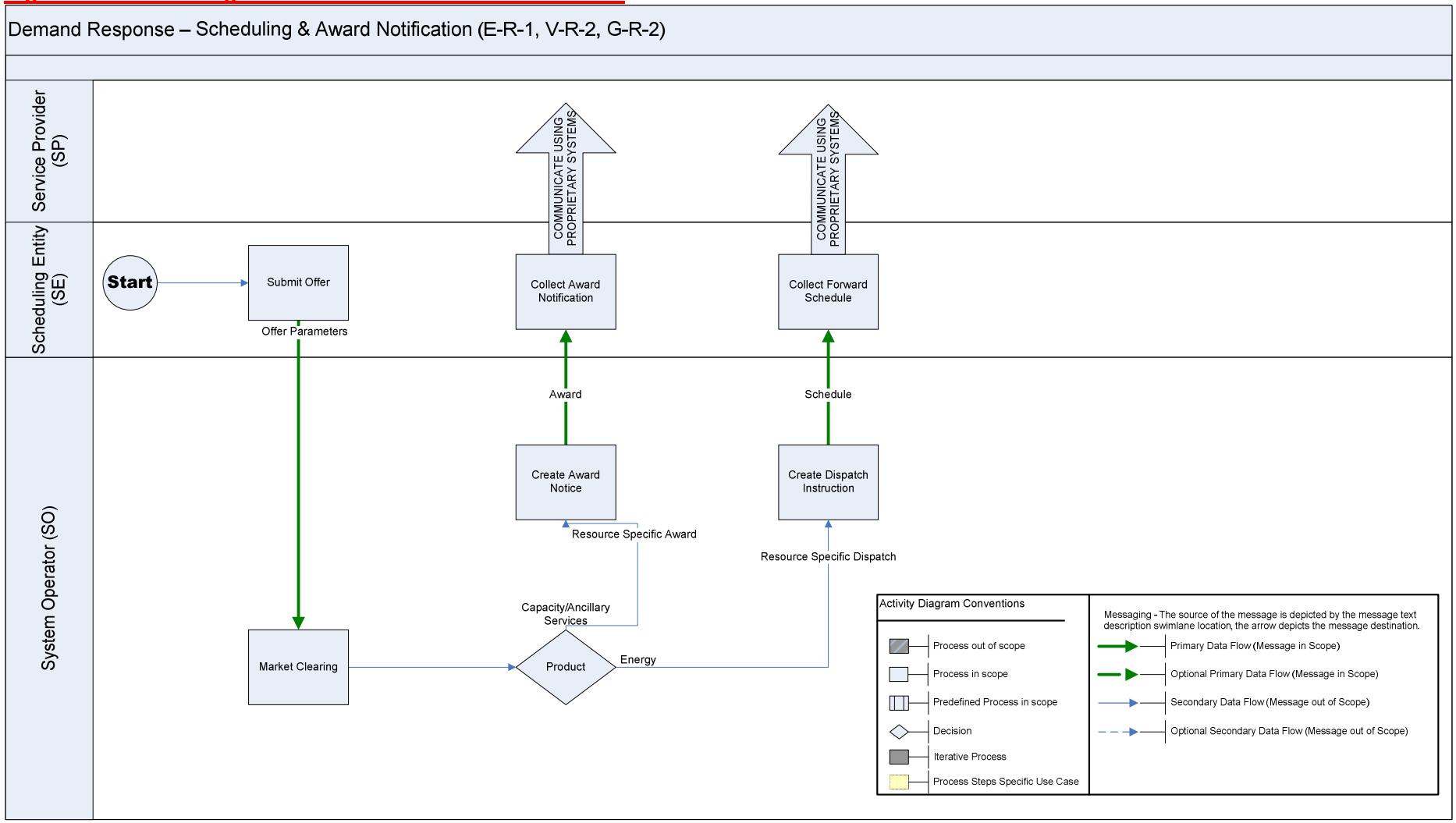
## Activity Diagram and Data Flow:

## Figure 3 - Scheduling and Award Notification - Economic



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## 016-2.4.3 Scheduling and Award Notification – Reliability

Overview: The Scheduling and Award Notification process describes the process from offer submission to award notification. This process also includes the supplemental commitment and reassessment of reliability to determine whether demand resources that are enrolled in reliability-based (emergency) demand response programs should be advised of a possible reliability deployment.

### Table 5 - Use Cases

| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **R-B-1** | Energy (Reliability) | Bulk | Baseline |
| **R-B-3** | Energy (Reliability) | Bulk | MBL |
| **R-B-2** | Energy (Reliability) | Bulk | MB/MA |
| **R-B-4** | Energy (Reliability) | Bulk | MGO |
| **C-B-1** | Capacity | Bulk | Baseline |
| **C-B-3** | Capacity | Bulk | MBL |
| **C-B-2** | Capacity | Bulk | MB/MA |
| **C-B-4** | Capacity | Bulk | MGO |
| **V-B-1** | Reserve | Bulk | Baseline |
| **V-B-3** | Reserve | Bulk | MBL |
| **V-B-2** | Reserve | Bulk | MB/MA |
| **V-B-4** | Reserve | Bulk | MGO |
| **V-R-1** | Reserve | Resource | Baseline |
| **V-R-3** | Reserve | Resource | MBL |
| **V-R-2** | Reserve | Resource | MB/MA |
| **V-R-4** | Reserve | Resource | MGO |

- The process begins when the ***SE*** submits availability to the ***SO***.
- The ***SO*** performs the Load Forecast and Supplemental Commitment process after the market has been settled. Reliability is reassessed by the ***SO*** to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
  - If ***SO*** determines that the system is secure, no demand response advance notification is required and reliability is assessed by the ***SO*** at the next interval.
  - If ***SO*** anticipates that a reliability issue is expected, the ***SO*** decides whether demand response is needed for reliability.
    - If demand response will not be needed, the process ends.

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

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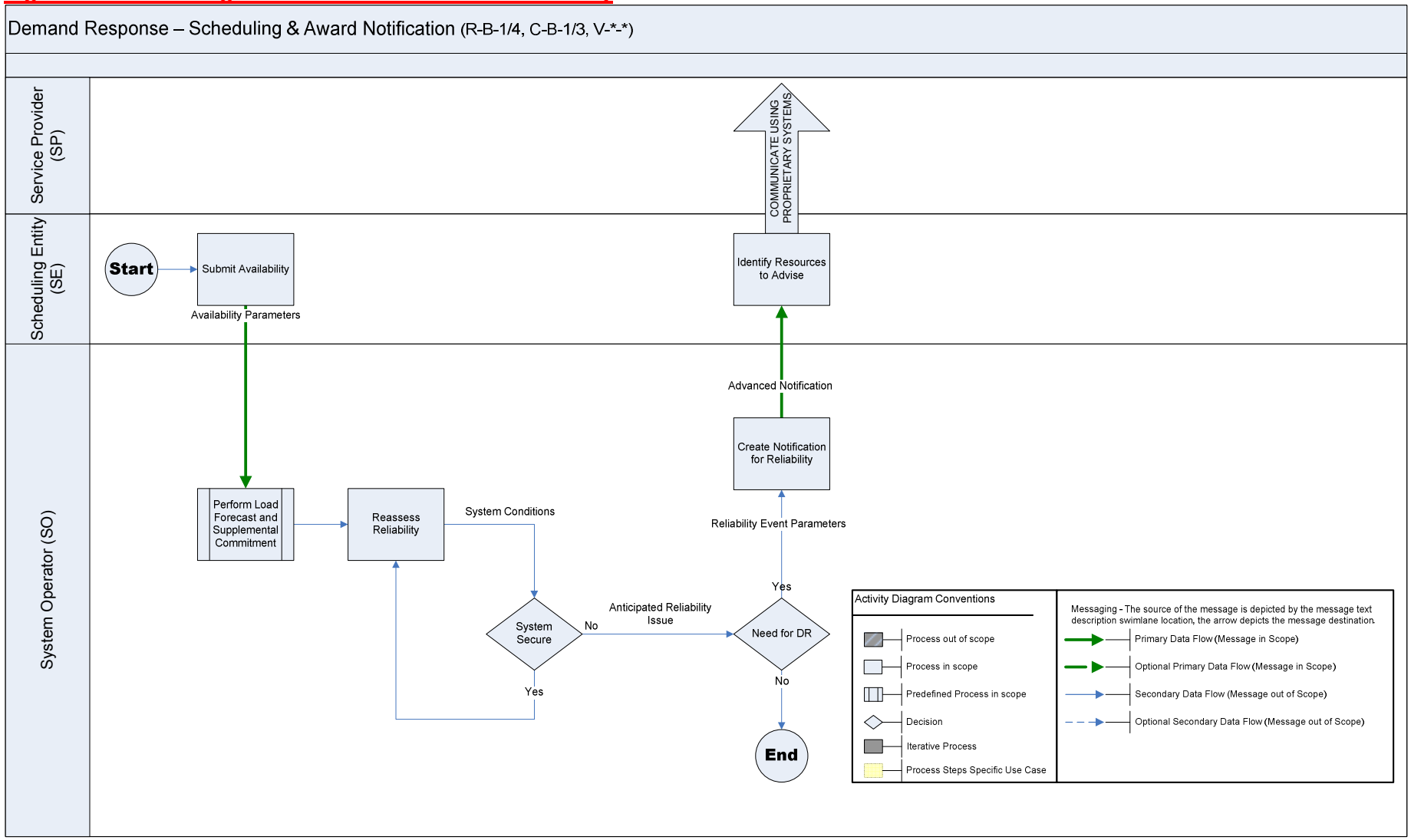
## Activity Diagram and Data Flow:

## Figure 4 - Scheduling and Award Notification - Reliability



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## 016-2.4.4 Deployment and Real-Time Communications - Economic

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The process flows and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

### Table 6 - Use Cases

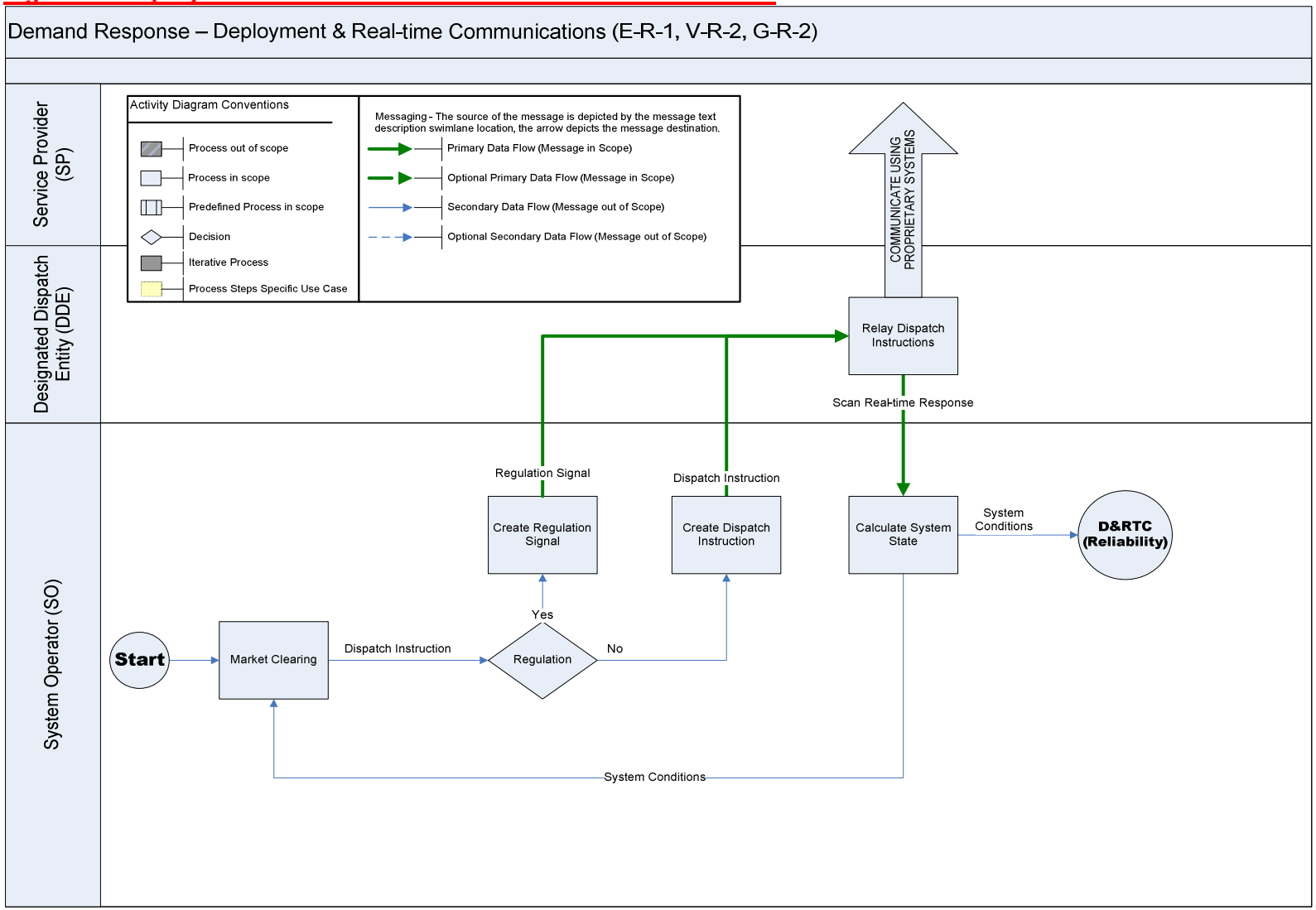
| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **E-R-1** | Energy (Economic) | Resource | Baseline |
| **R-B-1** | Energy (Reliability) | Bulk | Baseline |
| **R-B-4** | Energy (Reliability) | Bulk | MGO |
| **V-R-2** | Reserve | Resource | MB/MA |
| **G-R-2** | Regulation | Resource | MB/MA |

- The process begins when the ***SO*** evaluates real-time system conditions through its market clearing process.
- The resulting resource-specific real-time dispatch information is transformed into dispatch instructions by the ***SO***.
  - If the dispatch instruction is for Regulation, the ***SO*** sends the Regulation signal to the ***DDE***.
  - If the dispatch is not for Regulation, the ***SO*** sends the dispatch instruction to the ***DDE***.
- The ***DDE*** communicates with the ***SP*** through the proprietary communication system of the ***DDE***.
- The ***SO*** collects real-time response from the ***DDE*** for evaluating the next interval and uses the information to calculate the system state.
- System conditions are made available to the market clearing process for the next interval and to **Deployment and Real-Time Communications – Reliability**.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
**Request Title: Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09**

## Activity Diagram and Data Flow:

## Figure 5 - Deployment and Real-Time Communications - Economic



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## 016-2.4.5 Deployment and Real-Time Communications – Reliability

Overview: The Deployment and Real-Time Communication process describes the process for real-time communications to demand resources providing market-based services on a real-time basis and dispatch for reliability-based (emergency) demand response programs. The process flows and descriptions below reflect a sequential nature to the real-time process solely for the purposes of describing the process of the real-time data flow; the real-time communication process simultaneously scans and updates in the same step.

**Table 7 - Use Cases**

| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **C-B-1** | Capacity | Bulk | Baseline |
| **C-B-3** | Capacity | Bulk | MBL |
| **E-B-1** | Energy (Economic) | Bulk | Baseline |
| **E-B-4** | Energy (Economic) | Bulk | MGO |
| **E-R-1** | Energy (Economic) | Resource | Baseline |
| **V-B-1** | Reserve | Bulk | Baseline |
| **V-B-2** | Reserve | Bulk | MB/MA |
| **V-B-3** | Reserve | Bulk | MBL |
| **V-B-4** | Reserve | Bulk | MGO |
| **V-R-1** | Reserve | Resource | Baseline |
| **V-R-2** | Reserve | Resource | MB/MA |
| **V-R-3** | Reserve | Resource | MBL |
| **V-R-4** | Reserve | Resource | MGO |
| **V-S-1** | Reserve | Self | Baseline |
| **V-S-2** | Reserve | Self | MB/MA |
| **V-S-3** | Reserve | Self | MBL |
| **V-S-4** | Reserve | Self | MGO |

- The ***SO*** performs the Load Forecast and Supplemental Commitment process after the interval has been dispatched. Reliability is reassessed by the ***SO*** to determine whether the system is secure (sufficient supply to meet forecasted load conditions).
  - If ***SO*** determines that the system is secure, no demand response deployment is required and reliability is assessed by the ***SO*** at the next interval.

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- If ***SO*** anticipates that a reliability issue is expected, the ***SO*** decides whether demand response is needed for reliability.
  - If demand response will not be needed, the process ends.
  - If the ***SO*** determines that demand response will be deployed, the reliability event parameters are prepared by the ***SO*** to create a reliability event notification.
    - The deployment instruction is sent to the ***DDE***.
    - The ***DDE*** identifies the demand resources to notify and relays the message to ***SP***s through the proprietary communication system of the ***DDE***.
  - Real-time or near real-time response data is collected by ***DDE*** using the proprietary communication system of the ***DDE***.
  - The ***DDE*** sends the event response information to the ***SO***.

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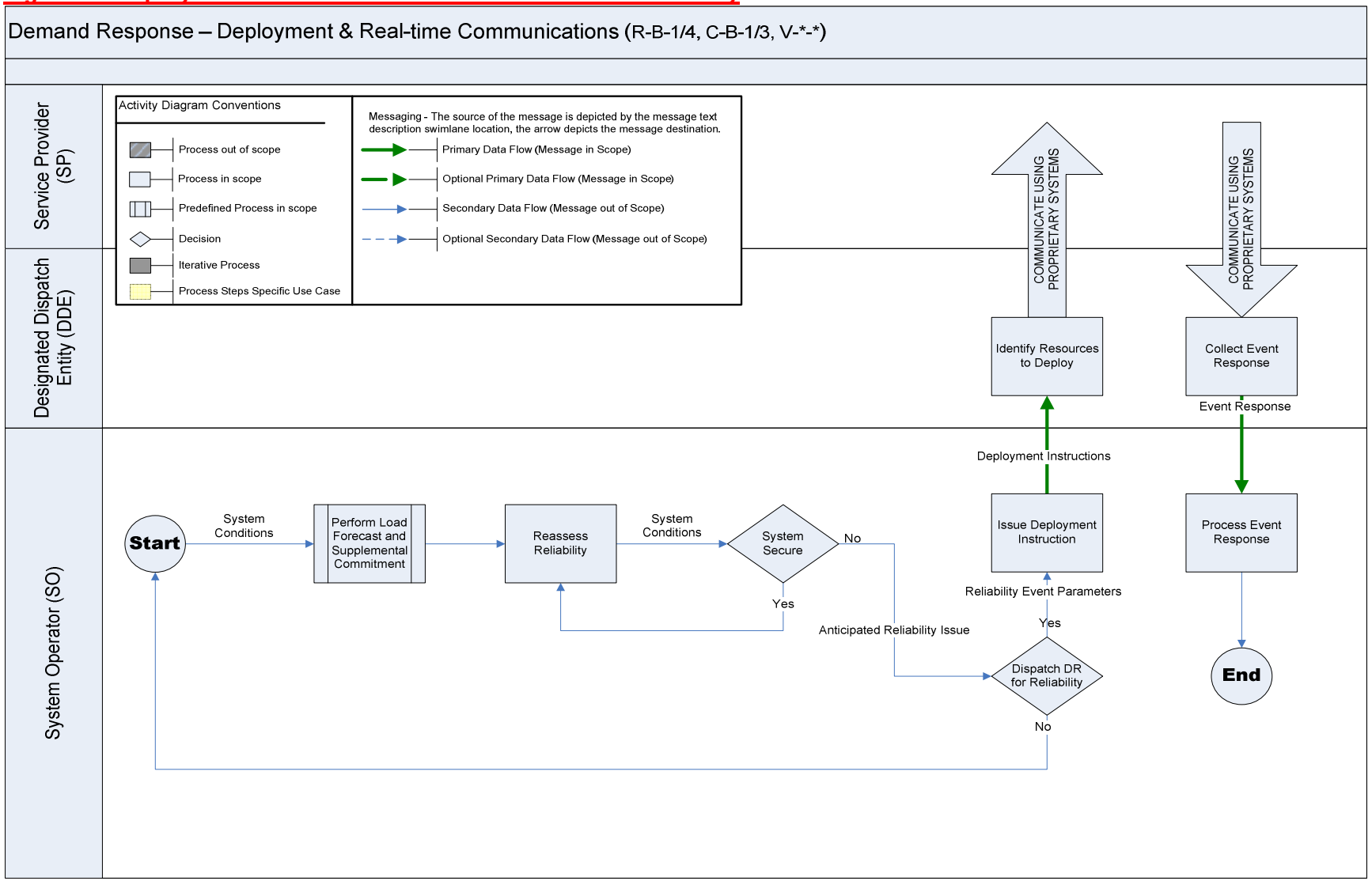
## Activity Diagram and Data Flow:

## Figure 6 - Deployment and Real-Time Communications - Reliability



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## 016-2.4.6 Measurement and Performance – Baseline

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

Use Cases: All use cases where ***Baseline*** applies.

- The process begins when the ***SP*** requests event meter data from the ***MA***.
- The ***MA*** sends the event meter data to the ***SP***.
- If the **SP** is required to calculate the baseline, the **SP** uses the event meter data to calculate the baseline.
  - The ***SP*** uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
  - The ***SP*** sends the calculated event performance and meter data to the ***SO***.
  - The ***SO*** evaluates the calculated event performance and meter data.
    - If the calculated event performance data are complete, the ***SO*** uses the settlement determinants in the Settlements process.
    - If the calculated event performance data are incomplete, the ***SO*** sends an event data rejection to the ***SP***.
- If the ***SO*** calculates the baseline, the ***SP*** sends the event meter data to the ***SO***.
  - If the event meter data are complete, the ***SO*** uses the event meter data to calculate the baseline.
    - The ***SO*** uses the baseline and event meter data to calculate the event reduction amount or event performance ratio.
    - The ***SO*** uses the settlement determinants in the Settlements process.
  - If the event meter data are incomplete, the ***SO*** sends an event data rejection to the ***SP***.

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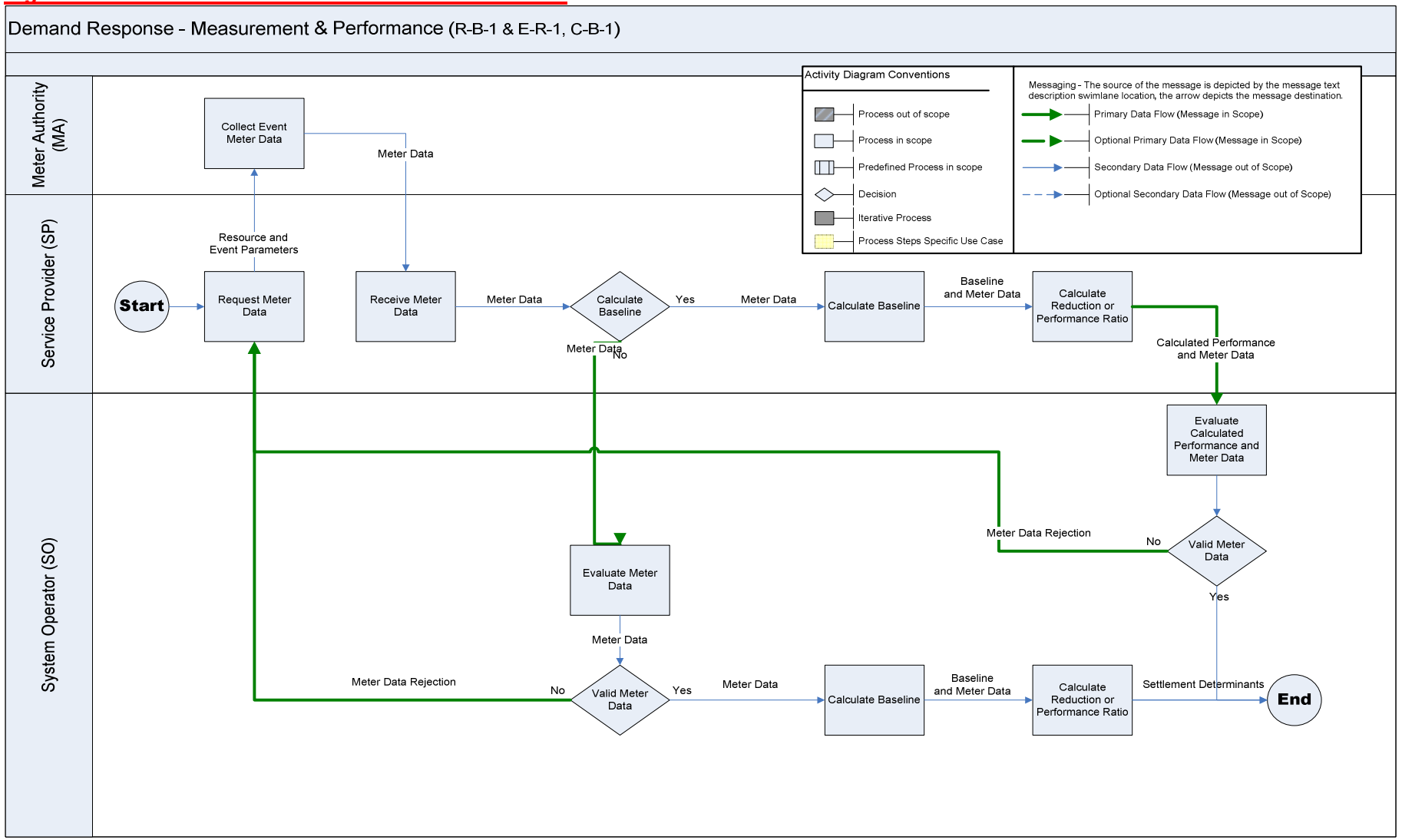
## Activity Diagram and Data Flow:

## Figure 7 - Measurement and Performance – Baseline



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## 016-2.4.7 Measurement and Performance - All Others

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

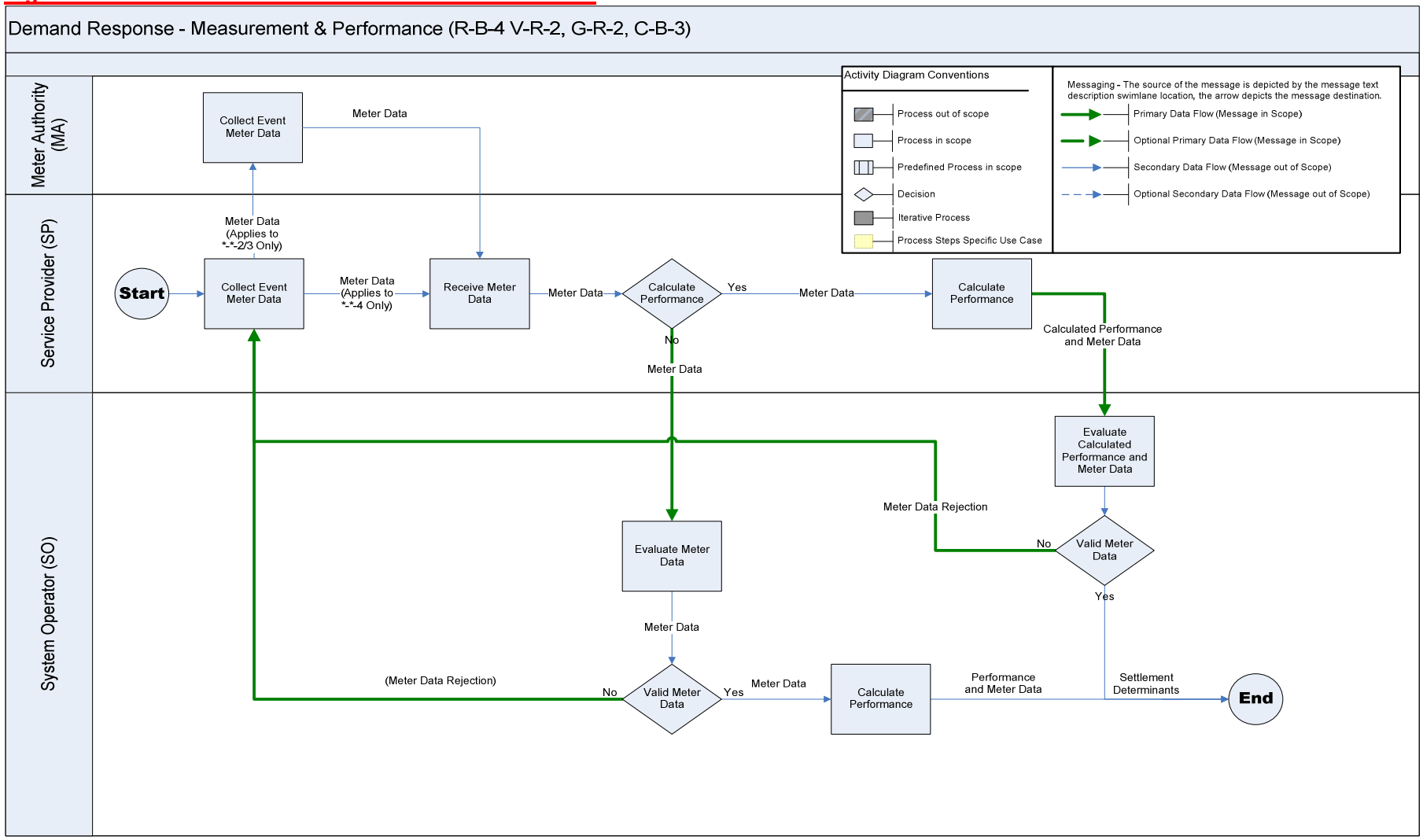
Use Cases: All use cases where ***Meter Before/Meter After, Maximum Base Load,*** or ***Meter Generator Output*** applies.

- The process begins when the ***SP*** collects event meter data from the ***MA*** for the specified performance evaluation method.
  - If the performance evaluation method is ***Meter Before/Meter After*** or ***Maximum Base Load***, the ***MA*** sends the event meter data to the ***SP***.
  - If the performance evaluation method is ***Meter Generator Output***, the SP uses the data from the meter on the generator.
- If the **SP** is required to calculate performance, the **SP** uses the event meter data to calculate performance.
  - The ***SP*** uses the meter data to calculate the event reduction amount or event performance ratio.
  - The ***SP*** sends the calculated event performance and meter data to the ***SO***.
  - The ***SO*** evaluates the calculated event performance and meter data.
    - If the calculated event performance data are complete, the ***SO*** uses the settlement determinants in the Settlements process.
    - If the calculated event performance data are incomplete, the ***SO*** sends an event data rejection to the ***SP***.
- If the ***SO*** calculates performance, the ***SP*** sends the meter data to the ***SO***.
  - If the event meter data are complete, the ***SO*** uses the event meter data to calculate performance.
    - The ***SO*** uses the event meter data to calculate the event reduction amount or event performance ratio.
    - The ***SO*** uses the settlement determinants in the Settlements process.
  - If the event meter data are incomplete, the ***SO*** sends an event data rejection to the ***SP***.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
**Request Title: Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09**

## Activity Diagram and Data Flow:

## Figure 8 - Measurement and Performance – All Others



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ)** |
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## 016-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor/object classes and sub-classes as illustrated in the entity-relationship model in Figure 1 of Appendix A. Abbreviations/Acronyms correspond to the IDs shown in the figure.

### ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| EA | Environmental Authority |
| ED | End Device |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ)
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**Request No.:** 2010 WEQ Annual Plan Item 6(a)
**Request Title:** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

## DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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**Request Title: Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09**

| Term | Definition |
|---|---|
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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**Request Title:** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

| Term | Definition |
|---|---|
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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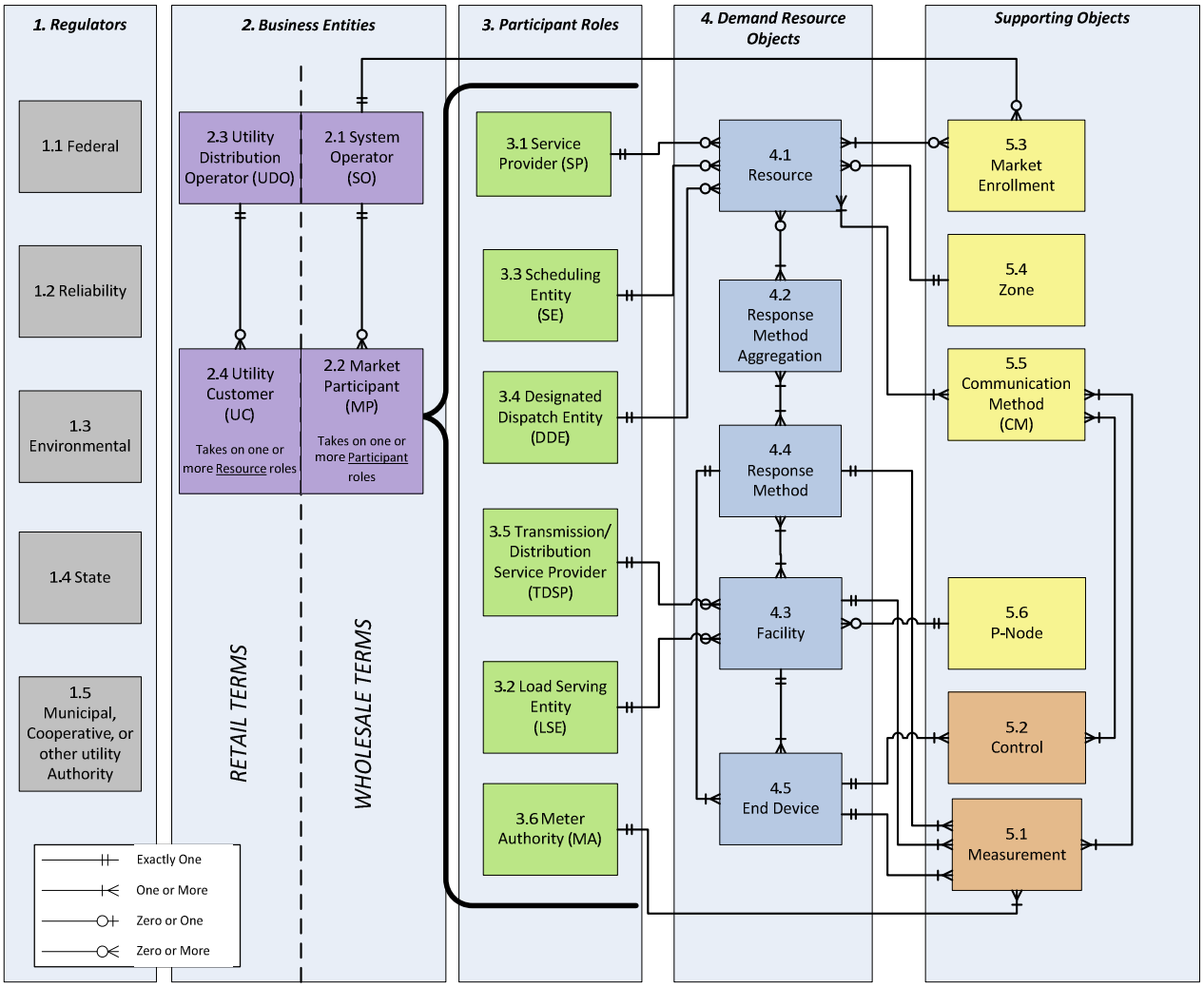
| **Request Title:** | **Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09** |

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



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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016-B

# Appendix B – Use Case Combinations

| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **E-B-1** | Energy (Economic) | Bulk | Baseline |
| **E-B-2** | Energy (Economic) | Bulk | MB/MA |
| **E-B-3** | Energy (Economic) | Bulk | MBL |
| **E-B-4** | Energy (Economic) | Bulk | MGO |
| **E-R-1** | Energy (Economic) | Resource | Baseline |
| **E-R-2** | Energy (Economic) | Resource | MB/MA |
| **E-R-3** | Energy (Economic) | Resource | MBL |
| **E-R-4** | Energy (Economic) | Resource | MGO |
| **E-S-1** | Energy (Economic) | Self | Baseline |
| **E-S-2** | Energy (Economic) | Self | MB/MA |
| **E-S-3** | Energy (Economic) | Self | MBL |
| **E-S-4** | Energy (Economic) | Self | MGO |
| **R-B-1** | Energy (Reliability) | Bulk | Baseline |
| **R-B-2** | Energy (Reliability) | Bulk | MB/MA |
| **R-B-3** | Energy (Reliability) | Bulk | MBL |
| **R-B-4** | Energy (Reliability) | Bulk | MGO |
| **R-R-1** | Energy (Reliability) | Resource | Baseline |
| **R-R-2** | Energy (Reliability) | Resource | MB/MA |
| **R-R-3** | Energy (Reliability) | Resource | MBL |
| **R-R-4** | Energy (Reliability) | Resource | MGO |
| **R-S-1** | Energy (Reliability) | Self | Baseline |
| **R-S-2** | Energy (Reliability) | Self | MB/MA |
| **R-S-3** | Energy (Reliability) | Self | MBL |
| **R-S-4** | Energy (Reliability) | Self | MGO |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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**Request No.:** 2010 WEQ Annual Plan Item 6(a)
**Request Title:** Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09

| Use Case | Product | Deployment | Performance Evaluation |
|---|---|---|---|
| **C-B-1** | Capacity | Bulk | Baseline |
| **C-B-2** | Capacity | Bulk | MB/MA |
| **C-B-3** | Capacity | Bulk | MBL |
| **C-B-4** | Capacity | Bulk | MGO |
| **C-R-1** | Capacity | Resource | Baseline |
| **C-R-2** | Capacity | Resource | MB/MA |
| **C-R-3** | Capacity | Resource | MBL |
| **C-R-4** | Capacity | Resource | MGO |
| **C-S-1** | Capacity | Self | Baseline |
| **C-S-2** | Capacity | Self | MB/MA |
| **C-S-3** | Capacity | Self | MBL |
| **C-S-4** | Capacity | Self | MGO |
| **G-B-1** | Regulation | Bulk | Baseline |
| **G-B-2** | Regulation | Bulk | MB/MA |
| **G-B-3** | Regulation | Bulk | MBL |
| **G-B-4** | Regulation | Bulk | MGO |
| **G-R-1** | Regulation | Resource | Baseline |
| **G-R-2** | Regulation | Resource | MB/MA |
| **G-R-3** | Regulation | Resource | MBL |
| **G-R-4** | Regulation | Resource | MGO |
| **G-S-1** | Regulation | Self | Baseline |
| **G-S-2** | Regulation | Self | MB/MA |
| **G-S-3** | Regulation | Self | MBL |
| **G-S-4** | Regulation | Self | MGO |
| **V-B-1** | Reserve | Bulk | Baseline |
| **V-B-2** | Reserve | Bulk | MB/MA |
| **V-B-3** | Reserve | Bulk | MBL |
| **V-B-4** | Reserve | Bulk | MGO |
| **V-R-1** | Reserve | Resource | Baseline |
| **V-R-2** | Reserve | Resource | MB/MA |
| **V-R-3** | Reserve | Resource | MBL |
| **V-R-4** | Reserve | Resource | MGO |
| **V-S-1** | Reserve | Self | Baseline |
| **V-S-2** | Reserve | Self | MB/MA |
| **V-S-3** | Reserve | Self | MBL |
| **V-S-4** | Reserve | Self | MGO |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## 4. Supporting Documentation

### a. Description of Request:

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

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

### b. Description of Recommendation:

See Section 3 Summary

### c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the use of dates/times within a broad spectrum of energy transactions. The scope of this effort has been limited to Demand Response Programs in order to meet NIST's deadline for this effort.

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

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

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

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

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

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ)** |
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| **Request Title:** | **Requirements Specifications for Wholesale Standard DR Signals - for NIST PAP09** |

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

# FORMAL COMMENTS

**Quadrant:** Wholesale Electric Quadrant

**Recommendation:** WEQ 2010 AP Item 6 (a) / REQ Annual Plan Item 9(a); Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03

**Submitted By:** Standards Review Subcommittee

**Date:** April 2, 2010

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Under the Standards Review Subcommittee (SRS) Scope of Work, which was approved by the SRS on March 6, 2008, the SRS agreed to review recommendations and if subcommittee deemed appropriate, they would submit advisory comments to the Executive Committee (EC) for consideration. As stated in the Scope of Work these comments are "not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices."

It is the SRS understanding that the recommendation will be included as standards in the WEQ Business Practice Standards and will be filed with the Federal Energy Regulatory Commission (FERC). Therefore the SRS would like to point out inconsistencies between this recommendation and existing standards as well as a number of concerns specific to the recommendation itself.

It is also the SRS understanding that these comments may be reviewed by the Smart Grid Task Force. The task force may review these comments, suggest modifications to the recommendation, and submit late comments for Executive Committee consideration.

**Recommendation Summary**

The SRS understands that for this document OASIS is referencing the "Organization for the Advancement of Structured Information Standards." In the current WEQ Business Practices Standards when OASIS is mentioned it refers to the "Open Access Same-Time Information System." The task force may want to add some clarifying language so that others reading the recommendation understand that OASIS in this context refers to the organization not the system.

**WEQ-000**

The terms and definitions do not seem to take into account existing definitions of terms and FERC Order 676-C which requested that NAESB resolve differences within its standards and differences between NERC and NAESB Standards. Below are examples that illustrate inconsistencies with the definitions for the same term.

Facility - *NERC Definition* - A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)

*Recommendation Definition* – The location at which connection to the transmission or distribution system is made.

Load Serving Entity - *Glossary Definition* The responsible entity that secures energy and Transmission Service (and related Interconnection Operations Services) to serve the electrical demand and energy requirements of its end-use customer.

*Recommendation Definition* – A role which carries the responsibility of serving end-users and selling electric energy to end-users.

System Operator - *Demand Response Final Action* – A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator, whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment and Release/Recall Instructions.

*Recommendation Definition* – An entity which carries the responsibility of administering the deman response process, from Resource enrollment to performance evaluation.

Within Definitions of terms there are capitalized terms which are not defined. These include:

- Federal
- Awards
- Schedules

**WEQ-016**

- **General**
    - There are terms which are capitalized which are not defined such as “Use Case”, “Time of Use Pricing”, “Smart Appliance”, “Display”, Utility Distribution Company and “Wind Power”.
    - There are acronyms which are not defined such as “UML”, “PUC”, and “HAN.”
    - There are acronyms which are used/defined in the WEQ-016 that are not included In WEQ-000 such as the Tariff Rate Types (CPP, MCPPE, PTR, etc.) C&I, EMS, and BAS.
- **Executive Summary –** This recommendation along with the recommendations for PAP04 Requirements Specifications for Common Scheduling Mechanism or Energy Transactions and PAP09 Requirements Specifications for Wholesale Standard DR Signals each contain an Executive Summary listed under the “Recommended Standards” section of the recommendation. Based on the standards numbering it appears that all three recommendations will be included in a new set of standards, WEQ-016.
    - First, we question whether WEQ-016 should have an Executive Summary. The only Business Practice Standards that have an executive summary is WEQ-014 (WEQ/WGQ eTariff Related Standards). The WEQ-014 standards were approved prior to the SRS review of recommendations. (If the SRS had been

reviewing standards at that time, we may have questioned having an Executive Summary in WEQ-014.)

- Second, the Executive Summaries in the three recommendations though similar are not identical. With the differences in the Executive Summaries and all three recommendations being included in WEQ-016 it is unclear how a single set of business practices can have three Executive Summaries.

If the EC decides to move forward with including an Excutive Summary, the SRS recommends that all capitalized terms and acronyms be included in WEQ-000. Also, the bulleted list of "main use cases that are affected by pricing" should be consistently formated in the Executive Summary, WEQ-016-3.4 and WEQ-016-3.5.

An option the Smart Grid Task Force may want to consider is to create a separate Business Practice Standard for each PAP recommendation rather than combining them into a single recommendation.

- **Introduction –** The SRS questions whether it is appropriate to include an "Assumptions" section in the WEQ Business Practice Standards.

  Assumptions:
  - Wholesale market price signals may have different characteristics than retail market signals.
  - Attempts to standardize pricing signals must not hinder regulatory changes or market innovations.

  The task force may want to consider re-naming this section to "Considerations" and place in an Appendix to the Business Practice Standards or move to Section 4.d of the recommendation form, "Commentary/Rationale of Subcommittee(s)/Task Force(s)."

- **Section WEQ-016-3.1 –** "Price signals should be flexible enough to accommodate regulatory changes or market innovations" appears to be an assumption/consideration rather than a standard.

- **Section WEQ-016-3.2 –** Duplicates the definitions and acronymns which are also being proposed to be included in WEQ-000. The WEQ recently completed an effort to create a common glossary and stop the process of having definitions for terms in multiple WEQ Business Practices. This section seems to reverse the WEQ current direction of having a common glossary with definitions only listed in one place. If the WEQ EC wants to proceed with this section the SRS suggests the EC consider striking the word "Proposed" from the column heading labeled "Proposed Definition."

- **Section WEQ-016-3.3** – The "Includes" and "Extends" relationships though listed in this section are not referenced in the rest of the document. If these relationships are not used, the SRS is unsure why they are listed.

- **Section WEQ-016-3.4** – The SRS would recommend that the Tariff Rate Types and corresponding definitions be moved to WEQ-000.

- **Section WEQ-016-3.6** – The SRS questions if the following language is appropriate for WEQ Business Practice Standards that will eventually be filed with the Commission.

  > "The following initial attributes were presented early in the PAP-03 meetings and will serve as the initial starting point for further refinement."

The task force may want to consider moving this section and subsections to Section 4 "Supporting Documentation" of the recommendation so that it is included in the final action but not included in the WEQ Business Practices Standards that will be filed with the Commission since this section is still under development.

- **Section WEQ-016-3.6.1 –**
    - The are inconsistencies with the formatting of Attribute names. (See Product Identifier and Identifier source.) One has both words in proper case (first letter upper case) and the other only the first word.
    - Under Product Identifier, Stock is capitalized but is not a defined term or attribute.
    - Under Product Type, there is a reference to 5.1. There is no 5.1 section in the document so it is unclear what is the correct reference.
    - Under Product Sub-Type, Reserve is capitalized but is not a defined term or attribute.
- **Section WEQ-016-3.6.2 –**
    - Under Considerations for the Price Component attribute it has "The sum of all Price Components must equal the Total Price." This may be more appropriate for consideration under "Total Price."
    - Under Considerations for the Price Type attribute it references "Real Time" which is not listed as an attribute nor is a defined term.
    - Under Considerations for the Override Unit of Measure for the Product attribute, it references "Alternative Unit of Measure" which is not listed as an attribute nor is a defined term.
    - Under Considerations for the Currency attribute it references "Energy Units of Measure" which is not listed as an attribute nor is a defined term.
    - Under Description for Currency, the description should not use the Attribute to describe itself. The description for Currency states "The Currency of the Total Price and Price Components."
    - Under Considerations for the Source Location Identifier Type attribute it references "GPS" which is not included in the list of acronyms.
- **Section WEQ-016-3.7 through Section WEQ-006-3.7.1 –** If this information is supplemental material only the SRS is questioning if it provides value. If it does then there are a number of capitalized terms that need to be defined including Operating Authority, Maneuverability, Contingency Reserve-Spinning, and Contingency Reserve-Supplemental. These terms should also be moved to WEQ-000.

  The task force needs to consider whether the intent of these sections of the recommendation is to have them included in the WEQ Business Practice Standards which will be filed with the Commission or whether the sections are intenteded to provide background information. If it is the latter, the task force may want to consider moving these section to Section 4 "Supporting Documentation."

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

**Please consider the following recommended changes:**

**PAP03**

1. **Move section 000-1 Abbreviation and Acronyms from 2 and add under new section 16-A Appendix A – Entity-Relationship Model on page 21. This should be consistent with PAP04 and PAP09. In addition:**
    a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
    b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Move section 000-2, (Definition of Terms) from 3-5 and add under new section 16-A Appendix A – Entity-Relationship Model after Abbreviation and Acronyms. This should be consistent with PAP04 and PAP09.**

3. **Could the first five paragraphs be moved from Introduction to Executive Summary?**

4. **Add Values to the heading 016-3.7, "Supplemental Material Values".**

5. **Spell out HAN and C&I, or include in Acronyms or Glossary.**

6. **Page 7 Reset the numerical system from 016-3 to 016-1 under the heading Business Practice Standards starting on page 7. This should be consistent with PAP04.**

7. **Page 7 (Actors) The format for the list of Actors, on page 7, appears different from the list in PAP09. Should we expect the heading and format for the actors list to be consistent between PAPs**

8. **Page 7 (Utility Customer) under proposed definition, should read:**
   **"An end-use customer of the Utility Distribution Operator that may be enabled to take on roles such as Facility or Resource."**

9. **Page 7 (Communication Method) under the Proposed Definition please include the word "report" in the list.**

10. **Page 7 (End Device) Does definition include back-up generators? What about batteries? Batteries will not always be located at the end of the line off the secondary system. Many now are used at the substation level.**

11. **Page 7 (Facility) Will the definition work for aggregated DR? In the case of aggregated residential DR do we therefore have thousands of facilities, or a single aggregated facility? What then is the location? Nodal? If nodal does that mean that program offerings are broken out by nodal and therefore dispatchable by node? What granularity node?**

12. **Page 8 (System Operator) The definition used seems to encompass both system operator and program administrator. The committee needs to keep in mind that the system operator is not the one who will dispatch the resource. He/she will**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

**make the order to dispatch the resource but control to dispatch the resource is another person or persons who may be different again from the program administrator who would again be a separate person with a very different job.**

13. **Page 10 (Tariff Rate Type) Regarding Hourly Rates. Currently the CAISO allows DR resources to operate in the Hour Ahead Scheduling Process (HASP) which is an hourly scheduled market.**

14. **Page 10 (Tariff Rate Type) Mostly customers are price responsive or other such as emergency or environmental. It may be a mistake to try to address all the possibilities. However most DR resources in California are not market price responsive they are programmatically price responsive. Which is one stage removed from market prices. Whereby the wholesale market may create the environment where the resource may be triggered but the customer is responding to a programmatic trigger set by contract or their participation in a program offer not the market price. Such customers receive set capacity and energy prices for their participation in the program.**

15. **Page 13 (Demand Load Shifting: Sample Scenarios) This should read: 'Illustrate how different End Devices will respond to a forward energy price signal including, but not limited to:"**

16. **Page 14 (Demand Reduction; Description) While not all resources will respond to a price signal, they will respond to "signals". Use of the word price is restrictive and therefore requires additional work to define how the different signals function. BPA suggests that the term "signals" is used, regarding what customers respond to.**

17. **Page 15 "Wind Power always commands a premium over coal power because of higher cost of production." This statement may not always be true, and may not be true in the future, so it appears biased. Suggest rephrasing.**

18. **Typo on p 17, in 016-3.6.1 (Product Identification) under Identifier source, under Considerations, 2nd sentence: The Identifier source reference the product.... Probably should read: The Identifier source references the product....**

19. **Page 20, 016-3.7.1, (Product Types and Sub Type Enumerations) under Contingency Reserve, in the description, NERC groups are currently called Regional Reliability Organizations vs. Councils. Please confirm with NERC.**

20. **Page 20 (Product Types and Sub Type Enumerations) Voltage support resources. While Reactive Posr is a type of voltage support there are other ways to provide voltage support which can be dispatchable to support voltage stability, whether they are batteries or line or substation regulators. Again, all of which are dispatchable. Lower the voltage by 1% and you get a 0.8 percent energy savings. This is a form of DR not apparently contemplated in the NAESB PAPs thus far.**

**PAP04**

1. **Delete section 000-1 (Abbreviation and Acronyms) from page 2. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 12. As stated for PAP03, please:**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Delete section 000-2 (Definition of Terms) from pages 3-5. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 13. In addition:**
   - **Should there be a list of Actor in this document similar to PAP03 and PAP09?**
   - **Should there be a section on Conventions in the document similar to PAP03?**

3. **Page 6, fourth paragraph, line 2: What does distribution mean in this context? This sentence is unclear. Next sentence: please remove "concerning those transactions.' This is either a redundant statement or a misplaced object.**

4. **Page 9, first paragraph, second sentence, BPA suggests the following change. Replace existing text with underlined text below:**
   **"Although some instances may be known by other names…"**

5. **Page 9: (Baseline Window) suggest augmenting language with capitalized text - "The window of time preceding and optionally following, a Demand Response Event over which electricity consumption and OUTSIDE AIR TEMPERATURE DATA are collected for the purpose of establishing a Baseline."**

6. **Page 9 (Adjustment Window) A baseline will not be calculated in an adjustment window but will be adjusted or modified in an adjustment window. See practice of the morning of adjustment. See also ambient air temp as a factor contributing to morning of adjustment.**

7. **Page 9 (Demand Response Event) Program Administrator is not always the dispatcher. A DR event is different than a DR program and it controlling contractual parameters.**

8. **Page 9 (Deployment) Deployment connotes a build-out traditionally associated with the creation of a DR resource through the roll-out of a programmatic offer. suggest use of the term "dispatch" instead.**

9. **Page 10 (Deployment Period) The term "Deployment" may be confusing to some in the industry. Here we are talking about resource operation and delivery. This could be fixed in the definition, by explaining what is being deployed.**

10. **Page 10 (Meter Data Reporting Deadline) This definition is necessary but we also need to define how, in some instances, real-time consumption data is used to verify, in real-time, resource compliance with dispatch instruction.**

11. **Page 10 (Performance Window) Please clarify which Program Administrator this term applies to: market or utility?**

12. **Page 10 (Recovery Period) "Required" is too heavy a word. You are simply releasing the resource from its DR obligations. You are not requiring any other types of subsequent action. You don't have the power or the right.**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

13. **Page 10 (Reduction Deadline) DR will not always be a reduction. Ramp up period will also be a type of demand response. DR does not equal demand reduction.**

14. **Page 11 (Telemetry Interval) "Program Administrator, BPA suggests using a different term or clarify the term and add it to the Glossary.**

15. **Page 16, Figure 1 is inadequate alone; BPA suggests adding some supporting text including what the figure is intended to convey.**

**PAP09**

1. **Delete section 000-1 (Abbreviation and Acronyms) from page 2. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 29. In addition:**
    a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
    b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Delete section 000-2 (Definition of Terms) from page 3-5. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 30.**

3. **Could the first three paragraphs be moved from Introduction to Executive Summary?**

4. **Reset the numerical system from 016-2 to 016-1 under the Business Practice Standards starting on page 8. This should be consistent with PAP04.**

5. **The format for the list of Actors, on page 9, appears different from the list in PAP03. Should we expect the heading and format for the actors list to be consistent between PAPs?**

6. **Should there be a section on Conventions in the document similar to PAP03?**

7. **In Page 9, 016-2.2 (Wholesale Entity Relationship Model) the text "Error! Reference source not found", should be removed. This could simply be a text conversion issue.**

8. **In Page 9 (System Operator) Here again there is more than one entity in this process. BPA recommends checking with NERC on the definition of this entity.**

9. **In Page 36, 4.c. (Business Purpose) looks like a cut and paste from PAP04. Not sure a cut and paste was the intent.**

10. **Page 14 (Wholesale) Figure 2 needs context and supporting text, and the legend needs to match the info in the figure/map.**

**Comments Submitted by K. York, TVA**

# Comments on NAESB Smart Grid Standards Covering Priority Action Plans 03, 04, and 09

## Filed by Tennessee Valley Authority

### Pap 03 – Common Electricity Product and Pricing Definition

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity, System Operator, and others need to match for industry-wide consistency.

Section WEQ-016.3.7 – 3.7.1 – Sections contain terms that are not defined and need to have definitions; such terms include: Operating Authority, Maneuverability, Contingency Reserve-Spinning, and Contingency Reserve-Supplemental.

TVA would like to know if the definition of Facility will work for aggregated Demand Response.

Actors should be consistent with those found in PAP-09.

### Pap 04 – Specifications for Common Scheduling Mechanism for Energy Transactions

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity and Facility need to match for industry-wide consistency.

Section WEQ-016 – Sections contain terms that are defined and need to have definitions; such terms include: Demand Response Programs, Program Administrator, Market Closing, Absolute Interval, Absolute Duration, and Minimum Run Time. In addition, there are several acronyms that have not been defined (SML, IETF, and DER).

Please note that the Program Administrator may not always be the dispatcher.

Do standard definitions for Response Method Aggregation, Resource, Scheduling Entity, and Service Provider exist in other approved standards? If so, we believe these should be changed to reflect those.

What is meant by a Demand Response Event? TVA's definition of a DR event is related to something that is controlled by either the utility or the customer (a planned event). The other two levels TVA deals with are a "steady state" and an automatic demand response state. TVA suggests that sub-definitions for the term Demand Response Event may be appropriate in order to more succinctly define them as either load or market events.

**Comments Submitted by K. York, TVA**

## Pap 09 – Specifications for Wholesale Standard DR Signals

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity and Facility need to match for industry-wide consistency.

Also, many sections have terms that have not been defined, such as Demand Resource Object, Federal, Awards, System Operator, and Schedules which need to have definitions.

The term Distributed Energy Resources and Inoperability should be defined in the Glossary.

Actors should be consistent with those found in PAP-03.

Does Scheduling Entity represent an Aggregator?

## General Comments:

In general, TVA believes that the Smart Grid effort should use as many existing approved communication protocols and industry standards as possible as a launching pad for the development of future standards. An example would be starting with FERC, NERC, and the nine Regional Reliability Organizations-approved naming conventions as well as existing “common” communication protocols (examples: Distributed Network Protocols and IEC 61850) that can appropriately integrated.

In addition, TVA would like to know if any thought has been given to how traditional transmission products would hamper or help the Smart Grid effort. What kind of transmission constraints would the Smart Grid effort encounter once operational?

Overall, TVA commends NAESB for these recommendations and believes the standards provide a workable framework for producing the granularity needed to integrate Smart Grid efforts into the business model.

Honeywell

Honeywell Automation and Control Solutions
1985 Douglas Drive
Golden Valley, MN 55422

April 9, 2010

Mr. Jonathan Booe
Smart Grid Task Force
North American Energy Standards Board
801 Travis Street, Suite 1675
Houston, Texas 77002

Dear Mr. Booe,

This letter is offered in response to your March 9, 2010 request for formal comments to the NAESB Smart Grid requirements relating to NIST PAPs 3, 4 and 9.

Honeywell energy management technologies are found in more than 150 million homes, five million buildings, 24 of the top 25 refineries, and nearly 5,000 industrial sites around the world. By applying our expertise in sensing and controls, we are creating energy efficient, more comfortable, safer, more secure, and productive environments for our customers. We stand ready to work together with utilities and customers to build and implement the Smart Grid.

Honeywell sees great value in the NAESB SGTF effort to describe and publish requirements for electricity product definition, pricing, scheduling and demand response signals. This important work is a key driver in the process of developing and deploying the national standards required to implement the Smart Grid.

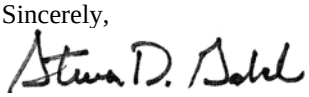
Honeywell has reviewed your documents and offers minor comments/edits for all the documents that fall into four categories.

1) Representation of all 3 customer domains (Residential, Commercial, and Industrial) should be included and explicitly stated when not applicable to all three.
2) Listings of specific standards setting organizations should not preclude others from participating.
3) The use cases and examples should include, when appropriate, in-premises energy management systems in residential, commercial and industrial customer domains.
4) Grammatical corrections.

We have attached all 3 documents with tracked changes to indicate recommended specific edits.

We look forward to utilizing these use cases/requirements to continue our dialog with NAESB and other standards setting organizations.

Sincerely,



Steve Gabel
Principal Development Engineer
Honeywell ACS Laboratories
steve.gabel@honeywell.com
763-954-6512

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)** |
| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

## 1. RECOMMENDED ACTION:

- X Accept as requested
- ___ Accept as modified below
- ___ Decline

## EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

- X Change to Existing Practice
- ___ Status Quo

## 2. TYPE OF DEVELOPMENT/MAINTENANCE

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

## 3. RECOMMENDATION

### SUMMARY:

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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New WEQ-016 Abbreviations/Acronyms and Defined Terms to be added to WEQ-000 are included below for reference *(previously added in Recommendation 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b))*

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## 000-1 ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| EMS | Energy Management System |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## 000-2 DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

## New Business Practice Standards WEQ-016 – Smart Grid Activities

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## RECOMMENDED STANDARDS:

### Executive Summary

### Specifications for Common Electricity Product and Pricing Definion

The following addresses the business objectives and context for capturing the attributes associated with electricity price and product signals as part of the Smart Grid implementation, which is called for by National Institute of Standards and Technology (NIST) Priority Action Plans (PAP) 03. The North America Energy Standards Board (NAESB) Smart Grid Task Force (SGTF) in cooperation with UCA International Users Group (UCAIug) Open Smart Grid (OpenSG) Task Force, the Independent System Operator/Regional Transmission Organization Council (ISO/RTO Council), and other organizations, has developed the use cases that provide requirements for electricity price and product signal standards.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)** |
| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

Because the NAESB Smart Grid Task Force is involved in activities related to several of NIST's Priority Action Plans, the SGTF has developed a standard list of actors and related objects for all Priority Action Plan work coming out of the group. This document also contains an overview of the most common retail rate structures and price-related use cases. Finally, a representative list of price and product attributes is provided.

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

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

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

## Introduction

## Specifications for Common Electricity Product and Pricing Definion

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

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

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

**Assumptions:**

- Wholesale market price signals may have different characteristics than retail market signals.
- Attempts to standardize pricing signals must not hinder regulatory changes or market innovations.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
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| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

**Business Practice Standards**

**016-3 Specifications for Common Electricity Product and Pricing Definition**

**016-3.1** Price signals should be flexible enough to accommodate regulatory changes or market innovations.

**016-3.2** ACTORS

The actors used in the use cases are role-based, with the Market Participant and Utility Customer business entities taking on one or more roles. This table contains only actors referenced by use cases in this document.

| Actor Name | Proposed Definition | Acronym | Actor ID[1] | Examples |
|---|---|---|---|---|
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. | UC | 2.4 | Residential, Industrial |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. | | 5.5 | |
| Control | The role associated with the control of an End Device. | | 5.2 | Facility EMS, Energy Services Interface (ESI) or Gateway |
| End Device | A physical end-use device that consumes or supplies electricity. | ED | 4.5 | HAN, Electric Vehicle, or Smart Appliance, Display |
| Facility | The location at which connection to the transmission or | | 4.3 | Electricity Consumer |

[1] Actor IDs refer to the identifiers associated with NAESB's Smart Grid Task Force Actors List. http://www.naesb.org/pdf4/smart_grid_ssd012810a1.xls

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| Actor Name | Proposed Definition | Acronym | Actor ID[1] | Examples |
|---|---|---|---|---|
| | distribution system is made. | | | |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. | LSE | 3.2 | |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. | | 5.1 | Meter |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. | | 4.1 | Supplier, Distributed Energy Resource (DER) |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. | SP | 3.1 | Retail Service Provider, Demand Response Provider, Dynamic Price Service Provider |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. | SO | 2.1 | Market and System Operators |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
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| Actor Name | Proposed Definition | Acronym | Actor ID[1] | Examples |
|---|---|---|---|---|
| Transmission/ Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. | TDSP | 3.5 | Utility Distribution Company |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. | UDO | 2.3 | Distribution Operator |

**016-3.3** CONVENTIONS

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
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| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

**016-3.4** USE CASE OVERVIEW

A tariff establishes the prices paid for the services received, and is based on a variety of factors including wholesale prices, quality and type of service and costs associated with transmission and distribution grid infrastructure and operation. The use cases in this document illustrate the high-level activities associated with publishing prices and how the information is used to evoke a change in consumption.

The table below provides information on common types of energy supply rate structures.

| Tariff Rate Type | Target Customers | Description |
|---|---|---|
| Block Rate | C&I, Residential | An energy supply rate structure in which the per unit energy price increases or decreases for each successive block of energy consumed. |
| Critical Peak Price (CPP) | C&I, Residential | An energy supply rate structure whereby "Time of Use Pricing" is in effect with the exception of certain "peak days" at which time electric prices may reflect the costs of electricity at the wholesale level. |
| Demand Rate | Mainly for C&I Customers, Pilot for Residential Customers | A component of an energy supply rate structure based on the highest demand for electricity measured in a billing period. |
| Day Ahead Market Rate (DAMR) | C&I, Residential | An energy supply rate structure, typically hourly, based on the day-ahead wholesale market price. |
| Market Clearing Price for Energy (MCPE) | C&I | An energy rate structure that allows for price changes every 15 minutes based on real-time wholesale market prices. |
| Peak Time Rebate (PTR) | C&I, Residential | An incentive rate in which the utility pays Customers to reduce demand during peak periods on critical days. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
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**Request No.:** 2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)
**Request Title:** Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

| Tariff Rate Type | Target Customers | Description |
|---|---|---|
| Real Time Price Rate (RTP) | C&I | An energy supply rate structure in which prices can vary, typically on an hourly basis, based on forecast (day-ahead) or actual (real-time) market conditions. |
| Time of Use Rate (TOU) | C&I, Residential | An energy supply rate structure where the per unit charge (kWh or kW) varies according to the time of day. Time-of-Use rates may have daily and seasonal variations. |
| Variable Peak Pricing (VPP) | C&I, Residential | An energy supply rate structure that combines features of TOU and RTP structures to include the flexibility of market price variation and the fixed time periods of a time of use rate. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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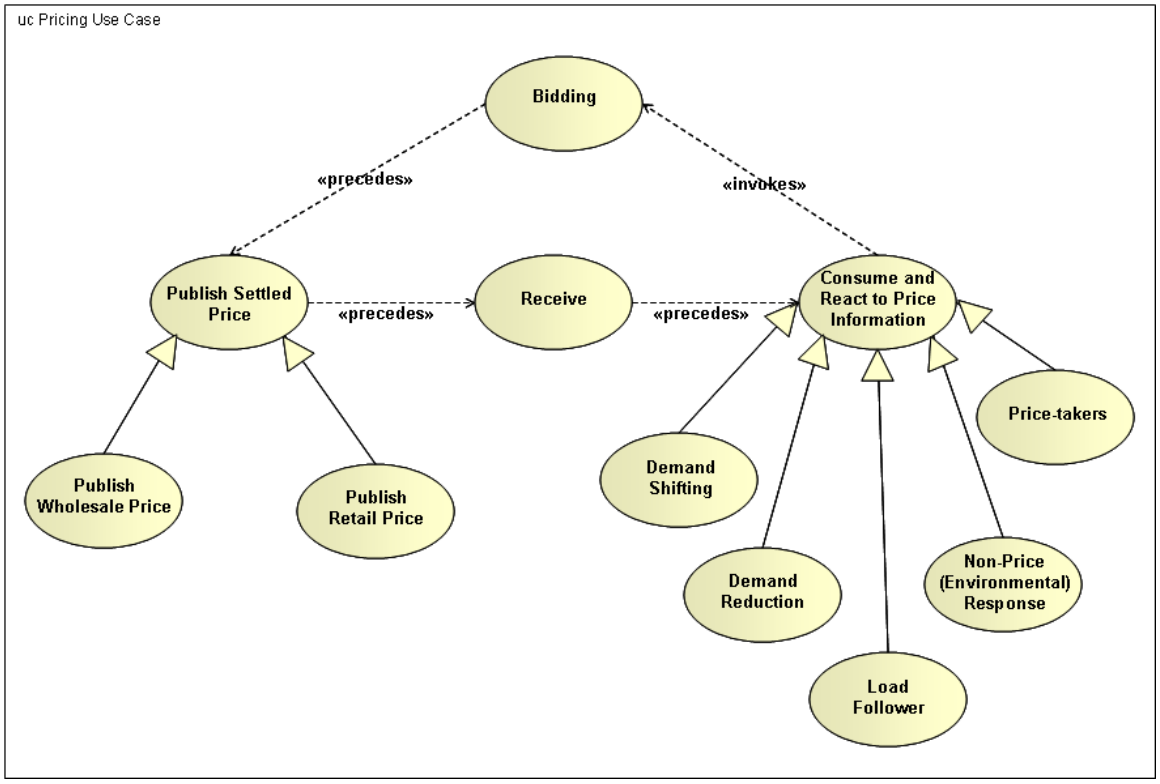
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)** |
| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

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

- Demand Shifting
- Demand Reduction
- Non-Price (Environmental) Response
- Load-Follower
- Price-takers



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
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**016-3.5** SPECIFIC USE CASES

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

| Use Case | Actors | Description | SAMPLE Scenarios |
|---|---|---|---|
| Demand Shifting | Service Provider End Device Facility | Pricing signals are used as a tool to influence when consumers use electricity. | The System Operator published day-ahead prices which are statistically higher than average between 2:30 and 5:30 in the afternoon. Illustrate how different End Devices will respond to a forward energy price signal including:<br>• An Energy Management System (EMS) requests Building Automation System (BAS) to “pre-cool” until 2:30 PM.<br>• Home-based intelligent device is programmed to operate at a time when electricity is cheaper.<br>• An electric plug-in vehicle is programmed to charge when electricity is cheaper. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)

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

| Use Case | Actors | Description | SAMPLE Scenarios |
|---|---|---|---|
| Demand Reduction | Control Facility | Pricing signals are used as a tool to influence the quantity of electricity that consumers use. | A Utility Distribution Company's fixed time-of-day tariffs indicates higher price during day, and lower price after 11:00 PM. Demonstrate how different End Devices will response to price differentials:<br>• Time-insensitive building systems schedule their run-time programs after 11:00 PM.<br>• Homeowner starts appliance at 5:10. The appliance notifies that by waiting 20 minutes to run, the consumer will get lower cost electricity. Homeowner acknowledges. |
| Environmental Response | Resource End Device Facility | Product characteristics (other than price) are used to influence either the quantity or the time at which the customer uses electricity. | Customer set a price threshold at which "green" power is desirable. Above the "green price" the customer will take any power, below the "green price" the customer will choose suppliers with renewable portfolios.<br>Test the scenario where, at 5:00 PM wind power picks up such that the price of power from renewable sources falls below the "green price" set by the customer.<br>Utility delivers blend of 20% wind, 80% coal during this time of day at .10/kWh. 25% of customers indicate preference to buy pure wind, an over-subscription. Prices for pure wind are bid up to .15/kWh as the wind-sensitive market decreases. 20% of consumers pay the 50% premium to get only wind-only power. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| Use Case | Actors | Description | SAMPLE Scenarios |
|---|---|---|---|
| | | | 1) Local PUC requires that segmentation be revenue-neutral, so bidding for Wind Power reduces undifferentiated power to .0875 kWh.<br>2) No bidding was required for undifferentiated power, so provider is incentivized to find additional sources of Wind Power.<br>3) Consumers unable to buy desired Wind Power reduce their aggregate demand.<br>Consumers have programmed non-time-sensitive systems and appliances to not run when Wind Power is not available, time-shifting some demand until Wind Power is available at the desired price.<br>Wind Power always commands a premium over coal power because of higher cost of production. Local regulatory policy requires pass-through of actual market costs for differentiated power. Consumers who buy coal power must buy carbon credits as well. If the [low] cost of coal is combined with the cost of the credit, renewable energy sources become more competitive. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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|---|---|
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## 016-3.6 PRICING AND PRODUCT ATTRIBUTES

The following initial attributes were presented early in the PAP-03 meetings and will serve as the initial starting point for further refinement.

### 016-3.6.1 Product Identification

| Attribute | Description | Considerations |
|---|---|---|
| Product Identifier | Energy, although largely a non-storable and transitory commodity, is nonetheless still a tradable and sellable entity. Any commodity benefits from having a unique identifier (external) that can unambiguously be used by consumers to identify what it is that they are purchasing. | Examples of product identification scheme used in the financial world is the ISIN (International Security Identifier Number), and Stock ticker symbols used by exchanges.<br>This not a transaction identifier – this would be an industry agreed upon identifier for a particular energy product offering. |
| Identifier source | Identification of the source of the product identifier. | In most systems there are competing or alternative product identification schemes. The Identifier source reference the product identification scheme for the Product Identifier. |
| Product Type | A product type. | Attempt to fit the product type within already in place ontologies or product classifications used within industry for trading energy. See 5.1 for suggestions. |
| Product Sub-Type | The sub-type of product | Products may be further divided into subtypes, for example Reserve products may be 10-minute or 30-minute response. |
| Unit of Measure for Product | Unit of measure the product. | The unit of measure such as MWh or kWh. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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## 016-3.6.2 Pricing Attributes

| Attribute | | Description | Considerations |
|---|---|---|---|
| Total Price | | Total Price of the product at point of delivery | Price is expressed as currency per Unit of Measure, i.e. quantity is not required, e.g. $/MWh<br>Total Price = Sum (Price Components) |
| Set of 1..n Price Components | | | |
| | Price Component | A component of the price. | Price may have one or more components. The sum of all Price Components must equal the Total Price |
| | Price Component Type | The type of Price Component | A standard set of price component types shall be enumerated, such as:<br>• Wholesale electricity cost<br>• Transmission costs<br>• Distribution costs |
| Price Type | | Type of price | A standard set of price types will need to be defined Real Time, 5 minute, day ahead, as examples for price types |
| Override Unit of Measure for the Product | | Unit of measure which is used to determine the price | Alternative Unit of Measure used in calculating the price. |
| Currency | | The Currency of the Total Price and Price Components | Currency is required to determine the units of measure of the Total Price and Price Components. The Energy Units of Measure are defined by the Product Type. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
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**Request Title:** Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03

| Attribute | Description | Considerations |
|---|---|---|
| Time and Interval | Interval of energy delivery | Timezone conventions and use need to be unambiguously defined and agreed upon.<br>Daily blocks, hourly markets, 5 minute markets.<br>A decision in how basic product information will reference and interact with the WS-Calendar initiative being completed as part of PAP-04. |
| Source Location Identifier | Location of the source of the electric energy | Electrical energy cost and value are greatly impacted by the distance between generation and consumption. Indicating the source of the generation is important in terms of pricing decisions on part of consumers and intermediaries.<br>The use of source location would mainly be used for bilateral transactions. |
| Source Location Identifier Type | Type of location. | The mechanism used to identify location can be defined in multiple sources based upon specific usage from control areas to GPS coordinates it is anticipated that there may need to be more than one method to identify a geographical location.<br>Where possible existing industry standards should be adopted to identify geographic locations. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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## 016-3.7 SUPPLEMENTAL MATERIAL

### 016-3.7.1 Product Types and Sub Type Enumerations

The following values are suggested for use in classification of electrical energy.[2] NERC document (see section 1.2). These would be in addition to ENERGY and CAPACITY.

| Value | Description |
|---|---|
| REGULATION | The provision of generation and load response capability, including capacity, energy, and MANEUVERABILITY, that responds to automatic controls issued by the OPERATING AUTHORITY. |
| LOAD FOLLOWING | The provision of generation and load response capability, including capacity, energy, and MANEUVERABILITY, that is dispatched within a scheduling period by the OPERATING AUTHORITY. |
| CONTINGENCY RESERVE | The provision of capacity deployed by the OPERATING AUTHORITY to reduce AREA CONTROL ERROR to meet the Disturbance Control Standard (DCS) and other NERC and Regional Reliability Council contingency requirements. CONTINGENCY RESERVES are composed of CONTINGENCY RESERVE–SPINNING and CONTINGENCY RESERVE–SUPPLEMENTAL. |
| REACTIVE POWER SUPPLY FROM GENERATION SOURCES | The provision of reactive capacity, reactive energy, and responsiveness from IOS RESOURCES, available to control voltages and support operation of the BULK ELECTRIC SYSTEM. |

[2] NERC Reference Document Interconnected Operations Services, 1.2 Definition of Terms.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

| Value | Description |
|---|---|
| FREQUENCY RESPONSE | The provision of capacity from IOS RESOURCES that deploys automatically to stabilize frequency following a significant and sustained frequency deviation on the INTERCONNECTION. |
| SYSTEM BLACK START CAPABILITY | The provision of generating equipment that, following a system blackout, is able to: 1) start without an outside electrical supply; and 2) energize a defined portion of the transmission system. SYSTEM BLACK START CAPABILITY serves to provide an initial startup supply source for other system capacity as one part of a broader restoration process to re-energize the transmission system. |

**4.** Supporting Documentation

**a. Description of Request:**

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

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

**b. Description of Recommendation:**

See Section 3 Summary

**c. Business Purpose:**

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
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| **Request No.:** | **2010 WEQ Annual Plan Item 6(a) / 2010 REQ Annual Plan Item 9(a)** |
| **Request Title:** | **Requirements Specifications for Common Electricity Product and Pricing Definition – for NIST PAP03** |

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

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

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

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

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

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

- October 22, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd102209notes.doc
- October 29, 2009 Meeting Notes – To be posted
- November 5, 2009 Meeting Notes – To be posted
- November 13, 2009 Meeting Notes – To be posted
- December 3, 2009 Meeting Notes – To be posted
- December 10, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121009notes.doc
- December 17, 2009 Meeting Notes – http://naesb.org/pdf4/smart_grid_ssd121709notes.doc
- January 7, 2010 Meeting Notes – To be posted
- January 14, 2010 Meeting Notes – To be posted
- January 21, 2010 Meeting Notes – To be posted
- January 28, 2010 Meeting Notes – To be posted
- February 5, 2010 Meeting Notes – To be posted
- February 18, 2010 Meeting Notes – To be posted

# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

**General Comments**

A. The documents being considered do not contain traditional NAESB Business Practice Standards content. Additional work will be necessary the convert these recommendation documents into Business Practice Standards, as it was a working assumption of the Smart Grid Task Force to deliver requirements only.

B. References in these Recommendations to 'Dispatch", "Markets", "Reliability" are made relative to DR and apply to DR resources only, and not Generation resources. NERC's compliance standards for Generation Resources are typically quite detailed, while compliance standards for DR resources are appropriately determined by the respective system operator specific to the DR product or service and the reliability need being addressed.

C. While the recommendations for PAP-03, PAP-04 and PAP-09 posted by NAESB are not business practice standards, they should not be misconstrued as a recommendation to change existing market designs or business rules across ISOs/RTOs; each ISO RTO has its own stakeholder process as the appropriate forum for making rule changes.

D. Although not explicitly stated in the PAP documents, compliance with orders from regulatory agencies, as they apply to DR in ISO/RTOs, is presumed.

E. It is our understanding that the contents of the documents are being presented as recommendations and are intended to be used neither as implementation templates nor for testing of interoperability. Rather, another step will be taken by the Organization for the Advancement of Structured Information Standards (OASIS) to deliver an information model, preferably reconciled with IEC 61970, which then could be implemented and tested.

F. The treatment of the glossary of terms – actors and definitions – is inconsistent across the recommendation documents — within the WEQ as well as the corresponding versions listed under REQ. In one case, the glossary of terms is in the recommendation without the diagram, in another it appears as an appendix, and in a third it appears in both the recommendation section *and* in an appendix. The highlighted wording regarding how the glossary will be incorporated into the WEQ-000 is unclear. The IRC requests that NAESB staff provide a clearer description to explain how the glossary of terms will be integrated into WEQ-000.

G. It is unclear how the data requirements work beginning in Phase 2 will be integrated with these recommendations if they are being passed through the standards approval process separately. This is of particular concern since PAP-03 and PAP09-Retail have partial lists of data requirements in the current recommendations. For consistency, the IRC recommends that all data requirements be removed from the Recommendations for PAPs 03/04/and 09 until the SGTF has completed Phase 2, where the data requirements will be identified for all three PAPs.

**PAP-SPECIFIC RECOMMENDATIONS**

***PAP-03***

1. "The term "wholesalers" in PAP03 should be modified to clarify whether it refers to energy marketers, energy service providers or ISOs and RTOs. Without this clarification, it is unclear to whom the proposed PAP03 standards apply

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

2. The use cases are very short. More elaboration needs to be given to the definitions and the samples should be elevated to fully described, testable use cases.

***PAP-04***

3. The IRC has identified that the following requirement from PAP04 as the only requirement applicable to wholesale markets and recommends that it be incorporated into the PAP09 wholesale document:

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

4. References to the term "wholesalers" in PAP04 do not apply to ISOs and RTOs, therefore, it is the understanding of the IRC that PAP04 would not apply to ISOs and RTOs.
5. The IRC recommends that PAP-04 be moved wholly into the REQ, where it can be applied to end-device and/or human communications without impact to or potential conflict with wholesale market operations.

***PAP-09 Retail***

6. As previously recommended in the IRC's informal comments in November 2009, the administration of DR products and services should be excluded from the scope of the retail use cases. Currently, language states that these processes will not be automated. If this is the case, they should not be included in a document that ultimately will lead to a machine-to-machine communication specification. Additionally, the processes for automating customer registration (as opposed to device enrollment) are likely to be handled in the future by a NAESB working group with a more global (i.e., not DR-centric) perspective. The IRC recommends removing the following sections:
    a. REQ.14.3.2.4.1 Administrate DR Program
    b. REQ.14.3.2.4.1.2 Create DR Program
    c. REQ.14.3.2.4.1.3 Update DR Program
    d. REQ.14.3.2.4.1.4 Remove DR Program
    e. REQ.14.3.2.4.2 Administrate Customer for DR
7. Our members believe that additional descriptions of the business processes are needed. The existing illustrations consist of Use Case Diagrams, which identify the Actors involved and the hierarchy of processes, and Sequence Diagrams, which identify the ordered messages that may

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NAESB PAP-03 / PAP-04 / PAP-09

be exchanged among the actors during the execution of the business processes. Activity Diagrams would better show the conditional flows and iterations that are common to these business processes and make the testing of use cases easier. Furthermore, alignment with the four governing business processes outlined in Figure 1 of the Wholesale document (page 12) would be extremely helpful. In fact, we would very much like to see integration with the wholesale business process Activity Diagrams, which have wholesale-retail integration points identified for further development by interested parties. IRC members will be made available to support such integration definition efforts should members of the REQ be interested in pursuing this activity in Phase 2.

8. The document defines DR-specific data elements (such as "Minimum Duration"), whereas the Wholesale document reuses generation/supply data elements (such as "Minimum Run Time"). These philosophies should be reconciled. See pp. 33-35, 39, and 40 for examples. As stated in cross-PAP recommendation E, this can be resolved by following the IRC recommendation that all data elements be removed from the current recommendations and submitted at a later date, when the Phase 2 data requirements work is complete.

**PAP-SPECIFIC RECOMMENDATIONS (DETAILED EDITS)**

***Common Introduction Language***

- Replace “United States of America with some overlaps to Canada” with “North America”
- 000-1: Replace “Reliability Authority (RA)” with “Regional Reliability Authority (RRA)”
- 000-2: For Response Method Aggregation, edit as follows: “…interval level consumption, e.g. ~~a site~~ **an RMA** may ~~also~~ be a physical entity ~~that may have~~ **with** its own meter…”

***PAP-03***

- Pg. 6 & Pg. 12: Replace “Demand Reduction” with “Demand Modification”
- Pg. 9: need to reconcile difference among TDSP / UDC / UDO
- Pg. 10: Definition of CPP is incorrect. Recommend the following change: “…at which time electric prices ~~may reflect the costs of electricity at the wholesale level~~ **are administratively adjusted to incentivize customers to actively modify their electricity usage**.”
- Pg. 10: Definition of PTR. Recommend the following change: “An incentive rate in which the utility pays **a rebate to** Customers ~~to~~ **who** reduce**d** demand during peak periods on critical days.”

***PAP-04***

- Pg 9: Replace “reducing” with “modifying”

***PAP-09 Retail***

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

- Pg 15: REQ.14.3.2.3: Use Case Overview - End-to-end business process flow should be consistent with Wholesale DR Signals document
- Pgs 17, 37, 45, 53, 58: Eliminate specific references to wholesale markets
- Pg 17: change "interruption" to "modification" (2x places)
- Pg. 30: Definition for Maximum Duration. Change "The maximum amount of time the asset/resource is capable of ~~delivering power (megawatts)~~ **modifying its electricity usage".**
- Pg 30: the Parent-Resource ID concept needs to be reconciled with the terminology and hierarchical structure of resources used in the wholesale document.
- Pg 31: the Source-Authentication concept needs to be reconciled with the approach to security used in the wholesale document
- Ph 37: revise text as follows "The Bidder may be a Customer bidding with ~~either an energy retailer (e.g., LSE, ESP),~~ a Service Provider ~~(e.g., CSP, DRP),~~ or ~~a power marketer (i.e., wholesale market participant). The Bidder may also be~~ a Service Provider bidding ~~up~~ to a LSE ~~or power marketer.~~ "
- Pg 38: recommend proper use of bids and offers, i.e. bids are to buy and offers are to sell
- Pg 44 & 53: replace "shed" with "modify" (2x place)
- Pg 45: the concept of a "number signifying the reliability of the grid" has no basis in any reliability standards with which the IRC members are acquainted
- Pg 55: replace "de-energize" with "modification"
- Pg 58 – DR Execution – Retail Time Pricing (RTP): Replace this section with the following text: "Provide real-time or dynamic pricing (RTP) to retail customers so that customers can vary their demand based on pricing signals. RTP represents retail electricity rates that vary as a function of time."

***PAP-09 Wholesale***

- Pg. 9 – unresolved reference should be fixed

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**Comments Submitted by E. Skiba, Midwest ISO**

## FORMAL COMMENTS

| | |
|---|---|
| **Quadrant:** | Wholesale Electric Quadrant |
| **Recommendations:** | WEQ 2010 AP Item 6 (a) / REQ Annual Plan Item 9(a); Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03,<br>WEQ 2010 AP Item 6 (b) / REQ Annual Plan Item 9(b); Requirements Specification for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04, and<br>WEQ 2010 AP Item 6 (c); Requirements Specifications for Wholesale Standard DR Signals – for NIST PAP09 |
| **Submitted By:** | Midwest ISO |
| **Date:** | April 14, 2010 |

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General Comments:

- Midwest ISO is concerned with the next steps for the PAPs once they are approved by the Executive Committee and ratified by the membership. The documents in many cases are intended only to provide examples and as such were not intended to be an all inclusive set of standards. In many cases the examples are not consistent with how some entities operate their markets. We will provide more detail as to where there are differences between the Midwest ISO market and the examples. At a minimum the documents should have some statement explaining that the examples included are not to be considered the full set of examples and that some markets may have implementations that are inconsistent with the examples and sample scenarios provided since the examples were not intended to provide an exhaustive set of standards. Without having this type of clarifying language on the examples, samples, etc., these standards may inadvertently dictate how the markets can operate in the future and as well as impact existing market designs.

PAP 3

- Page 10 – Definition for Market Clearing Price for Energy should be inclusive of 5 minutes…it says 15.
- Page 10 – Midwest ISO is concerned that the examples of common tariff rate types may lock entities into having to support all the tariff rate types listed and/or prevent them from creating any new tariff rate types without having the NAESB business practice standards changed.
- Page 14 – The recommendation makes the assumption that wind is dispatachable which is not the case.
- Page 15 – The sample scenario makes an invalid assumption that wind always commands a premium over coal because with rebates it may not be in the Midwest ISO market.
- Page 15 – The sample scenario makes an invalid assumption that Consumers must buy carbon credits, which is not the case in the Midwest ISO market.
- Page 18 – Pricing Attributes…does it include ancillary service prices?
- Page 19 – GMT is used within the Midwest ISO, with an offset.
- Pages 18-19 – Midwest ISO is concerned that the pricing attributes included in the list do not have any explanation as to whether the attributes are required or optional. Additionally, we would expect that this section be driven out during Phase 2. Midwest ISO would recommend this section be removed from the recommendation and be a part of the Phase 2 Recommendation.

**Comments Submitted by E. Skiba, Midwest ISO**

- Pages 20-21 – Midwest ISO is concerned that it does not offer a number of the provision listed in the Product Types and Sub-types. For example, following types/sub-types are not included in the Midwest ISO market: Load Following and Reactive Power Supply From Generation Sources.

PAP 4

- Page 3 – Issue with definition of Facility: reads like elemental node for calculating price instead of a aggregated commercial pricing node
- Page 8 – The intent is table unclear since it is "an incomplete, but representative set of instances."
- Page 16 – Entity Relationship Model – Midwest ISO has concern with the following not being connected: Resource and Facility, Zone and Facility, and Resource and P-node.

PAP 9

- Page 10 – Use Case description – Midwest ISO does not distinguish Energy between Economic and Reliability.
- Page 19 – (Visio diagram) Midwest ISO is concerned whether this is a commitment process or a dispatch process. The Reliability Assessment commitment process will notify demand response of the commitment at the commercial pricing node level. The notification goes to the demand response participant and local balancing authority.
- Page 16 – (Visio diagram)…Can we follow both paths out of the Product decision? It appears that they are exclusive, which is not the case within the Midwest ISO market.
- Page 21 – (Visio diagram)…On this diagram it appears that the processes support sending multiple data streams and does not support the capability for providing a single combined setpoint. Midwest ISO market utilizes a combined setpoint approach. Midwest ISO combines into a single setpoint: energy, spin, etc. into one message, since we run a co-optimized market. Since regulation is added to base (set point) we can have something like 3 products using one message/signal. Would Midwest ISO have to use separate notifications rather than a combined setpoint?
- Page 24 – Since we are the Designated Dispatch Entity and System Operator we have concerns with the feasibility of the Entity Diagram and Business Process. The "green arrows" are defined in or out of the System Operator (SO) swim lane. This could be an issue since Midwest ISO needs to balance its footprint in 4 seconds for ACE, which currently imposes the use of ICCP. There is a general concern with the implementation if we were required to use XML and not able to use Inter-Control Center Communications Protocol (ICCP).

# FORMAL COMMENTS

**Quadrant:** Wholesale Electric Quadrant

**Recommendation:** WEQ 2010 AP Item 6 (b) / REQ Annual Plan Item 9(b); Requirements Specification for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

**Submitted By:** Standards Review Subcommittee

**Date:** April 2, 2010

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Under the Standards Review Subcommittee (SRS) Scope of Work, which was approved by the SRS on March 6, 2008, the SRS agreed to review recommendations and if subcommittee deemed appropriate, they would submit advisory comments to the Executive Committee (EC) for consideration. As stated in the Scope of Work these comments are "not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices."

It is the SRS understanding that the recommendation will be included as standards in the WEQ Business Practice Standards and will be filed with the Federal Energy Regulatory Commission (FERC). Therefore the SRS would like to point out inconsistencies between this recommendation and existing standards as well as a number of concerns specific to the recommendation itself.

It is also the SRS understanding that these comments may be reviewed by the Smart Grid Task Force. The task force may review these comments, suggest modifications to the recommendation, and submit late comments for Executive Committee consideration.

**WEQ-000**

The terms and definitions do not seem to take into account existing definitions of terms and FERC Order 676-C which requested that NAESB resolve differences within its standards and differences between NERC and NAESB Standards. Below are examples that illustrate inconsistencies with the definitions for the same term.

Facility - *NERC Definition* - A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)

*Recommendation Definition* – The location at which connection to the transmission or distribution system is made.

Load Serving Entity - *Glossary Definition* The responsible entity that secures energy and Transmission Service (and related Interconnection Operations Services) to serve the electrical demand and energy requirements of its end-use customer.

*Recommendation Definition* – A role which carries the responsibility of serving end-users and selling electric energy to end-users.

System Operator - *Demand Response Final Action* – A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator, whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment and Release/Recall Instructions.

*Recommendation Definition* – An entity which carries the responsibility of administering the deman response process, from Resource enrollment to performance evaluation.

Within Definitions of terms there are capitalized terms which are not defined. These include:

- Federal
- Awards
- Schedules

**WEQ-016**

- **General**
    - There are terms which are capitalized which are not defined in the WEQ Business Practice Standards such as “Demand Response Programs”, “Program Administrator”, “Market Closing”, “Absolute Interval”, Absolute Duration and “Minimum Run Time”.
    - There are acronyms which are not defined such as “XML”, “IETF”, and “DER.”
- **Executive Summary –** This recommendation along with the recommendations for PAP03 Requirements Specifications for Common Electricity Product and Pricing Definition and PAP09 Requirements Specifications for Wholesale Standard DR Signals each contain an Executive Summary listed under the “Recommended Standards” section of the recommendation. Based on the standards numbering it appears that all three recommendations will be included in a new set of standards, WEQ-016.
    - First, we question whether WEQ-016 should have an Executive Summary. The only Business Practice Standards that have an executive summary is WEQ-014 (WEQ/WGQ eTariff Related Standards). The WEQ-014 standards were approved prior to the SRS review of recommendations. (If the SRS had been reviewing standards at that time, we may have questioned having an Executive Summary in WEQ-014.)
    - Second, the Executive Summaries in the three recommendations though similar are not identical. With the differences in the Executive Summaries and all three recommendations being included in WEQ-016 it is unclear how a single set of business practices can have three Executive Summaries.

  If the EC decides to move forward with including an Excutive Summary, the SRS recommends that all capitalized terms and acronyms be included in WEQ-000.

An option the Smart Grid Task Force may want to consider is to create a separate Business Practice Standard for each PAP recommendation rather than combining them into a single recommendation.

The SRS understands that for this document OASIS is referencing the "Organization for the Advancement of Structured Information Standards." In the current WEQ Business Practices Standards when OASIS is mentioned it refers to the "Open Access Same-Time Information System." The task force may want to add some clarifying language so that others reading the recommendation understand that OASIS in this context refers to the organization not the system.

- **Introduction –** The SRS questions whether it is appropriate to include an "Assumptions" section in the WEQ Business Practice Standards.

  Assumptions:
  - We assume as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

  The task force may want to consider re-naming this section to "Considerations" and place in an Appendix to the Business Practice Standards or move to Section 4.d of the recommendation form, "Commentary/Rationale of Subcommittee(s)/Task Force(s)."

- **Section WEQ-016-1.1 through WEQ-016-1.1.1 –** The standards do not have any text associatied with WEQ-016-1 or WEQ-016.1.1. Other than section WEQ-016-1.1.1, there are no additional subsections that contain text. Unless the task force plans to add addition subsections under and WEQ-016.1.1, they may want to consider moving WEQ-016-1.1.1 to WEQ-016.1.1.

  Note: the Standards Review Subcommittee is also suggesting that Sections WEQ-016-1.2 through WEQ-016-1.2.1 be deleted. (See Below.) If this happens then WEQ-016-1.1.1 could potentially be moved to WEQ-016-1.

- **Section WEQ-16.1.1.1** – The term Demand Response Programs is not consistent with how it is formated sometimes it is "Demand Response Programs" and in one instance it is "Demand Response program". The term needs to be consistently formatted and also defined.

  The SRS suggests that the incomplete but representative set of instances found in this section be moved to an Appendix. For the WEQ Business Practice Standards, examples are included in appendices rather than in the main body of the WEQ Business Pactice Standards. Also, there are a number of capitalized terms which do not have definitions. The SRS suggest to either lower case or provide definitions.

- **Section WEQ-016-1.2 through WEQ-016-1.2.1 –** The Standards Review Subcommittee recommends these sections be deleted. All of the terms listed here were defined in the Business Practices for Measurement and Verification Wholesale Electricty Demand Response Business Practice Standards Final Action. The WEQ Executive Committee made a decision to move to a common glossary so that terms are defined in one place WEQ-000.

Additionally the SRS has noticed inconsistencies between the descriptions listed here and the defintions included in the Business Practices for Measurement and Verification Wholesale Electricty Demand Response Business Practice Standards Final Action. If the task force is intending to change the definitions for terms they should show the redlines to the approved definitions. Below are terms that do not match what is approved in the WEQ Business Practices, which have been filed with the Federal Energy Regulatory Commission:

- Baseline Window (missing sentence)
- Demand Repsonse Event (changed System Operator to Program Administrator and Program Administrator is an undefined term)
- Meter Data Reporting Deadline (definition has been modified slightly)
- Normal Operations (changed System Operator to Program Administrator)
- Performance Window (changed System Operator to Program Administrator)
- Release/Recall (changed System Operator to Program Administrator)
- Telemetry Interval (changed System Operator to Program Administrator)

- **Appendix A** – The Standards Review Subcommittee suggests the Abbreviations and Acronyms be deleted from the appendix and only listed in WEQ-000. See comments under "Section WEQ-016-1.2 through WEQ-016-1.2.1" for additional rationale on the SRS suggestion.

  The Figure 1 in the appendix has no explanation as to what it is and why it is included in the recommendation. The Standards Review Subcommittee suggest that additional language be included so that users of the NAESB WEQ Business Practice Standards understand what is an Entity Relationship Model and what is important to know with this specific Entity Relationship Model.

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

**Please consider the following recommended changes:**

**PAP03**

1. **Move section 000-1 Abbreviation and Acronyms from 2 and add under new section 16-A Appendix A – Entity-Relationship Model on page 21. This should be consistent with PAP04 and PAP09. In addition:**
    a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
    b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Move section 000-2, (Definition of Terms) from 3-5 and add under new section 16-A Appendix A – Entity-Relationship Model after Abbreviation and Acronyms. This should be consistent with PAP04 and PAP09.**

3. **Could the first five paragraphs be moved from Introduction to Executive Summary?**

4. **Add Values to the heading 016-3.7, "Supplemental Material Values".**

5. **Spell out HAN and C&I, or include in Acronyms or Glossary.**

6. **Page 7 Reset the numerical system from 016-3 to 016-1 under the heading Business Practice Standards starting on page 7. This should be consistent with PAP04.**

7. **Page 7 (Actors) The format for the list of Actors, on page 7, appears different from the list in PAP09. Should we expect the heading and format for the actors list to be consistent between PAPs**

8. **Page 7 (Utility Customer) under proposed definition, should read:**
   **"An end-use customer of the Utility Distribution Operator that may be enabled to take on roles such as Facility or Resource."**

9. **Page 7 (Communication Method) under the Proposed Definition please include the word "report" in the list.**

10. **Page 7 (End Device) Does definition include back-up generators? What about batteries? Batteries will not always be located at the end of the line off the secondary system. Many now are used at the substation level.**

11. **Page 7 (Facility) Will the definition work for aggregated DR? In the case of aggregated residential DR do we therefore have thousands of facilities, or a single aggregated facility? What then is the location? Nodal? If nodal does that mean that program offerings are broken out by nodal and therefore dispatchable by node? What granularity node?**

12. **Page 8 (System Operator) The definition used seems to encompass both system operator and program administrator. The committee needs to keep in mind that the system operator is not the one who will dispatch the resource. He/she will**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

**make the order to dispatch the resource but control to dispatch the resource is another person or persons who may be different again from the program administrator who would again be a separate person with a very different job.**

13. **Page 10 (Tariff Rate Type) Regarding Hourly Rates. Currently the CAISO allows DR resources to operate in the Hour Ahead Scheduling Process (HASP) which is an hourly scheduled market.**

14. **Page 10 (Tariff Rate Type) Mostly customers are price responsive or other such as emergency or environmental. It may be a mistake to try to address all the possibilities. However most DR resources in California are not market price responsive they are programmatically price responsive. Which is one stage removed from market prices. Whereby the wholesale market may create the environment where the resource may be triggered but the customer is responding to a programmatic trigger set by contract or their participation in a program offer not the market price. Such customers receive set capacity and energy prices for their participation in the program.**

15. **Page 13 (Demand Load Shifting: Sample Scenarios) This should read: 'Illustrate how different End Devices will respond to a forward energy price signal including, but not limited to:"**

16. **Page 14 (Demand Reduction; Description) While not all resources will respond to a price signal, they will respond to "signals". Use of the word price is restrictive and therefore requires additional work to define how the different signals function. BPA suggests that the term "signals" is used, regarding what customers respond to.**

17. **Page 15 "Wind Power always commands a premium over coal power because of higher cost of production." This statement may not always be true, and may not be true in the future, so it appears biased. Suggest rephrasing.**

18. **Typo on p 17, in 016-3.6.1 (Product Identification) under Identifier source, under Considerations, 2nd sentence: The Identifier source reference the product.... Probably should read: The Identifier source references the product....**

19. **Page 20, 016-3.7.1, (Product Types and Sub Type Enumerations) under Contingency Reserve, in the description, NERC groups are currently called Regional Reliability Organizations vs. Councils. Please confirm with NERC.**

20. **Page 20 (Product Types and Sub Type Enumerations) Voltage support resources. While Reactive Posr is a type of voltage support there are other ways to provide voltage support which can be dispatchable to support voltage stability, whether they are batteries or line or substation regulators. Again, all of which are dispatchable. Lower the voltage by 1% and you get a 0.8 percent energy savings. This is a form of DR not apparently contemplated in the NAESB PAPs thus far.**

**PAP04**

1. **Delete section 000-1 (Abbreviation and Acronyms) from page 2. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 12. As stated for PAP03, please:**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Delete section 000-2 (Definition of Terms) from pages 3-5. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 13. In addition:**
   - **Should there be a list of Actor in this document similar to PAP03 and PAP09?**
   - **Should there be a section on Conventions in the document similar to PAP03?**

3. **Page 6, fourth paragraph, line 2: What does distribution mean in this context? This sentence is unclear. Next sentence: please remove "concerning those transactions.' This is either a redundant statement or a misplaced object.**

4. **Page 9, first paragraph, second sentence, BPA suggests the following change. Replace existing text with underlined text below:**
   **"Although some instances may be <u>known by</u> other names…"**

5. **Page 9: (Baseline Window) suggest augmenting language with capitalized text - "The window of time preceding and optionally following, a Demand Response Event over which electricity consumption and OUTSIDE AIR TEMPERATURE DATA are collected for the purpose of establishing a Baseline."**

6. **Page 9 (Adjustment Window) A baseline will not be calculated in an adjustment window but will be adjusted or modified in an adjustment window. See practice of the morning of adjustment. See also ambient air temp as a factor contributing to morning of adjustment.**

7. **Page 9 (Demand Response Event) Program Administrator is not always the dispatcher. A DR event is different than a DR program and it controlling contractual parameters.**

8. **Page 9 (Deployment) Deployment connotes a build-out traditionally associated with the creation of a DR resource through the roll-out of a programmatic offer. suggest use of the term "dispatch" instead.**

9. **Page 10 (Deployment Period) The term "Deployment" may be confusing to some in the industry. Here we are talking about resource operation and delivery. This could be fixed in the definition, by explaining <u>what</u> is being deployed.**

10. **Page 10 (Meter Data Reporting Deadline) This definition is necessary but we also need to define how, in some instances, real-time consumption data is used to verify, in real-time, resource compliance with dispatch instruction.**

11. **Page 10 (Performance Window) Please clarify which Program Administrator this term applies to: market or utility?**

12. **Page 10 (Recovery Period) "Required" is too heavy a word. You are simply releasing the resource from its DR obligations. You are not requiring any other types of subsequent action. You don't have the power or the right.**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

13. **Page 10 (Reduction Deadline) DR will not always be a reduction. Ramp up period will also be a type of demand response. DR does not equal demand reduction.**

14. **Page 11 (Telemetry Interval) "Program Administrator, BPA suggests using a different term or clarify the term and add it to the Glossary.**

15. **Page 16, Figure 1 is inadequate alone; BPA suggests adding some supporting text including what the figure is intended to convey.**

**PAP09**

1. **Delete section 000-1 (Abbreviation and Acronyms) from page 2. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 29. In addition:**
    a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
    b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Delete section 000-2 (Definition of Terms) from page 3-5. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 30.**

3. **Could the first three paragraphs be moved from Introduction to Executive Summary?**

4. **Reset the numerical system from 016-2 to 016-1 under the Business Practice Standards starting on page 8. This should be consistent with PAP04.**

5. **The format for the list of Actors, on page 9, appears different from the list in PAP03. Should we expect the heading and format for the actors list to be consistent between PAPs?**

6. **Should there be a section on Conventions in the document similar to PAP03?**

7. **In Page 9, 016-2.2 (Wholesale Entity Relationship Model) the text "Error! Reference source not found", should be removed. This could simply be a text conversion issue.**

8. **In Page 9 (System Operator) Here again there is more than one entity in this process. BPA recommends checking with NERC on the definition of this entity.**

9. **In Page 36, 4.c. (Business Purpose) looks like a cut and paste from PAP04. Not sure a cut and paste was the intent.**

10. **Page 14 (Wholesale) Figure 2 needs context and supporting text, and the legend needs to match the info in the figure/map.**

**Comments Submitted by K. York, TVA**

# Comments on NAESB Smart Grid Standards Covering Priority Action Plans 03, 04, and 09

## Filed by Tennessee Valley Authority

### Pap 03 – Common Electricity Product and Pricing Definition

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity, System Operator, and others need to match for industry-wide consistency.

Section WEQ-016.3.7 – 3.7.1 – Sections contain terms that are not defined and need to have definitions; such terms include: Operating Authority, Maneuverability, Contingency Reserve-Spinning, and Contingency Reserve-Supplemental.

TVA would like to know if the definition of Facility will work for aggregated Demand Response.

Actors should be consistent with those found in PAP-09.

### Pap 04 – Specifications for Common Scheduling Mechanism for Energy Transactions

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity and Facility need to match for industry-wide consistency.

Section WEQ-016 – Sections contain terms that are defined and need to have definitions; such terms include: Demand Response Programs, Program Administrator, Market Closing, Absolute Interval, Absolute Duration, and Minimum Run Time. In addition, there are several acronyms that have not been defined (SML, IETF, and DER).

Please note that the Program Administrator may not always be the dispatcher.

Do standard definitions for Response Method Aggregation, Resource, Scheduling Entity, and Service Provider exist in other approved standards? If so, we believe these should be changed to reflect those.

What is meant by a Demand Response Event? TVA's definition of a DR event is related to something that is controlled by either the utility or the customer (a planned event). The other two levels TVA deals with are a "steady state" and an automatic demand response state. TVA suggests that sub-definitions for the term Demand Response Event may be appropriate in order to more succinctly define them as either load or market events.

**Comments Submitted by K. York, TVA**

## Pap 09 – Specifications for Wholesale Standard DR Signals

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity and Facility need to match for industry-wide consistency.

Also, many sections have terms that have not been defined, such as Demand Resource Object, Federal, Awards, System Operator, and Schedules which need to have definitions.

The term Distributed Energy Resources and Inoperability should be defined in the Glossary.

Actors should be consistent with those found in PAP-03.

Does Scheduling Entity represent an Aggregator?

## General Comments:

In general, TVA believes that the Smart Grid effort should use as many existing approved communication protocols and industry standards as possible as a launching pad for the development of future standards. An example would be starting with FERC, NERC, and the nine Regional Reliability Organizations-approved naming conventions as well as existing “common” communication protocols (examples: Distributed Network Protocols and IEC 61850) that can appropriately integrated.

In addition, TVA would like to know if any thought has been given to how traditional transmission products would hamper or help the Smart Grid effort. What kind of transmission constraints would the Smart Grid effort encounter once operational?

Overall, TVA commends NAESB for these recommendations and believes the standards provide a workable framework for producing the granularity needed to integrate Smart Grid efforts into the business model.

Honeywell

Honeywell Automation and Control Solutions
1985 Douglas Drive
Golden Valley, MN 55422

April 9, 2010

Mr. Jonathan Booe
Smart Grid Task Force
North American Energy Standards Board
801 Travis Street, Suite 1675
Houston, Texas 77002

Dear Mr. Booe,

This letter is offered in response to your March 9, 2010 request for formal comments to the NAESB Smart Grid requirements relating to NIST PAPs 3, 4 and 9.

Honeywell energy management technologies are found in more than 150 million homes, five million buildings, 24 of the top 25 refineries, and nearly 5,000 industrial sites around the world. By applying our expertise in sensing and controls, we are creating energy efficient, more comfortable, safer, more secure, and productive environments for our customers. We stand ready to work together with utilities and customers to build and implement the Smart Grid.

Honeywell sees great value in the NAESB SGTF effort to describe and publish requirements for electricity product definition, pricing, scheduling and demand response signals. This important work is a key driver in the process of developing and deploying the national standards required to implement the Smart Grid.

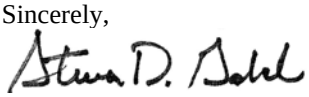
Honeywell has reviewed your documents and offers minor comments/edits for all the documents that fall into four categories.

1) Representation of all 3 customer domains (Residential, Commercial, and Industrial) should be included and explicitly stated when not applicable to all three.
2) Listings of specific standards setting organizations should not preclude others from participating.
3) The use cases and examples should include, when appropriate, in-premises energy management systems in residential, commercial and industrial customer domains.
4) Grammatical corrections.

We have attached all 3 documents with tracked changes to indicate recommended specific edits.

We look forward to utilizing these use cases/requirements to continue our dialog with NAESB and other standards setting organizations.

Sincerely,



Steve Gabel
Principal Development Engineer
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**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)** |
| **Request Title:** | **Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04** |

## 1. RECOMMENDED ACTION:

- [X] Accept as requested
- [ ] Accept as modified below
- [ ] Decline

## EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

- [X] Change to Existing Practice
- [ ] Status Quo

## 2. TYPE OF DEVELOPMENT/MAINTENANCE

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

## 3. RECOMMENDATION

### SUMMARY:

The NAESB Smart Grid Task Force (SGTF) submits this Recommendation to define the range of information required to establish the breadth of the communication requirement. There is no need for the cases to be exhaustive, merely illustrative of the full scope.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)** |
| **Request Title:** | **Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04** |

# New WEQ-016 Abbreviations/Acronyms and Defined Terms to be added to WEQ-000

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

## 000-1 ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| EMS | Energy Management System |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
**Requesters:** NAESB Smart Grid Task Force (SGTF)
**Request No.:** 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)
**Request Title:** Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

## 000-2 DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

**For Quadrant:** Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)
**Requesters:** NAESB Smart Grid Task Force (SGTF)
**Request No.:** 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)
**Request Title:** Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04

| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
| **For Quadrant:** | **Wholesale Electric Quadrant (WEQ) and Retail Electric Quadrant (REQ)** |
| **Requesters:** | **NAESB Smart Grid Task Force (SGTF)** |
| **Request No.:** | **2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b)** |
| **Request Title:** | **Requirements Specifications for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04** |

| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

## New Business Practice Standards WEQ-016 – Smart Grid Activities

*(NOTE: NAESB Retail numbering convention will replace WEQ numbering convention in NAESB Retail publication)*

**RECOMMENDED STANDARDS:**

**Executive Summary**

**Requirements Specification for Common Scheduling Mechanism for Energy Transactions**

The following contains a set of requirements relating to the use of date and time based data elements that are used in transactions for Demand Response Programs. This information is being provided to NIST in order to aid in the development of a standard representation for date/time based data elements derived from an XML representation of iCalendar[1].

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

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

## Introduction

## Requirements Specification for Common Scheduling Mechanism for Energy Transactions

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

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

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

Smart grid transactions communicate three classes of information. They describe events used within the power management and distribution of the grid. They invoke financial or business transactions concerning those transactions. They communicate schedules and interval information for the flows of energy. Per agreement, all semantics relating to Power Management will use the Common Information Model (CIM) from IEC TC57. All financial and market semantics will be based upon the definitions found in ISO 20022 (Financial Documents) and in their most common expression, FIX. All elements relating to schedule and interval will be expressed in the notation of the IETF iCalendar (RFC 5545) standard, as defined in the XML representation of iCalendar developed by CalConnect. The purpose of this approach is to increase interoperation and understanding between domains.

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

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The purpose of this action is to define the requirements for standard communication of date, time, schedule, and interval by smart grid actors, with particular attention to demand response (DR). These requirements will be submitted to the OASIS and CalConnect technical committee to define the applicable communication standards to support them.

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

**Assumptions**: We assume as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

## Business Practice Standards

### 016-1 REQUIREMENTS SPECIFICATION FOR COMMON SCHEDULING MECHANISM FOR ENERGY TRANSACTIONS

#### 016-1.1 USE CASE OVERVIEW

##### 016-1.1.1 Requirements for Date and Time Usage

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## 016-1.2 SPECIFIC USE CASES

### 016-1.2.1 Date and Time Based Data Elements Utilized in Demand Response Programs

The representative instances named in the table below are representative of those used in smart grid transactions. Although some instances may have be seen under other names in different markets, standardizing those names is beyond the scope of this activity, which is limited to standardizing communication of date, time, schedule, and interval. These instances are sufficiently diverse to define the range of communications that the standard must support.

| Representative Instances | Description |
|---|---|
| Adjustment Window | The period prior to a Demand Response Event used for calculating a Baseline Adjustment. |
| Advance Notification | One or more communications to Demand Resources of an impending Demand Response Event transmitted in advance of the actual event. |
| Baseline Window | The window of time preceding and optionally following, a Demand Response Event over which electricity consumption data is collected for the purpose of establishing a Baseline. |
| Demand Response Event | The periods, deadlines, and transitions during which Demand Resources perform. The Program Administrator should specify the duration and applicability of a Demand Response Event. Not all deadlines, periods, and transitions may be applicable to all Demand Response products or services. |
| Deployment | The time at which a Demand Resource begins reducing Demand on the system in response to an instruction. |

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| Representative Instances | Description |
|---|---|
| Deployment Period | The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall |
| Meter Data Recording Interval | The time between electricity meter consumption recordings |
| Meter Data Reporting Deadline | The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data submission is required for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month). |
| Normal Operations | The time following Release/Recall at which a Program Administrator may require a Demand Resource to have returned its Load consumption to normal levels, and to be available again for Deployment |
| Performance Window | The period in a Demand Response Event analyzed by the Program Administrator to measure and verify the Demand Reduction Value for a Demand Resource. |
| Ramp Period | The time between Deployment and Reduction Deadline, representing the period of time over which a Demand Resource is expected to achieve its change in Demand |
| Recovery Period | The time between Release/Recall and Normal Operations, representing the window over which Demand Resources are required to return to their normal Load. |
| Reduction Deadline | The time at the end of the Ramp Period when a Demand Resource is required to have met its Demand Reduction Value obligation |
| Release/Recall | The time when a Program Administrator notifies a Demand Resource that the Deployment Period has ended or will end |

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| Representative Instances | Description |
|---|---|
| Sustained Response Period | The time between Reduction Deadline and Release/Recall, representing the window over which a Demand Resource is required to maintain its reduced net consumption of electricity |
| Telemetry Interval | The time unit between communications between a Demand Resource or Demand Response Provider and a Program Administrator |

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## 016-A Appendix A – Entity-Relationship Model

The following terms and definitions correspond to a set of actor/object classes and sub-classes as illustrated in the entity-relationship model in Figure 1~~Figure 1~~ of Appendix A. Abbreviations/Acronyms correspond to the IDs shown in the figure.

### ABBREVIATIONS AND ACRONYMS

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device |
| EMS | Energy Management System |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

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## DEFINITION OF TERMS

| Term | Definition |
|---|---|
| Business Entity | The wholesale or retail entity that interacts with other entities in its market. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| Control | The role associated with the control of an End Device. |
| Demand Response Objects | Physical and logical types of demand response resource objects. |
| Designated Dispatch Entity | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| End Device | A physical end-use device that consumes or supplies electricity. |
| Environmental Authority | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| Facility | The location at which connection to the transmission or distribution system is made. |
| Federal Regulator | A Federal regulatory authority. |
| Load Serving Entity | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Local Authority | A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |

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| Term | Definition |
|---|---|
| Market Participant | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules. |
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Metering Authority | A role which carries the responsibility of providing data necessary to determine the performance of a Resource. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |
| Participant | The entity that represents resources to a market or distribution operator. |
| Regulator | A rule-making and enforcement entity. |
| Reliability Authority | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities. |
| Response Method | A measurable action taken in response to an instruction to change consumption. |
| Response Method Aggregation | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. |
| Resource | A market-dependent group of Response Method Aggregations that represents a dispatchable entity. |
| Scheduling Entity | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Service Provider | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |

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| Term | Definition |
|---|---|
| State Regulator | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Supporting Objects | Objects that support the interaction of Business Entities and Demand Response Objects. |
| System Operator | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Utility Customer | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |
| Utility Distribution Operator | An entity which carries the responsibility of operating an electricity distribution system. |
| Zone | A physical or electrical region. |

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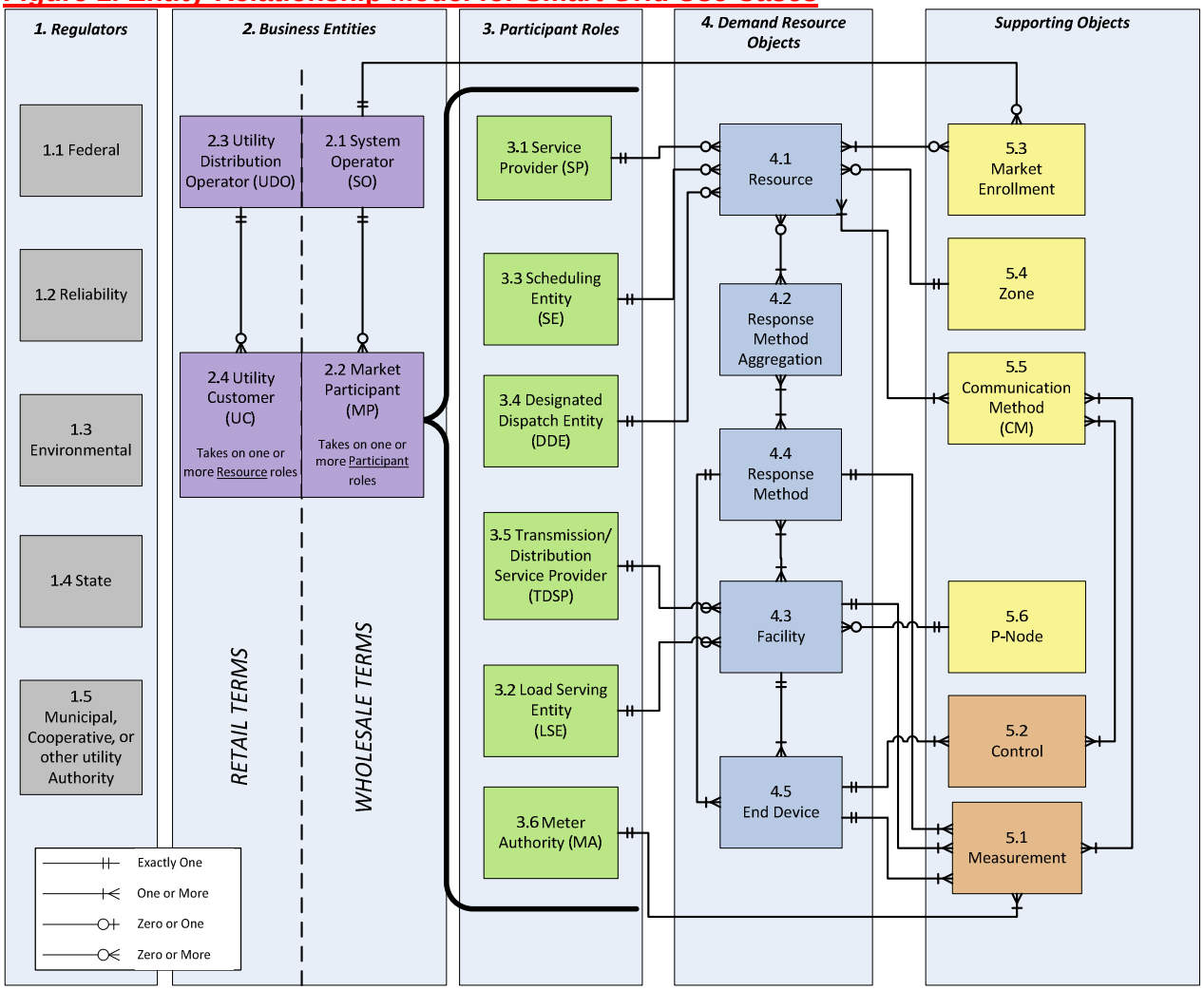
**Figure 1. Entity-Relationship Model for Smart Grid Use Cases**



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## 4. SUPPORTING DOCUMENTATION

### a. Description of Request:

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

This recommendation specifically pertains to PAP 04[2], "A Common Scheduling Mechanism for Energy Transactions".

### b. Description of Recommendation:

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

### c. Business Purpose:

This recommendation has been developed in response to a request from NIST to provide use cases and requirements germane to the use of dates/times within a broad spectrum of energy transactions. The scope of this effort has been limited to Demand Response Programs in order to meet NIST's deadline for this effort.

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

Assumptions - We assume as given that common semantics for communicating schedule, interval, and sequence will enhance interoperation between domains and between business entities.

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

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

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

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

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

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- November 10, 2009 Meeting Notes – To be posted

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

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

# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

**General Comments**

A. The documents being considered do not contain traditional NAESB Business Practice Standards content. Additional work will be necessary the convert these recommendation documents into Business Practice Standards, as it was a working assumption of the Smart Grid Task Force to deliver requirements only.

B. References in these Recommendations to 'Dispatch", "Markets", "Reliability" are made relative to DR and apply to DR resources only, and not Generation resources. NERC's compliance standards for Generation Resources are typically quite detailed, while compliance standards for DR resources are appropriately determined by the respective system operator specific to the DR product or service and the reliability need being addressed.

C. While the recommendations for PAP-03, PAP-04 and PAP-09 posted by NAESB are not business practice standards, they should not be misconstrued as a recommendation to change existing market designs or business rules across ISOs/RTOs; each ISO RTO has its own stakeholder process as the appropriate forum for making rule changes.

D. Although not explicitly stated in the PAP documents, compliance with orders from regulatory agencies, as they apply to DR in ISO/RTOs, is presumed.

E. It is our understanding that the contents of the documents are being presented as recommendations and are intended to be used neither as implementation templates nor for testing of interoperability. Rather, another step will be taken by the Organization for the Advancement of Structured Information Standards (OASIS) to deliver an information model, preferably reconciled with IEC 61970, which then could be implemented and tested.

F. The treatment of the glossary of terms – actors and definitions – is inconsistent across the recommendation documents — within the WEQ as well as the corresponding versions listed under REQ. In one case, the glossary of terms is in the recommendation without the diagram, in another it appears as an appendix, and in a third it appears in both the recommendation section *and* in an appendix. The highlighted wording regarding how the glossary will be incorporated into the WEQ-000 is unclear. The IRC requests that NAESB staff provide a clearer description to explain how the glossary of terms will be integrated into WEQ-000.

G. It is unclear how the data requirements work beginning in Phase 2 will be integrated with these recommendations if they are being passed through the standards approval process separately. This is of particular concern since PAP-03 and PAP09-Retail have partial lists of data requirements in the current recommendations. For consistency, the IRC recommends that all data requirements be removed from the Recommendations for PAPs 03/04/and 09 until the SGTF has completed Phase 2, where the data requirements will be identified for all three PAPs.

**PAP-SPECIFIC RECOMMENDATIONS**

***PAP-03***

1. "The term "wholesalers" in PAP03 should be modified to clarify whether it refers to energy marketers, energy service providers or ISOs and RTOs. Without this clarification, it is unclear to whom the proposed PAP03 standards apply

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

2. The use cases are very short. More elaboration needs to be given to the definitions and the samples should be elevated to fully described, testable use cases.

***PAP-04***

3. The IRC has identified that the following requirement from PAP04 as the only requirement applicable to wholesale markets and recommends that it be incorporated into the PAP09 wholesale document:

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

4. References to the term "wholesalers" in PAP04 do not apply to ISOs and RTOs, therefore, it is the understanding of the IRC that PAP04 would not apply to ISOs and RTOs.
5. The IRC recommends that PAP-04 be moved wholly into the REQ, where it can be applied to end-device and/or human communications without impact to or potential conflict with wholesale market operations.

***PAP-09 Retail***

6. As previously recommended in the IRC's informal comments in November 2009, the administration of DR products and services should be excluded from the scope of the retail use cases. Currently, language states that these processes will not be automated. If this is the case, they should not be included in a document that ultimately will lead to a machine-to-machine communication specification. Additionally, the processes for automating customer registration (as opposed to device enrollment) are likely to be handled in the future by a NAESB working group with a more global (i.e., not DR-centric) perspective. The IRC recommends removing the following sections:
    a. REQ.14.3.2.4.1 Administrate DR Program
    b. REQ.14.3.2.4.1.2 Create DR Program
    c. REQ.14.3.2.4.1.3 Update DR Program
    d. REQ.14.3.2.4.1.4 Remove DR Program
    e. REQ.14.3.2.4.2 Administrate Customer for DR
7. Our members believe that additional descriptions of the business processes are needed. The existing illustrations consist of Use Case Diagrams, which identify the Actors involved and the hierarchy of processes, and Sequence Diagrams, which identify the ordered messages that may

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

be exchanged among the actors during the execution of the business processes. Activity Diagrams would better show the conditional flows and iterations that are common to these business processes and make the testing of use cases easier. Furthermore, alignment with the four governing business processes outlined in Figure 1 of the Wholesale document (page 12) would be extremely helpful. In fact, we would very much like to see integration with the wholesale business process Activity Diagrams, which have wholesale-retail integration points identified for further development by interested parties. IRC members will be made available to support such integration definition efforts should members of the REQ be interested in pursuing this activity in Phase 2.

8. The document defines DR-specific data elements (such as "Minimum Duration"), whereas the Wholesale document reuses generation/supply data elements (such as "Minimum Run Time"). These philosophies should be reconciled. See pp. 33-35, 39, and 40 for examples. As stated in cross-PAP recommendation E, this can be resolved by following the IRC recommendation that all data elements be removed from the current recommendations and submitted at a later date, when the Phase 2 data requirements work is complete.

**PAP-SPECIFIC RECOMMENDATIONS (DETAILED EDITS)**

***Common Introduction Language***

- Replace “United States of America with some overlaps to Canada” with “North America”
- 000-1: Replace “Reliability Authority (RA)” with “Regional Reliability Authority (RRA)”
- 000-2: For Response Method Aggregation, edit as follows: “…interval level consumption, e.g. ~~a site~~ **an RMA** may ~~also~~ be a physical entity ~~that may have~~ **with** its own meter…”

***PAP-03***

- Pg. 6 & Pg. 12: Replace “Demand Reduction” with “Demand Modification”
- Pg. 9: need to reconcile difference among TDSP / UDC / UDO
- Pg. 10: Definition of CPP is incorrect. Recommend the following change: “…at which time electric prices ~~may reflect the costs of electricity at the wholesale level~~ **are administratively adjusted to incentivize customers to actively modify their electricity usage**.”
- Pg. 10: Definition of PTR. Recommend the following change: “An incentive rate in which the utility pays **a rebate to** Customers ~~to~~ **who** reduce**d** demand during peak periods on critical days.”

***PAP-04***

- Pg 9: Replace “reducing” with “modifying”

***PAP-09 Retail***

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

- Pg 15: REQ.14.3.2.3: Use Case Overview - End-to-end business process flow should be consistent with Wholesale DR Signals document
- Pgs 17, 37, 45, 53, 58: Eliminate specific references to wholesale markets
- Pg 17: change "interruption" to "modification" (2x places)
- Pg. 30: Definition for Maximum Duration. Change "The maximum amount of time the asset/resource is capable of ~~delivering power (megawatts)~~ **modifying its electricity usage".**
- Pg 30: the Parent-Resource ID concept needs to be reconciled with the terminology and hierarchical structure of resources used in the wholesale document.
- Pg 31: the Source-Authentication concept needs to be reconciled with the approach to security used in the wholesale document
- Ph 37: revise text as follows "The Bidder may be a Customer bidding with ~~either an energy retailer (e.g., LSE, ESP),~~ a Service Provider ~~(e.g., CSP, DRP),~~ or ~~a power marketer (i.e., wholesale market participant). The Bidder may also be~~ a Service Provider bidding ~~up~~ to a LSE ~~or power marketer.~~ "
- Pg 38: recommend proper use of bids and offers, i.e. bids are to buy and offers are to sell
- Pg 44 & 53: replace "shed" with "modify" (2x place)
- Pg 45: the concept of a "number signifying the reliability of the grid" has no basis in any reliability standards with which the IRC members are acquainted
- Pg 55: replace "de-energize" with "modification"
- Pg 58 – DR Execution – Retail Time Pricing (RTP): Replace this section with the following text: "Provide real-time or dynamic pricing (RTP) to retail customers so that customers can vary their demand based on pricing signals. RTP represents retail electricity rates that vary as a function of time."

***PAP-09 Wholesale***

- Pg. 9 – unresolved reference should be fixed

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**Comments Submitted by E. Skiba, Midwest ISO**

## FORMAL COMMENTS

| | |
|---|---|
| **Quadrant:** | Wholesale Electric Quadrant |
| **Recommendations:** | WEQ 2010 AP Item 6 (a) / REQ Annual Plan Item 9(a); Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03,<br>WEQ 2010 AP Item 6 (b) / REQ Annual Plan Item 9(b); Requirements Specification for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04, and<br>WEQ 2010 AP Item 6 (c); Requirements Specifications for Wholesale Standard DR Signals – for NIST PAP09 |
| **Submitted By:** | Midwest ISO |
| **Date:** | April 14, 2010 |

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General Comments:

- Midwest ISO is concerned with the next steps for the PAPs once they are approved by the Executive Committee and ratified by the membership. The documents in many cases are intended only to provide examples and as such were not intended to be an all inclusive set of standards. In many cases the examples are not consistent with how some entities operate their markets. We will provide more detail as to where there are differences between the Midwest ISO market and the examples. At a minimum the documents should have some statement explaining that the examples included are not to be considered the full set of examples and that some markets may have implementations that are inconsistent with the examples and sample scenarios provided since the examples were not intended to provide an exhaustive set of standards. Without having this type of clarifying language on the examples, samples, etc., these standards may inadvertently dictate how the markets can operate in the future and as well as impact existing market designs.

PAP 3

- Page 10 – Definition for Market Clearing Price for Energy should be inclusive of 5 minutes…it says 15.
- Page 10 – Midwest ISO is concerned that the examples of common tariff rate types may lock entities into having to support all the tariff rate types listed and/or prevent them from creating any new tariff rate types without having the NAESB business practice standards changed.
- Page 14 – The recommendation makes the assumption that wind is dispatachable which is not the case.
- Page 15 – The sample scenario makes an invalid assumption that wind always commands a premium over coal because with rebates it may not be in the Midwest ISO market.
- Page 15 – The sample scenario makes an invalid assumption that Consumers must buy carbon credits, which is not the case in the Midwest ISO market.
- Page 18 – Pricing Attributes…does it include ancillary service prices?
- Page 19 – GMT is used within the Midwest ISO, with an offset.
- Pages 18-19 – Midwest ISO is concerned that the pricing attributes included in the list do not have any explanation as to whether the attributes are required or optional. Additionally, we would expect that this section be driven out during Phase 2. Midwest ISO would recommend this section be removed from the recommendation and be a part of the Phase 2 Recommendation.

**Comments Submitted by E. Skiba, Midwest ISO**

- Pages 20-21 – Midwest ISO is concerned that it does not offer a number of the provision listed in the Product Types and Sub-types. For example, following types/sub-types are not included in the Midwest ISO market: Load Following and Reactive Power Supply From Generation Sources.

PAP 4

- Page 3 – Issue with definition of Facility: reads like elemental node for calculating price instead of a aggregated commercial pricing node
- Page 8 – The intent is table unclear since it is "an incomplete, but representative set of instances."
- Page 16 – Entity Relationship Model – Midwest ISO has concern with the following not being connected: Resource and Facility, Zone and Facility, and Resource and P-node.

PAP 9

- Page 10 – Use Case description – Midwest ISO does not distinguish Energy between Economic and Reliability.
- Page 19 – (Visio diagram) Midwest ISO is concerned whether this is a commitment process or a dispatch process. The Reliability Assessment commitment process will notify demand response of the commitment at the commercial pricing node level. The notification goes to the demand response participant and local balancing authority.
- Page 16 – (Visio diagram)…Can we follow both paths out of the Product decision? It appears that they are exclusive, which is not the case within the Midwest ISO market.
- Page 21 – (Visio diagram)…On this diagram it appears that the processes support sending multiple data streams and does not support the capability for providing a single combined setpoint. Midwest ISO market utilizes a combined setpoint approach. Midwest ISO combines into a single setpoint: energy, spin, etc. into one message, since we run a co-optimized market. Since regulation is added to base (set point) we can have something like 3 products using one message/signal. Would Midwest ISO have to use separate notifications rather than a combined setpoint?
- Page 24 – Since we are the Designated Dispatch Entity and System Operator we have concerns with the feasibility of the Entity Diagram and Business Process. The "green arrows" are defined in or out of the System Operator (SO) swim lane. This could be an issue since Midwest ISO needs to balance its footprint in 4 seconds for ACE, which currently imposes the use of ICCP. There is a general concern with the implementation if we were required to use XML and not able to use Inter-Control Center Communications Protocol (ICCP).

**Comments Submitted by the WEQ Standards Review Subcommittee**

## FORMAL COMMENTS

| | |
|---|---|
| **Quadrant:** | Wholesale Electric Quadrant |
| **Recommendation:** | WEQ 2010 AP Item 6 (c); Requirements Specifications for Wholesale Standard DR Signals – for NIST PAP09 |
| **Submitted By:** | Standards Review Subcommittee (SRS) |
| **Date:** | April 9, 2010 |

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Under the Standards Review Subcommittee (SRS) Scope of Work, which was approved by the SRS on March 6, 2008, the SRS agreed to review recommendations and if subcommittee deemed appropriate, they would submit advisory comments to the Executive Committee (EC) for consideration. As stated in the Scope of Work these comments are "not intended to change the scope of the Business Practices or recommendation, but to provide consistency and uniformity across all WEQ Business Practices."

It is the SRS understanding that this recommendation will be included as standards in the WEQ Business Practice Standards and will be filed with the Federal Energy Regulatory Commission (FERC). Therefore, the SRS would like to point out inconsistencies between this recommendation and existing standards as well as a number of concerns specific to the recommendation itself.

It is also the SRS' understanding that these comments may be reviewed by the Smart Grid Task Force. The task force may review these comments, suggest modifications to the recommendation, and submit late comments for Executive Committee consideration.

**WEQ-000**

The terms and definitions do not seem to take into account existing definitions of terms and FERC Order 676-C which requested that NAESB resolve differences within its standards and differences between NERC and NAESB Standards. Below are examples that illustrate inconsistencies with the definitions for the same term.

Facility - *NERC Definition* - A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)

*Recommendation Definition* – The location at which connection to the transmission or distribution system is made.

Load Serving Entity - *Glossary Definition* The responsible entity that secures energy and Transmission Service (and related Interconnection Operations Services) to serve the electrical demand and energy requirements of its end-use customer.

*Recommendation Definition* – A role which carries the responsibility of serving end-users and selling electric energy to end-users.

**Comments Submitted by the WEQ Standards Review Subcommittee**

System Operator - *Demand Response Final Action* – A System Operator is a Balancing Authority, Transmission Operator, or Reliability Coordinator, whose responsibility is to monitor and control an electric system in real time (based on NERC definition). The System Operator is responsible for initiating Advance Notifications, Deployment and Release/Recall Instructions.

*Recommendation Definition* – An entity which carries the responsibility of administering the deman response process, from Resource enrollment to performance evaluation.

Within Definitions of terms there are capitalized terms which are not defined. These include:

- Demand Resource Object
- Federal
- Awards
- System Operator
- Schedules

Under 000-2 (page 3), System Operator is used in the definition of Market Paticipant and is also not a defined term. Included in 000-1, Abbreviations and Acryonyms, is SO (System Operator). For consistency, either define System Operator in 000-2 or use the acronym SO in the definition of Market Participant. The SRS recommends use of the acronym SO as it would be more consistent because the definition includes several other acronyms which are included in 000-1.

**WEQ-016**

- **General**
    - On page 1 under Recommendation, the acronym NIST is not defined as it used here for the first time in the recommendation. The acronym is defined on page 5, under the Executive Summary.
- There are terms which are capitalized which are not defined in the WEQ Business Practice Standards such as “Demand Response.”
- Distributed Energy Resources and Inoperability are defined through the use of footnotes. Recommend adding these terms to the Definition of Terms under 000-2.
- Review the recommendation to correctly include the acronym when the term/phrase is first used. Several examples include the first time System Operator and Market Participants which are first included in the Executive Summary.
- Numbering for the recommendation starts with 016-2. The SRS suggests renumbering to start with 016-1 if the decision is to move this Recommendation to a standalone WEQ Business Practice Standard.
- Table 1 includes additional acronyms and definitions. Recommend moving all of them to the beginning of the recommendation within 000-1 or 000-2 as appropriate with the other already identified acronyms and definitions.
- Under 016-2, there is a section identified as ‘Conventions.’ The SRS recommends renumbering this section to be 016-2.1 and then continue the changed numbering through the remaining recommendation.

**Comments Submitted by the WEQ Standards Review Subcommittee**

- Under 16.2.2, while not capitalized the term cardinality key is used. It is recommended that this term be defined. In this section there is an "Error! Reference source not found" Microsoft Word tag reference that need to be corrected.
- Under 016.2-3 the term Baseline is used and has not been defined.
- In terms of flow and understanding, the recommendation uses the term 'use cases' without specifically identifying that the Figures included in the recommendation are demonstrating the specific use cases. The SRS recommends including language that allows for explicit understanding or adding a column to the specific tables that include the Figure number.
- The documented processes need to be verified against the process in the Figures. For example, in section 016-2.4.2 the textual description refers to submit a supply offer and the figure has Submit Offer. Also, the figure containes two processes Create Award Notice and Collect Award Notification which are not mentioned in the textual description.
- Included in Figures 2, 4 and 6, the descriptions include 'V-*-*.' This reference case requires further explicit description of this term.
- Recommend renaming Figure 1, included in Appendix A, Figure 1A.
- Recommned including on Appendix B, where appropriate, the Figure number if that particular case is included in the recommendation. There is no explantion for the table included in the Appendix B. The task force should consider including and description so that people can understand what is presented in the table.
- **Executive Summary –** This recommendation along with the recommendations for PAP03 Requirements Specifications for Common Electricity Product and Pricing Definition and PAP09 Requirements Specifications for Wholesale Standard DR Signals each contain an Executive Summary listed under the "Recommended Standards" section of the recommendation. Based on the standards numbering it appears that all three recommendations will be included in a new set of standards, WEQ-016.
    - First, we question whether WEQ-016 should have an Executive Summary. The only Business Practice Standards that have an executive summary is WEQ-014 (WEQ/WGQ eTariff Related Standards). The WEQ-014 standards were approved prior to the SRS review of recommendations. (If the SRS had been reviewing standards at that time, we may have questioned having an Executive Summary in WEQ-014.)
    - Second, the Executive Summaries in the three recommendations though similar are not identical. With the differences in the Executive Summaries and all three recommendations being included in WEQ-016 it is unclear how a single set of business practices can have three Executive Summaries.

  If the EC decides to move forward with including an Excutive Summary, the SRS recommends that all capitalized terms and acronyms be included in WEQ-000.

  An option the Smart Grid Task Force may want to consider is to create a separate Business Practice Standard for each PAP recommendation rather than combining them into a single recommendation.

**Comments Submitted by the WEQ Standards Review Subcommittee**

- **Introduction –** The SRS questions whether it is appropriate to include an "Assumptions" section in the WEQ Business Practice Standards.

  The task force may want to consider re-naming this section to "Considerations" and place in an Appendix to the Business Practice Standards.

  There are a number of capitalized terms which do not have definitions. The SRS suggest to either lower case or provide definitions.

- **Appendix A** – The Standards Review Subcommittee suggests the Abbreviations and Acronyms be deleted from the appendix and only listed in WEQ-000. Several included in Appendix A are already included in WEQ-000 (LSE, LA, MA).

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

**Please consider the following recommended changes:**

**PAP03**

1. **Move section 000-1 Abbreviation and Acronyms from 2 and add under new section 16-A Appendix A – Entity-Relationship Model on page 21. This should be consistent with PAP04 and PAP09. In addition:**
    a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
    b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Move section 000-2, (Definition of Terms) from 3-5 and add under new section 16-A Appendix A – Entity-Relationship Model after Abbreviation and Acronyms. This should be consistent with PAP04 and PAP09.**

3. **Could the first five paragraphs be moved from Introduction to Executive Summary?**

4. **Add Values to the heading 016-3.7, "Supplemental Material Values".**

5. **Spell out HAN and C&I, or include in Acronyms or Glossary.**

6. **Page 7 Reset the numerical system from 016-3 to 016-1 under the heading Business Practice Standards starting on page 7. This should be consistent with PAP04.**

7. **Page 7 (Actors) The format for the list of Actors, on page 7, appears different from the list in PAP09. Should we expect the heading and format for the actors list to be consistent between PAPs**

8. **Page 7 (Utility Customer) under proposed definition, should read:**
   **"An end-use customer of the Utility Distribution Operator that may be enabled to take on roles such as Facility or Resource."**

9. **Page 7 (Communication Method) under the Proposed Definition please include the word "report" in the list.**

10. **Page 7 (End Device) Does definition include back-up generators? What about batteries? Batteries will not always be located at the end of the line off the secondary system. Many now are used at the substation level.**

11. **Page 7 (Facility) Will the definition work for aggregated DR? In the case of aggregated residential DR do we therefore have thousands of facilities, or a single aggregated facility? What then is the location? Nodal? If nodal does that mean that program offerings are broken out by nodal and therefore dispatchable by node? What granularity node?**

12. **Page 8 (System Operator) The definition used seems to encompass both system operator and program administrator. The committee needs to keep in mind that the system operator is not the one who will dispatch the resource. He/she will**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

**make the order to dispatch the resource but control to dispatch the resource is another person or persons who may be different again from the program administrator who would again be a separate person with a very different job.**

13. **Page 10 (Tariff Rate Type) Regarding Hourly Rates. Currently the CAISO allows DR resources to operate in the Hour Ahead Scheduling Process (HASP) which is an hourly scheduled market.**

14. **Page 10 (Tariff Rate Type) Mostly customers are price responsive or other such as emergency or environmental. It may be a mistake to try to address all the possibilities. However most DR resources in California are not market price responsive they are programmatically price responsive. Which is one stage removed from market prices. Whereby the wholesale market may create the environment where the resource may be triggered but the customer is responding to a programmatic trigger set by contract or their participation in a program offer not the market price. Such customers receive set capacity and energy prices for their participation in the program.**

15. **Page 13 (Demand Load Shifting: Sample Scenarios) This should read: 'Illustrate how different End Devices will respond to a forward energy price signal including, but not limited to:"**

16. **Page 14 (Demand Reduction; Description) While not all resources will respond to a price signal, they will respond to "signals". Use of the word price is restrictive and therefore requires additional work to define how the different signals function. BPA suggests that the term "signals" is used, regarding what customers respond to.**

17. **Page 15 "Wind Power always commands a premium over coal power because of higher cost of production." This statement may not always be true, and may not be true in the future, so it appears biased. Suggest rephrasing.**

18. **Typo on p 17, in 016-3.6.1 (Product Identification) under Identifier source, under Considerations, 2nd sentence: The Identifier source reference the product.... Probably should read: The Identifier source references the product....**

19. **Page 20, 016-3.7.1, (Product Types and Sub Type Enumerations) under Contingency Reserve, in the description, NERC groups are currently called Regional Reliability Organizations vs. Councils. Please confirm with NERC.**

20. **Page 20 (Product Types and Sub Type Enumerations) Voltage support resources. While Reactive Posr is a type of voltage support there are other ways to provide voltage support which can be dispatchable to support voltage stability, whether they are batteries or line or substation regulators. Again, all of which are dispatchable. Lower the voltage by 1% and you get a 0.8 percent energy savings. This is a form of DR not apparently contemplated in the NAESB PAPs thus far.**

**PAP04**

1. **Delete section 000-1 (Abbreviation and Acronyms) from page 2. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 12. As stated for PAP03, please:**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Delete section 000-2 (Definition of Terms) from pages 3-5. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 13. In addition:**
   - **Should there be a list of Actor in this document similar to PAP03 and PAP09?**
   - **Should there be a section on Conventions in the document similar to PAP03?**

3. **Page 6, fourth paragraph, line 2: What does distribution mean in this context? This sentence is unclear. Next sentence: please remove "concerning those transactions.' This is either a redundant statement or a misplaced object.**

4. **Page 9, first paragraph, second sentence, BPA suggests the following change. Replace existing text with underlined text below:**
   **"Although some instances may be <u>known by</u> other names…"**

5. **Page 9: (Baseline Window) suggest augmenting language with capitalized text - "The window of time preceding and optionally following, a Demand Response Event over which electricity consumption and OUTSIDE AIR TEMPERATURE DATA are collected for the purpose of establishing a Baseline."**

6. **Page 9 (Adjustment Window) A baseline will not be calculated in an adjustment window but will be adjusted or modified in an adjustment window. See practice of the morning of adjustment. See also ambient air temp as a factor contributing to morning of adjustment.**

7. **Page 9 (Demand Response Event) Program Administrator is not always the dispatcher. A DR event is different than a DR program and it controlling contractual parameters.**

8. **Page 9 (Deployment) Deployment connotes a build-out traditionally associated with the creation of a DR resource through the roll-out of a programmatic offer. suggest use of the term "dispatch" instead.**

9. **Page 10 (Deployment Period) The term "Deployment" may be confusing to some in the industry. Here we are talking about resource operation and delivery. This could be fixed in the definition, by explaining <u>what</u> is being deployed.**

10. **Page 10 (Meter Data Reporting Deadline) This definition is necessary but we also need to define how, in some instances, real-time consumption data is used to verify, in real-time, resource compliance with dispatch instruction.**

11. **Page 10 (Performance Window) Please clarify which Program Administrator this term applies to: market or utility?**

12. **Page 10 (Recovery Period) "Required" is too heavy a word. You are simply releasing the resource from its DR obligations. You are not requiring any other types of subsequent action. You don't have the power or the right.**

# Formal Comments
# Of the
# Bonneville Power Administration
# On
# PAPs 03, 04 & 09

13. **Page 10 (Reduction Deadline) DR will not always be a reduction. Ramp up period will also be a type of demand response. DR does not equal demand reduction.**

14. **Page 11 (Telemetry Interval) "Program Administrator, BPA suggests using a different term or clarify the term and add it to the Glossary.**

15. **Page 16, Figure 1 is inadequate alone; BPA suggests adding some supporting text including what the figure is intended to convey.**

**PAP09**

1. **Delete section 000-1 (Abbreviation and Acronyms) from page 2. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 29. In addition:**
    a. **Add "DR for Demand Response" to the Abbreviation and Acronyms.**
    b. **Add "DER for Distributed Energy Resources" to the Abbreviation and Acronyms.**

2. **Delete section 000-2 (Definition of Terms) from page 3-5. It is duplicated in section 16-A Appendix A – Entity-Relationship Model on page 30.**

3. **Could the first three paragraphs be moved from Introduction to Executive Summary?**

4. **Reset the numerical system from 016-2 to 016-1 under the Business Practice Standards starting on page 8. This should be consistent with PAP04.**

5. **The format for the list of Actors, on page 9, appears different from the list in PAP03. Should we expect the heading and format for the actors list to be consistent between PAPs?**

6. **Should there be a section on Conventions in the document similar to PAP03?**

7. **In Page 9, 016-2.2 (Wholesale Entity Relationship Model) the text "Error! Reference source not found", should be removed. This could simply be a text conversion issue.**

8. **In Page 9 (System Operator) Here again there is more than one entity in this process. BPA recommends checking with NERC on the definition of this entity.**

9. **In Page 36, 4.c. (Business Purpose) looks like a cut and paste from PAP04. Not sure a cut and paste was the intent.**

10. **Page 14 (Wholesale) Figure 2 needs context and supporting text, and the legend needs to match the info in the figure/map.**

**Comments Submitted by K. York, TVA**

# Comments on NAESB Smart Grid Standards Covering Priority Action Plans 03, 04, and 09

## Filed by Tennessee Valley Authority

### Pap 03 – Common Electricity Product and Pricing Definition

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity, System Operator, and others need to match for industry-wide consistency.

Section WEQ-016.3.7 – 3.7.1 – Sections contain terms that are not defined and need to have definitions; such terms include: Operating Authority, Maneuverability, Contingency Reserve-Spinning, and Contingency Reserve-Supplemental.

TVA would like to know if the definition of Facility will work for aggregated Demand Response.

Actors should be consistent with those found in PAP-09.

### Pap 04 – Specifications for Common Scheduling Mechanism for Energy Transactions

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity and Facility need to match for industry-wide consistency.

Section WEQ-016 – Sections contain terms that are defined and need to have definitions; such terms include: Demand Response Programs, Program Administrator, Market Closing, Absolute Interval, Absolute Duration, and Minimum Run Time. In addition, there are several acronyms that have not been defined (SML, IETF, and DER).

Please note that the Program Administrator may not always be the dispatcher.

Do standard definitions for Response Method Aggregation, Resource, Scheduling Entity, and Service Provider exist in other approved standards? If so, we believe these should be changed to reflect those.

What is meant by a Demand Response Event? TVA's definition of a DR event is related to something that is controlled by either the utility or the customer (a planned event). The other two levels TVA deals with are a "steady state" and an automatic demand response state. TVA suggests that sub-definitions for the term Demand Response Event may be appropriate in order to more succinctly define them as either load or market events.

**Comments Submitted by K. York, TVA**

## Pap 09 – Specifications for Wholesale Standard DR Signals

Terms and definitions found within this standard should match NERC/NAESB glossaries approved by the FERC. Definitions such as Load Serving Entity and Facility need to match for industry-wide consistency.

Also, many sections have terms that have not been defined, such as Demand Resource Object, Federal, Awards, System Operator, and Schedules which need to have definitions.

The term Distributed Energy Resources and Inoperability should be defined in the Glossary.

Actors should be consistent with those found in PAP-03.

Does Scheduling Entity represent an Aggregator?

## General Comments:

In general, TVA believes that the Smart Grid effort should use as many existing approved communication protocols and industry standards as possible as a launching pad for the development of future standards. An example would be starting with FERC, NERC, and the nine Regional Reliability Organizations-approved naming conventions as well as existing “common” communication protocols (examples: Distributed Network Protocols and IEC 61850) that can appropriately integrated.

In addition, TVA would like to know if any thought has been given to how traditional transmission products would hamper or help the Smart Grid effort. What kind of transmission constraints would the Smart Grid effort encounter once operational?

Overall, TVA commends NAESB for these recommendations and believes the standards provide a workable framework for producing the granularity needed to integrate Smart Grid efforts into the business model.

# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

**General Comments**

A. The documents being considered do not contain traditional NAESB Business Practice Standards content. Additional work will be necessary the convert these recommendation documents into Business Practice Standards, as it was a working assumption of the Smart Grid Task Force to deliver requirements only.

B. References in these Recommendations to 'Dispatch", "Markets", "Reliability" are made relative to DR and apply to DR resources only, and not Generation resources. NERC's compliance standards for Generation Resources are typically quite detailed, while compliance standards for DR resources are appropriately determined by the respective system operator specific to the DR product or service and the reliability need being addressed.

C. While the recommendations for PAP-03, PAP-04 and PAP-09 posted by NAESB are not business practice standards, they should not be misconstrued as a recommendation to change existing market designs or business rules across ISOs/RTOs; each ISO RTO has its own stakeholder process as the appropriate forum for making rule changes.

D. Although not explicitly stated in the PAP documents, compliance with orders from regulatory agencies, as they apply to DR in ISO/RTOs, is presumed.

E. It is our understanding that the contents of the documents are being presented as recommendations and are intended to be used neither as implementation templates nor for testing of interoperability. Rather, another step will be taken by the Organization for the Advancement of Structured Information Standards (OASIS) to deliver an information model, preferably reconciled with IEC 61970, which then could be implemented and tested.

F. The treatment of the glossary of terms – actors and definitions – is inconsistent across the recommendation documents — within the WEQ as well as the corresponding versions listed under REQ. In one case, the glossary of terms is in the recommendation without the diagram, in another it appears as an appendix, and in a third it appears in both the recommendation section *and* in an appendix. The highlighted wording regarding how the glossary will be incorporated into the WEQ-000 is unclear. The IRC requests that NAESB staff provide a clearer description to explain how the glossary of terms will be integrated into WEQ-000.

G. It is unclear how the data requirements work beginning in Phase 2 will be integrated with these recommendations if they are being passed through the standards approval process separately. This is of particular concern since PAP-03 and PAP09-Retail have partial lists of data requirements in the current recommendations. For consistency, the IRC recommends that all data requirements be removed from the Recommendations for PAPs 03/04/and 09 until the SGTF has completed Phase 2, where the data requirements will be identified for all three PAPs.

**PAP-SPECIFIC RECOMMENDATIONS**

***PAP-03***

1. "The term "wholesalers" in PAP03 should be modified to clarify whether it refers to energy marketers, energy service providers or ISOs and RTOs. Without this clarification, it is unclear to whom the proposed PAP03 standards apply

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

2. The use cases are very short. More elaboration needs to be given to the definitions and the samples should be elevated to fully described, testable use cases.

***PAP-04***

3. The IRC has identified that the following requirement from PAP04 as the only requirement applicable to wholesale markets and recommends that it be incorporated into the PAP09 wholesale document:

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

4. References to the term "wholesalers" in PAP04 do not apply to ISOs and RTOs, therefore, it is the understanding of the IRC that PAP04 would not apply to ISOs and RTOs.
5. The IRC recommends that PAP-04 be moved wholly into the REQ, where it can be applied to end-device and/or human communications without impact to or potential conflict with wholesale market operations.

***PAP-09 Retail***

6. As previously recommended in the IRC's informal comments in November 2009, the administration of DR products and services should be excluded from the scope of the retail use cases. Currently, language states that these processes will not be automated. If this is the case, they should not be included in a document that ultimately will lead to a machine-to-machine communication specification. Additionally, the processes for automating customer registration (as opposed to device enrollment) are likely to be handled in the future by a NAESB working group with a more global (i.e., not DR-centric) perspective. The IRC recommends removing the following sections:
    a. REQ.14.3.2.4.1 Administrate DR Program
    b. REQ.14.3.2.4.1.2 Create DR Program
    c. REQ.14.3.2.4.1.3 Update DR Program
    d. REQ.14.3.2.4.1.4 Remove DR Program
    e. REQ.14.3.2.4.2 Administrate Customer for DR

7. Our members believe that additional descriptions of the business processes are needed. The existing illustrations consist of Use Case Diagrams, which identify the Actors involved and the hierarchy of processes, and Sequence Diagrams, which identify the ordered messages that may

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

be exchanged among the actors during the execution of the business processes. Activity Diagrams would better show the conditional flows and iterations that are common to these business processes and make the testing of use cases easier. Furthermore, alignment with the four governing business processes outlined in Figure 1 of the Wholesale document (page 12) would be extremely helpful. In fact, we would very much like to see integration with the wholesale business process Activity Diagrams, which have wholesale-retail integration points identified for further development by interested parties. IRC members will be made available to support such integration definition efforts should members of the REQ be interested in pursuing this activity in Phase 2.

8. The document defines DR-specific data elements (such as "Minimum Duration"), whereas the Wholesale document reuses generation/supply data elements (such as "Minimum Run Time"). These philosophies should be reconciled. See pp. 33-35, 39, and 40 for examples. As stated in cross-PAP recommendation E, this can be resolved by following the IRC recommendation that all data elements be removed from the current recommendations and submitted at a later date, when the Phase 2 data requirements work is complete.

**PAP-SPECIFIC RECOMMENDATIONS (DETAILED EDITS)**

***Common Introduction Language***

- Replace “United States of America with some overlaps to Canada” with “North America”
- 000-1: Replace “Reliability Authority (RA)” with “Regional Reliability Authority (RRA)”
- 000-2: For Response Method Aggregation, edit as follows: “…interval level consumption, e.g. ~~a site~~ **an RMA** may ~~also~~ be a physical entity ~~that may have~~ **with** its own meter…”

***PAP-03***

- Pg. 6 & Pg. 12: Replace “Demand Reduction” with “Demand Modification”
- Pg. 9: need to reconcile difference among TDSP / UDC / UDO
- Pg. 10: Definition of CPP is incorrect. Recommend the following change: “…at which time electric prices ~~may reflect the costs of electricity at the wholesale level~~ **are administratively adjusted to incentivize customers to actively modify their electricity usage**.”
- Pg. 10: Definition of PTR. Recommend the following change: “An incentive rate in which the utility pays **a rebate to** Customers ~~to~~ **who** reduce**d** demand during peak periods on critical days.”

***PAP-04***

- Pg 9: Replace “reducing” with “modifying”

***PAP-09 Retail***

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

- Pg 15: REQ.14.3.2.3: Use Case Overview - End-to-end business process flow should be consistent with Wholesale DR Signals document
- Pgs 17, 37, 45, 53, 58: Eliminate specific references to wholesale markets
- Pg 17: change "interruption" to "modification" (2x places)
- Pg. 30: Definition for Maximum Duration. Change "The maximum amount of time the asset/resource is capable of ~~delivering power (megawatts)~~ **modifying its electricity usage".**
- Pg 30: the Parent-Resource ID concept needs to be reconciled with the terminology and hierarchical structure of resources used in the wholesale document.
- Pg 31: the Source-Authentication concept needs to be reconciled with the approach to security used in the wholesale document
- Ph 37: revise text as follows "The Bidder may be a Customer bidding with ~~either an energy retailer (e.g., LSE, ESP),~~ a Service Provider ~~(e.g., CSP, DRP),~~ or ~~a power marketer (i.e., wholesale market participant). The Bidder may also be~~ a Service Provider bidding ~~up~~ to a LSE ~~or power marketer.~~ "
- Pg 38: recommend proper use of bids and offers, i.e. bids are to buy and offers are to sell
- Pg 44 & 53: replace "shed" with "modify" (2x place)
- Pg 45: the concept of a "number signifying the reliability of the grid" has no basis in any reliability standards with which the IRC members are acquainted
- Pg 55: replace "de-energize" with "modification"
- Pg 58 – DR Execution – Retail Time Pricing (RTP): Replace this section with the following text: "Provide real-time or dynamic pricing (RTP) to retail customers so that customers can vary their demand based on pricing signals. RTP represents retail electricity rates that vary as a function of time."

***PAP-09 Wholesale***

- Pg. 9 – unresolved reference should be fixed

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**Comments Submitted by E. Skiba, Midwest ISO**

## FORMAL COMMENTS

| | |
|---|---|
| **Quadrant:** | Wholesale Electric Quadrant |
| **Recommendations:** | WEQ 2010 AP Item 6 (a) / REQ Annual Plan Item 9(a); Requirements Specification for Common Electricity Product and Pricing Definition – for NIST PAP03,<br>WEQ 2010 AP Item 6 (b) / REQ Annual Plan Item 9(b); Requirements Specification for Common Scheduling Mechanism for Energy Transactions – for NIST PAP04, and<br>WEQ 2010 AP Item 6 (c); Requirements Specifications for Wholesale Standard DR Signals – for NIST PAP09 |
| **Submitted By:** | Midwest ISO |
| **Date:** | April 14, 2010 |

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General Comments:

- Midwest ISO is concerned with the next steps for the PAPs once they are approved by the Executive Committee and ratified by the membership. The documents in many cases are intended only to provide examples and as such were not intended to be an all inclusive set of standards. In many cases the examples are not consistent with how some entities operate their markets. We will provide more detail as to where there are differences between the Midwest ISO market and the examples. At a minimum the documents should have some statement explaining that the examples included are not to be considered the full set of examples and that some markets may have implementations that are inconsistent with the examples and sample scenarios provided since the examples were not intended to provide an exhaustive set of standards. Without having this type of clarifying language on the examples, samples, etc., these standards may inadvertently dictate how the markets can operate in the future and as well as impact existing market designs.

PAP 3

- Page 10 – Definition for Market Clearing Price for Energy should be inclusive of 5 minutes…it says 15.
- Page 10 – Midwest ISO is concerned that the examples of common tariff rate types may lock entities into having to support all the tariff rate types listed and/or prevent them from creating any new tariff rate types without having the NAESB business practice standards changed.
- Page 14 – The recommendation makes the assumption that wind is dispatachable which is not the case.
- Page 15 – The sample scenario makes an invalid assumption that wind always commands a premium over coal because with rebates it may not be in the Midwest ISO market.
- Page 15 – The sample scenario makes an invalid assumption that Consumers must buy carbon credits, which is not the case in the Midwest ISO market.
- Page 18 – Pricing Attributes…does it include ancillary service prices?
- Page 19 – GMT is used within the Midwest ISO, with an offset.
- Pages 18-19 – Midwest ISO is concerned that the pricing attributes included in the list do not have any explanation as to whether the attributes are required or optional. Additionally, we would expect that this section be driven out during Phase 2. Midwest ISO would recommend this section be removed from the recommendation and be a part of the Phase 2 Recommendation.

**Comments Submitted by E. Skiba, Midwest ISO**

- Pages 20-21 – Midwest ISO is concerned that it does not offer a number of the provision listed in the Product Types and Sub-types. For example, following types/sub-types are not included in the Midwest ISO market: Load Following and Reactive Power Supply From Generation Sources.

PAP 4

- Page 3 – Issue with definition of Facility: reads like elemental node for calculating price instead of a aggregated commercial pricing node
- Page 8 – The intent is table unclear since it is "an incomplete, but representative set of instances."
- Page 16 – Entity Relationship Model – Midwest ISO has concern with the following not being connected: Resource and Facility, Zone and Facility, and Resource and P-node.

PAP 9

- Page 10 – Use Case description – Midwest ISO does not distinguish Energy between Economic and Reliability.
- Page 19 – (Visio diagram) Midwest ISO is concerned whether this is a commitment process or a dispatch process. The Reliability Assessment commitment process will notify demand response of the commitment at the commercial pricing node level. The notification goes to the demand response participant and local balancing authority.
- Page 16 – (Visio diagram)…Can we follow both paths out of the Product decision? It appears that they are exclusive, which is not the case within the Midwest ISO market.
- Page 21 – (Visio diagram)…On this diagram it appears that the processes support sending multiple data streams and does not support the capability for providing a single combined setpoint. Midwest ISO market utilizes a combined setpoint approach. Midwest ISO combines into a single setpoint: energy, spin, etc. into one message, since we run a co-optimized market. Since regulation is added to base (set point) we can have something like 3 products using one message/signal. Would Midwest ISO have to use separate notifications rather than a combined setpoint?
- Page 24 – Since we are the Designated Dispatch Entity and System Operator we have concerns with the feasibility of the Entity Diagram and Business Process. The "green arrows" are defined in or out of the System Operator (SO) swim lane. This could be an issue since Midwest ISO needs to balance its footprint in 4 seconds for ACE, which currently imposes the use of ICCP. There is a general concern with the implementation if we were required to use XML and not able to use Inter-Control Center Communications Protocol (ICCP).

Honeywell

Honeywell Automation and Control Solutions
1985 Douglas Drive
Golden Valley, MN 55422

April 9, 2010

Mr. Jonathan Booe
Smart Grid Task Force
North American Energy Standards Board
801 Travis Street, Suite 1675
Houston, Texas 77002

Dear Mr. Booe,

This letter is offered in response to your March 9, 2010 request for formal comments to the NAESB Smart Grid requirements relating to NIST PAPs 3, 4 and 9.

Honeywell energy management technologies are found in more than 150 million homes, five million buildings, 24 of the top 25 refineries, and nearly 5,000 industrial sites around the world. By applying our expertise in sensing and controls, we are creating energy efficient, more comfortable, safer, more secure, and productive environments for our customers. We stand ready to work together with utilities and customers to build and implement the Smart Grid.

Honeywell sees great value in the NAESB SGTF effort to describe and publish requirements for electricity product definition, pricing, scheduling and demand response signals. This important work is a key driver in the process of developing and deploying the national standards required to implement the Smart Grid.

Honeywell has reviewed your documents and offers minor comments/edits for all the documents that fall into four categories.

1) Representation of all 3 customer domains (Residential, Commercial, and Industrial) should be included and explicitly stated when not applicable to all three.
2) Listings of specific standards setting organizations should not preclude others from participating.
3) The use cases and examples should include, when appropriate, in-premises energy management systems in residential, commercial and industrial customer domains.
4) Grammatical corrections.

We have attached all 3 documents with tracked changes to indicate recommended specific edits.

We look forward to utilizing these use cases/requirements to continue our dialog with NAESB and other standards setting organizations.

Sincerely,

Steve Gabel
Principal Development Engineer
Honeywell ACS Laboratories
steve.gabel@honeywell.com
763-954-6512

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## 1. RECOMMENDED ACTION:

| | |
|---|---|
| X | Accept as requested |
| | Accept as modified below |
| | Decline |

## EFFECT OF EC VOTE TO ACCEPT RECOMMENDED ACTION:

| | |
|---|---|
| X | Change to Existing Practice |
| | Status Quo |

## 2. TYPE OF DEVELOPMENT/MAINTENANCE

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

## 3. RECOMMENDATION

**SUMMARY:**

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

**RECOMMENDED STANDARDS:**

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

| | |
|---|---|
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# New Model Business Practices REQ.14 – Smart Grid Activities

## RECOMMENDED STANDARDS:

### Executive Summary

### Specifications for Retail Standard Demand Response Signals

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

According to the Framework Document findings:

1. DR signals standardization must support all four market types; i.e. regions with a) no open wholesale and no retail competition, b) open wholesale market only, c) open retail competition only, d) open wholesale and open retail competition. It must also consider key differences that exist and will continue to exist in all four market types.
2. Wholesale market DR and pricing signals have different characteristics than retail market DR and pricing signals, although commonality in format is feasible.
3. Most Customers (with a few exception of Commercial and Industrial (C&I) Customers) will not interact directly with wholesale market when it comes to DR and pricing signals.
4. Retail pricing models are complex, due to the numerous tariff rate structures that exist in both regulated and un-regulated markets. Attempts to standardize DR control and pricing signals must not hinder regulatory changes or market innovations when it comes to future tariff or pricing models.
5. New business entities (Energy Service Providers (ESP), Demand Response Providers (DRP), Service Providers, and Energy Information Service Providers (ESIP)) as well as new customer energy management systems will play an increasing role in DR implementation.
6. DER may play an increasingly important role in DR, yet the development of tariff and/or pricing models that support DER's role in DR is still in its infancy.
7. The Customer's perspective and ability to react to DR control and pricing signals must be a key driver during the development of DR standards.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

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

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

## Introduction

## Specifications for Retail Standard Demand Response Signals

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

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

**Assumptions**: The following and its content have been developed with the consideration of the following key assumptions:

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

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

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

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

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

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New REQ.14.2.B Technical Abbreviations/Acronyms and Defined Terms to be added to REQ.14 are included below for reference *(previously added in Recommendation 2010 WEQ Annual Plan Item 6(b) / 2010 Retail Annual Plan Item 9(b))*

**REQ.14.2.B Technical Definitions**

**Abbreviations and Acronyms**

| Abbreviation / Acronym | Meaning |
|---|---|
| DDE | Designated Dispatch Entity |
| EA | Environmental Authority |
| ED | End Device' |
| EMS | Energy Management System |
| FR | Federal Regulator |
| LA | Local Authority |
| LSE | Load Serving Entity |
| MA | Metering Authority |
| MP | Market Participant |
| RA | Reliability Authority |
| RM | Response Method |
| RMA | Response Method Aggregation |
| SE | Scheduling Entity |
| SO | System Operator |
| SP | Service Provider |
| SR | State Regulator |
| TDSP | Transmission/Distribution Service Provider |
| UC | Utility Customer |
| UDO | Utility Distribution Operator |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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**REQ.14.2.1t** **Business Entity**: The wholesale or retail entity that interacts with other entities in its market.

**REQ.14.2.2t** **Communication Method**: The method by which an object communicates with another object to instruct, measure or control.

**REQ.14.2.3t** **Control**: The role associated with the control of an End Device.

**REQ.14.2.4t** **Demand Response Objects**: Physical and logical types of demand response resource objects.

**REQ.14.2.5t** **Designated Dispatch Entity**: A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information.

**REQ.14.2.6t** **End Device**: A physical end-use device that consumes or supplies electricity.

**REQ.14.2.7t** **Environmental Authority**: A regulatory authority responsible for the development, reporting and enforcement of environmental activities.

**REQ.14.2.8t** **Facility**: The location at which connection to the transmission or distribution system is made.

**REQ.14.2.9t** **Federal Regulator**: A Federal regulatory authority.

**REQ.14.2.10t** **Load Serving Entity**: A role which carries the responsibility of serving end-users and selling electric energy to end-users.

**REQ.14.2.11t** **Local Authority**: A regulatory authority responsible for the oversight and administration of utility service-related functions within its jurisdiction.

**REQ.14.2.12t** **Market Enrollment**: The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service.

**REQ.14.2.13t** **Market Participant**: An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's market rules.

**REQ.14.2.14t** **Measurement**: The role associated with the device or algorithm that measures the consumption or supply of an End Device.

**REQ.14.2.15t** **Metering Authority**: A role which carries the responsibility of providing data necessary to determine the performance of a Resource.

**REQ.14.2.16t** **P-Node**: The price location of the Facility in the transmission and/or distribution network.

**REQ.14.2.17t** **Participant**: The entity that represents resources to a market or distribution operator.

**REQ.14.2.18t** **Regulator:** A rule-making and enforcement entity.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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**REQ.14.2.19t** **Reliability Authority:** A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related activities.

**REQ.14.2.20t** **Response Method:** A measurable action taken in response to an instruction to change consumption.

**REQ.14.2.21t** **Response Method Aggregation:** A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers.

**REQ.14.2.22t** **Resource:** A market-dependent group of Response Method Aggregations that represents a dispatchable entity.

**REQ.14.2.23t** **Scheduling Entity:** A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards.

**REQ.14.2.24t** **Service Provider:** A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator.

**REQ.14.2.25t** **State Regulator:** A regulatory authority responsible for the oversight and administration of electric utilities.

**REQ.14.2.26t** **Support Operator:** Objects that support the interaction of Business Entities and Demand Response Objects.

**REQ.14.2.27t** **System Operator:** An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation.

**REQ.14.2.28t** **Transmission/Distribution Service Provider:** A role which carries the responsibility of operating a local electricity transmission and/or distribution system.

**REQ.14.2.29t** **Utility Customer:** An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource.

**REQ.14.2.30t** **Utility Distribution Operator:** An entity which carries the responsibility of operating an electricity distribution system.

**REQ.14.2.31t** **Zone:** A physical or electrical region.

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## Model Business Practices

### REQ.14.3.2 Specifications for Retail Standard Demand Response Signals

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

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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| # | Name | Description | Rationale | Implication |
|---|---|---|---|---|
| 3 | Platform Independence, Vendor Neutral | Requirements and design artifacts shall be platform independent. Implementation technology shall be chosen due to its level of acceptance at the marketplace as open standards. | There is an expectation of differentiation and innovation in the marketplace. With greater dependence on a specific platform, there may be less architectural flexibility. | To achieve both technical and semantic interoperability, certain lower level technologies will need to be chosen. For example, Web Services technology is widely used for integration, and UML is widely used for modeling. |
| 4 | Cyber Secure | Architecture must incorporate latest secure computing techniques. | The integrity of the electric grid and market depend on preventing unauthorized actors from manipulating the DR and DER system. | Architecture must comply with the latest security guidance from the NIST SGIP Architecture Committee and CyberSecurity Task Group, when it comes to Web Services security related implementation. |
| 5 | Interoperability | DR signaling standards should utilize open, interoperable industry standard control and communication technologies to integrate with both common energy management and control systems that can conduct DR activities | Interoperability across different domains of Smart Grid is key to the success of DR signaling standards as it ensures level playing field for innovative solutions for all participants of the Smart Grid. | DR signaling standards must be developed in harmonization with others relevant standards as identified by the NIST SGIP. |
| 6 | Automatic Demand Response | The DR program (analysis, notification, event, action, monitoring, verification, settlement) should be automatic. DR signaling standards should provide secure, reliable communications with consumers for DR operations | Automation is the only way to ensure large scale and repeatable demand response implementation. | Security, reliability and testability must be ensured for DR automation. |

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| # | Name | Description | Rationale | Implication |
|---|---|---|---|---|
| 7 | Cover All Market Types | DR signaling standards should be supported and implementable in all four market types listed in this document | Standards development shall not get in the way of regulatory policy decisions. | DR signals design need to support a wide range of programs and tariff/pricing structures. |

**REQ.14.3.2.1** ACTORS

The following actor roles and actors are defined and used across NAESB documents related to NIST PAP03, 04 and 09 (Wholesale and Retail).

**Actor Roles**

| Term | Acronym | Definition |
|---|---|---|
| Service Provider | SP | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| Designated Dispatch Entity | DDE | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information. |
| Load Serving Entity | LSE | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Metering Authority | MA | A role which carries the responsibility of providing data necessary to determine the performance of a ***Resource.*** |
| Scheduling Entity | SE | A role which carries the responsibility of submitting bids/offers and receives ***Schedules*** and ***Awards***. |
| System Operator | SO | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Transmission/Distribution Service Provider | TDSP | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |

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## Actors List

| **Regulator** | A rule-making and enforcement entity. |
|---|---|
| Federal Regulator (FR) | A Federal regulatory authority. |
| Reliability Authority (RA) | A regulatory authority responsible for the development, reporting and enforcement of electric reliability-related |
| Environmental Authority (EA) | A regulatory authority responsible for the development, reporting and enforcement of environmental activities. |
| State Regulator (SR) | A regulatory authority responsible for the oversight and administration of electric utilities. |
| Local Authority (LA) | A regulatory authority responsible for the administration of utility service-related functions within its jurisdiction. |

| **Business Entity** | The wholesale or retail entity that interacts with other entities in its market. |
|---|---|
| System Operator (SO) | An entity which carries the responsibility of administering the demand response process, from Resource enrollment to performance evaluation. |
| Market Participant (MP) | An organization registered with the System Operator that may take on roles such as SP, LSE, TDSP, DDE, SE, and/or MA in accordance with the System Operator's |
| Utility Distribution Operator (UDO) | An entity which carries the responsibility of operating an electricity distribution system. |
| Utility Customer (UC) | An end-use customer of the Utility Distribution Operator that takes on roles such as Facility or Resource. |

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| **Participant Role** | The entity that represents resources to a market or distribution operator. |
|---|---|
| Service Provider (SP) | A role which carries the responsibility of coordinating resources to deliver electricity products and services to a market or distribution operator. |
| Load Serving Entity (LSE) | A role which carries the responsibility of serving end-users and selling electric energy to end-users. |
| Scheduling Entity (SE) | A role which carries the responsibility of submitting bids/offers and receives Schedules and Awards. |
| Designated Dispatch Entity (DDE) | A role which carries the responsibility of receiving and processing demand resource dispatch instructions or market information and (optionally) providing response information |
| Transmission/Distribution Service Provider (TDSP) | A role which carries the responsibility of operating a local electricity transmission and/or distribution system. |
| Metering Authority (MA) | A role which carries the responsibility of providing electric usage data necessary to determine the performance of a Resource. |

| **Resource Objects** | Physical and logical types of resource-related objects. |
|---|---|
| Resource | A group of Response Method Aggregations that represents a dispatchable entity. ***Also referred to as DR Resource in this document.*** |
| Response Method Aggregation (RMA) | A logical entity that has a reportable interval level consumption, e.g. a site may also be a physical entity that may have its own meter, a neighborhood of homes that has a net meter, or an estimate of consumption of an aggregation of retail customers. ***Also referred to as DR Asset in this document.*** |
| Facility | The location at which connection to the transmission or distribution system is made. |

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| **Resource Objects** | Physical and logical types of resource-related objects. |
|---|---|
| Response Method (RM) | A measurable action taken in response to an instruction to change consumption. |
| End Device (ED) | A physical end-use device that consumes or supplies electricity. |

| **Supporting Objects** | Objects that support the interaction of Business Entities and Resource Objects |
|---|---|
| Measurement | The role associated with the device or algorithm that measures the consumption or supply of an End Device. |
| Control | The role associated with the control of an End Device. |
| Market Enrollment | The collection of enrollment or tariff data for a Demand Resource Object to provide a specific market product or service. |
| Zone | A physical or electrical region. |
| Communication Method | The method by which an object communicates with another object to instruct, measure or control. |
| P-Node | The price location of the Facility in the transmission and/or distribution network. |

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## REQ.14.3.2.2 Conventions

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

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

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

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## REQ.14.3.2.3 Use Case Overview

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

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

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

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

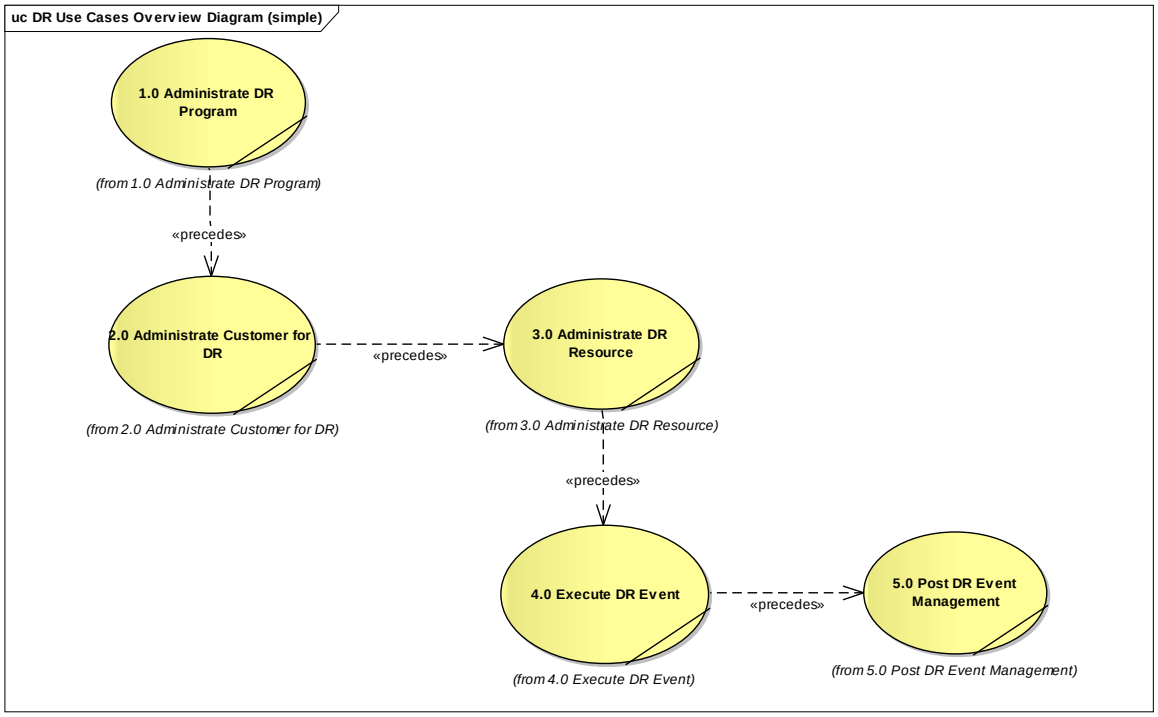


**Figure 1. Retail Market DR Use Case Overview**

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## REQ.14.3.2.4 Specific Use Cases

### REQ.14.3.2.4.1 Administrate DR Program

Typically DR programs are created for specific business needs of demand side management. However, it is not required to affect demand behavior. It is also likely that DR programs will evolve over time. Figure 2 shows the actors and use cases involved in administrating DR programs. Following are the three main use cases concerning the creation, update and removal of DR programs. It is unlikely that this step of the DR management will be automated.

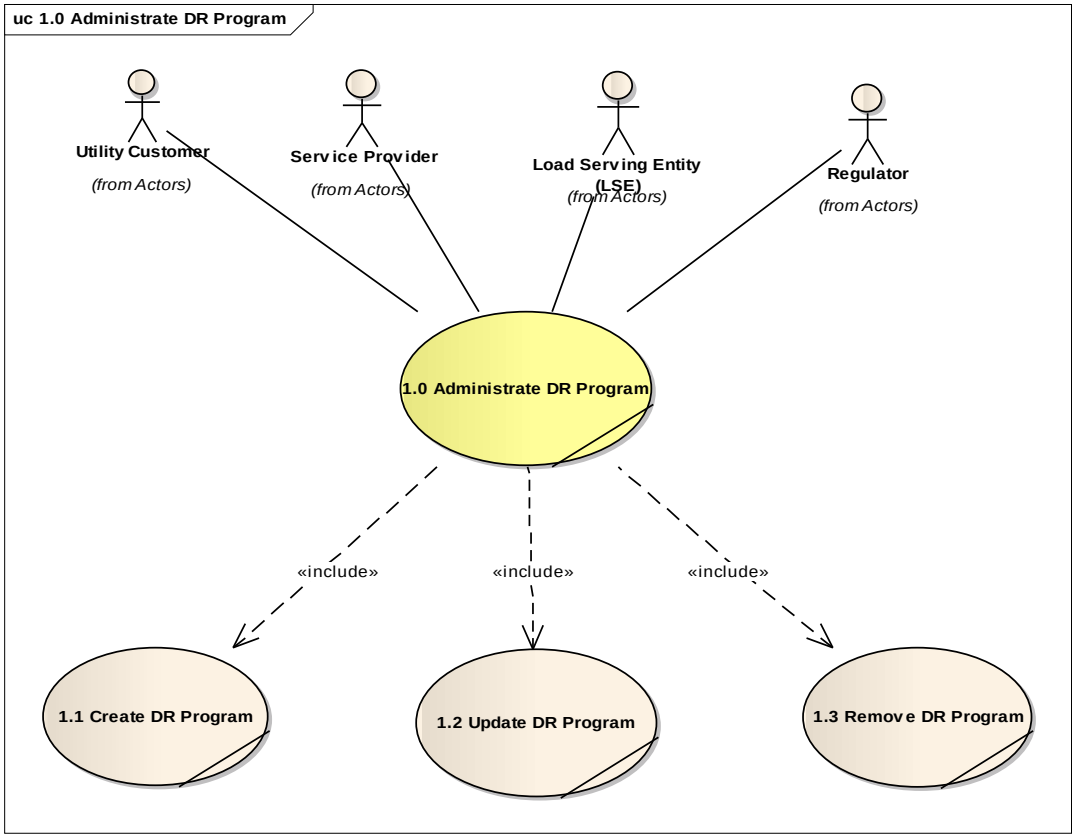


**Figure 2. Administrate DR Program**

### REQ.14.3.2.4.1.2 Create DR Program

#### Description

A DR program is created to meet one of two, or both, situations. A DR program is created to meet a reliability need, i.e., a projected insufficient energy supply, and/or for economic purposes, i.e., when market prices are peaking.

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A properly designed DR program will have a clearly stated goal or objective, Program Administrator, activation and operational protocols, and responsibilities and obligations. The items that should be considered include, but are not limited to:

- The type and size of the target Customer;
- The type of program to be implemented, e.g., Direct Load Control, Firm Service Level, Guaranteed Load Drop, etc.;
- The type and level of granularity of metering and telemetry to be used/required;
- Any regulatory requirements;
- Method of communication;
- Activation protocol;
- Marketing and Sales activities;
- Customer Education activities;
- Duration;
- Delivery Period;
- LSE/UDO Compensation;
- Data Exchange Protocols;
- Customer Authorization;
- Third Party Participation;
- Registration / Enrollment Process;
- Approval Process;
- Baseline Calculations;
- Settlement Process;
- Payment Process;
- DR Resource enablement, including incentives;
- DR Resource deployment process;
- M&V Methodology;
- Contractual Agreements;
- Dispute Resolution Process;
- Phase-in or Roll-out Plan;
- Product type offering to the ISO/RTO; energy only, ancillary service (regulation up/down, spinning/non-spinning, etc.);
- If offering to ISO/RTO, specific metering/telemetry or other requirements needed to actively participate ;
- Address multiple participation in other DR programs (retail and wholesale);
- Include/Exclude full/partial co-generation system, back-up generation, DER, etc…;
- UDO verifying DR resource physical electric grid location.

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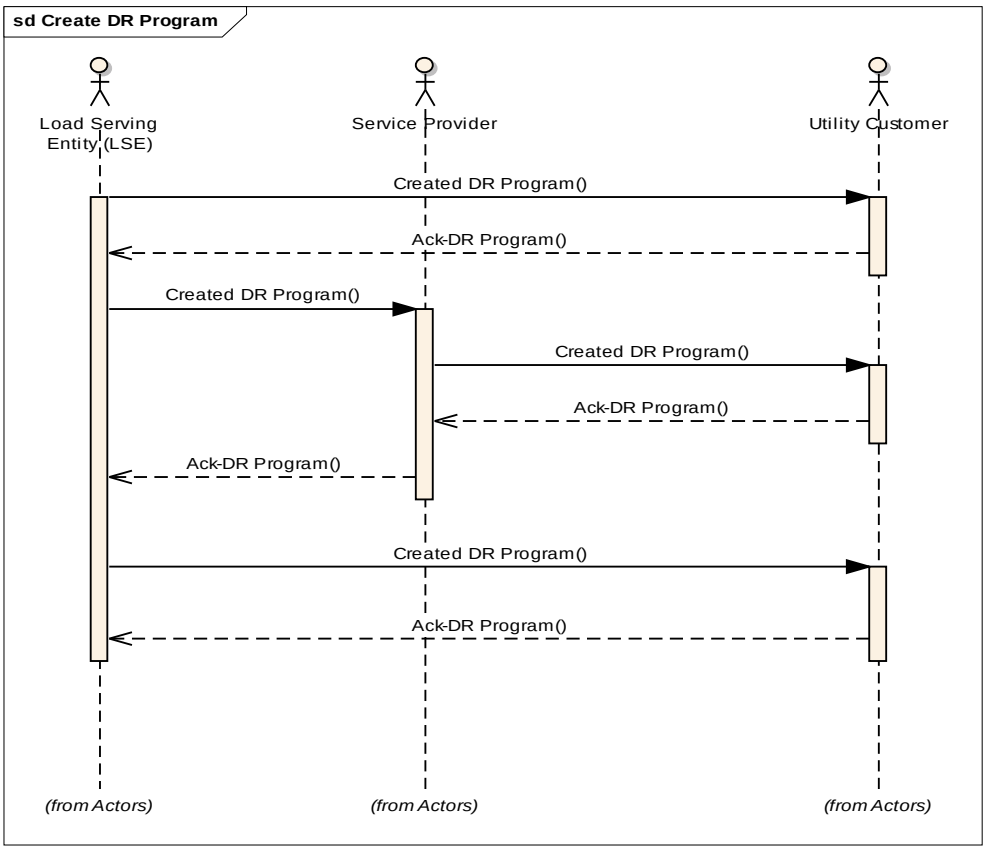
Once the DR program is developed, it should be certified prior to its implementation. Such testing may be accomplished through a pilot program. The results of the test/pilot should then be compared against the goal/objective of the program and any needed modifications made. Upon satisfactory results, the DR program should be filed with and approved by the Applicable Regulatory Authority, if any. Depending on which Entity is creating the DR program, it must also be submitted to and approved by the System Operator. Finally, the DR program must be implemented. Upon activation of a DR program, an observable demand reduction should occur.

## Sequence Diagram

The following DR Program interaction assumes the initial steps of regulatory process are completed for the approval of a DR program. This shows the potential automation of the creation of DR programs from systems perspective.



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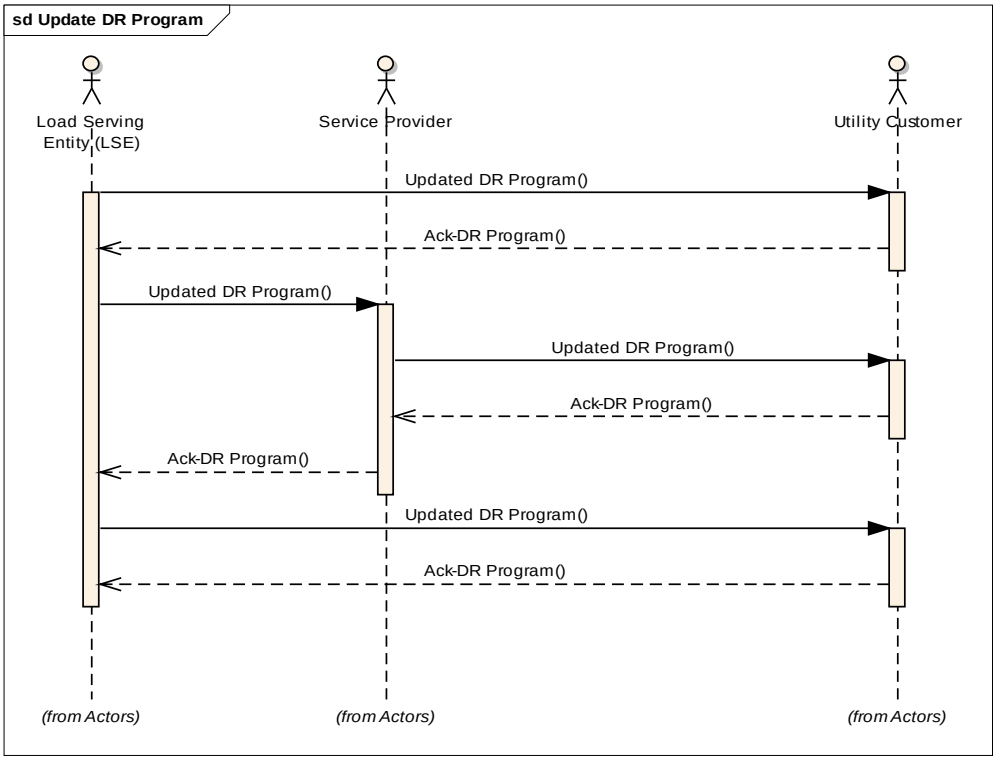
## REQ.14.3.2.4.1.3 Update DR Program

Once a DR program is initiated, changes in various elements of the program may be required or desired. After identifying the specific modification required, each of the considerations identified in the "Create" step should be investigated to insure that no unintended impacts occur as a result of the modification. If such unintended impacts occur, further investigation of the modification is required prior to implementation.

A regulated Entity must then present the modifications to the Applicable Regulatory Authority for approval and, then to the System Operator for approval. Once approved, the modifications must be communicated to Customers.

### Sequence Diagram



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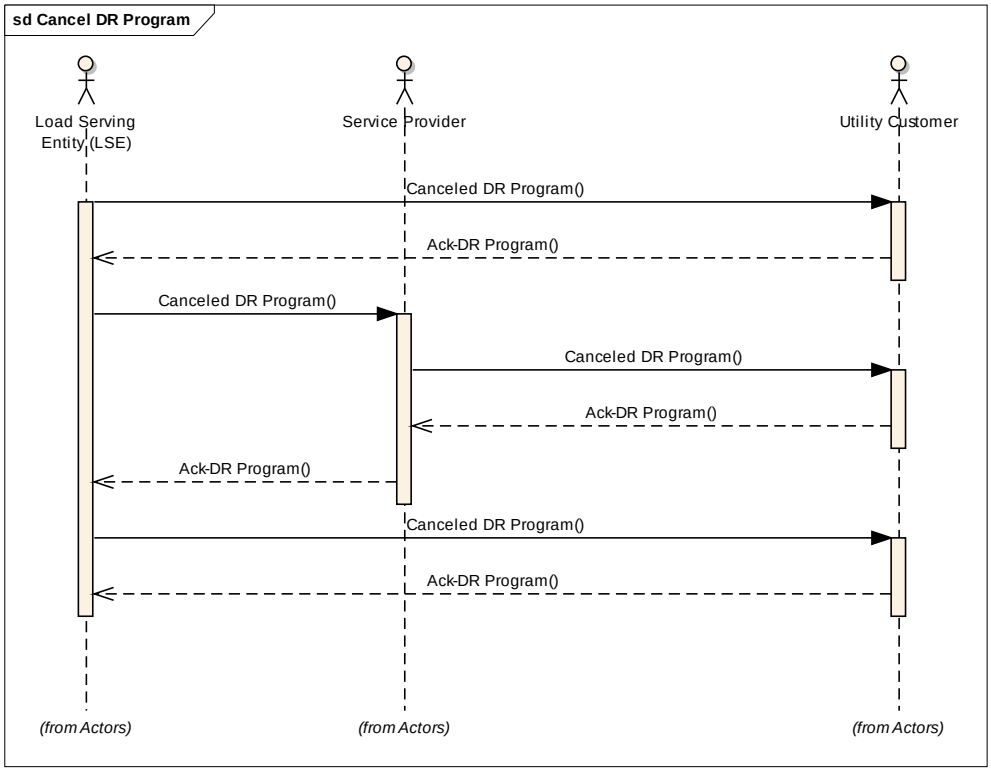
## REQ.14.3.2.4.1.4 Remove DR Program

Termination of a DR program must take into account any DR resource long term commitments in System Operator programs and contractual obligations with Service Provider (Service Providers, Energy Service Provider) or Load Serving Entities. In addition, State and or Federal regulatory agency filings and approvals must be considered prior to terminating a DR program. Termination of a DR program may involve the removal of DR infrastructure, such as Direct Load Control Devices and advanced metering and pulse devices used in the Measurement and Verification of the program. All outstanding payments to the DR resources should be completed prior to the termination of the DR program.

### Sequence Diagram



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## REQ.14.3.2.4.2 Administrate Customer for DR

Once the DR programs are established, there will be campaigns from Service Provider to get customers enrolled into the programs. Figure 3 shows the actors and use cases involved in administrating customers into DR programs. Following are the three main use cases concerning the creation, update and removal of customers for a DR program. Enrollment may affect how a customer is compensated for demand responses. It is unlikely that this step of the DR management will be automated.

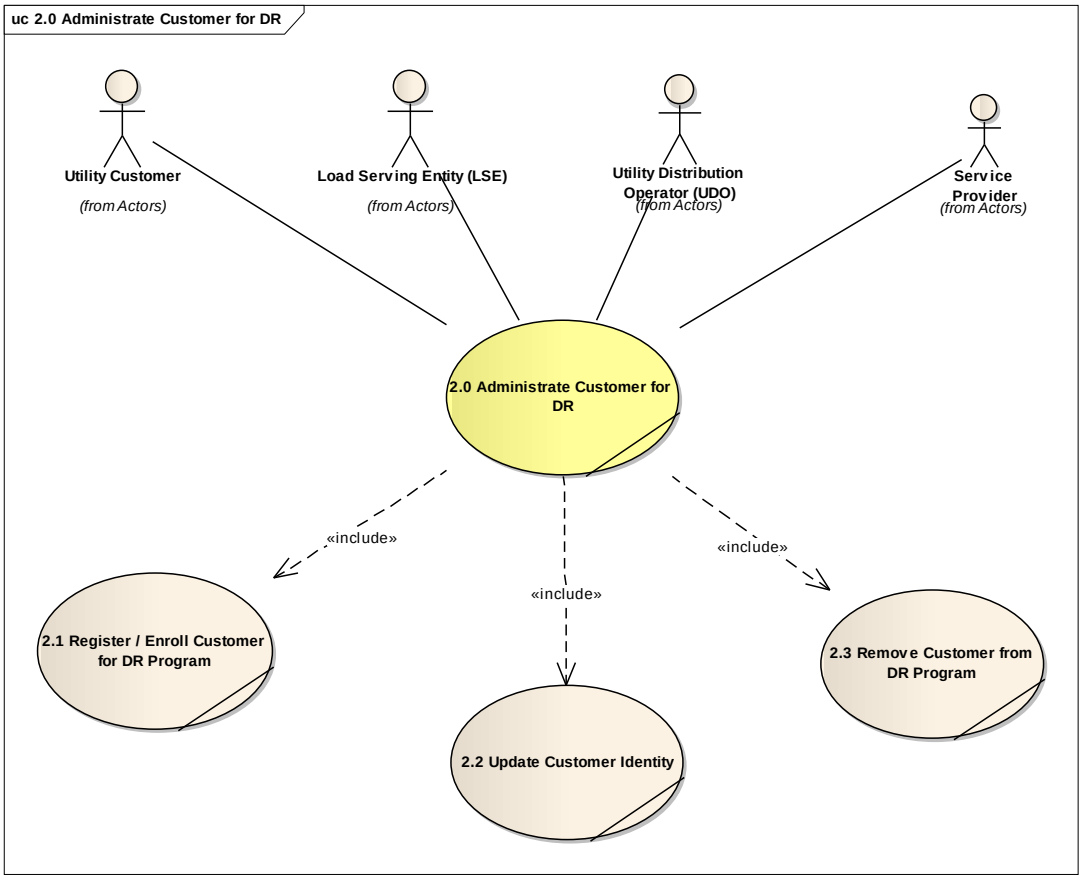


**Figure 3. Administrate Customer for DR**

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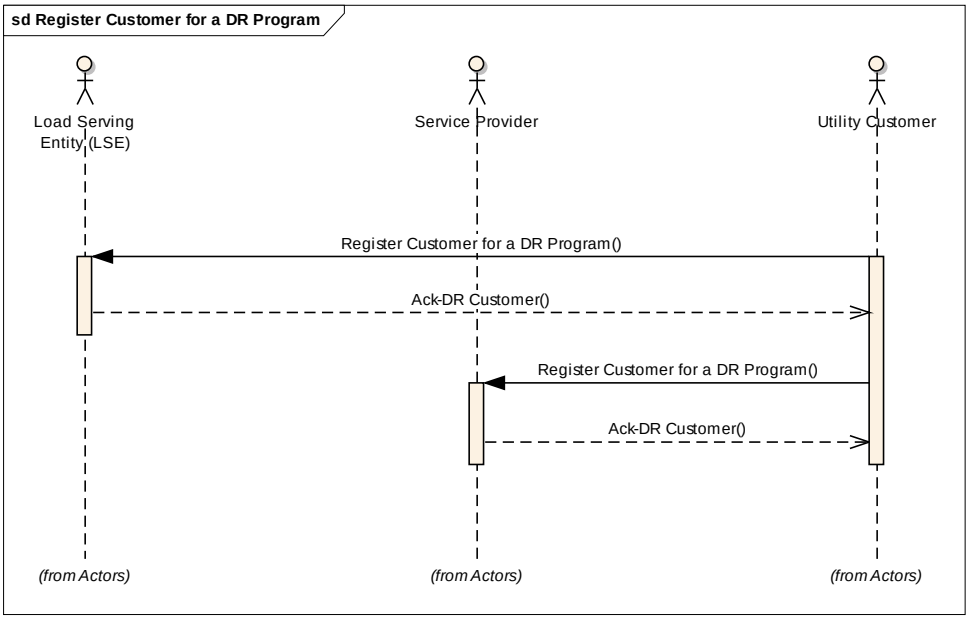
## REQ.14.3.2.4.2.1 Register / Enroll Customer for DR Program

### Description

The registration/enrollment process must capture the key identifiers in order to enable accurate accounting and classification of DR resources, as well as to ensure customer understanding of the type and specific requirements of demand response service they are providing. A registration process to track registrations of System Operators or facilitating agencies and the movement of DR resources from one Service Provider to another as may occur from time to time is necessary. Internet-based applications for the registration/enrollment process are ideal for this type of program administration. There may be different applications for various service types and customer types.

### Sequence Diagram



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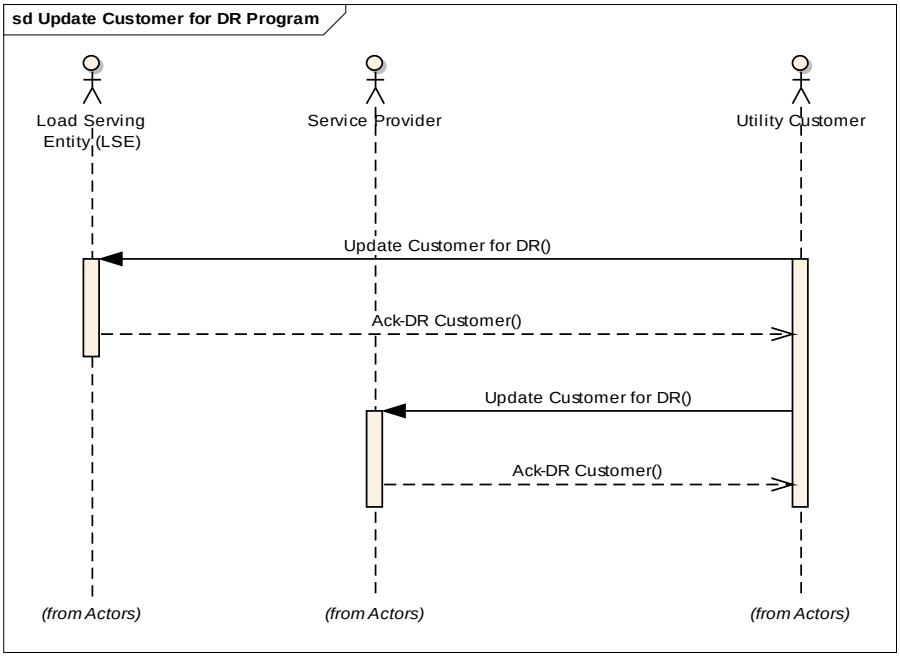
## REQ.14.3.2.4.2.2 Update Customer Identity

### Description

Once a DR registration is completed, changes in various elements of the registration may be required or desired. After identifying the specific modification required, each of the considerations identified in the register/enroll step should be investigated to ensure that it is accurate and complete.

All parties (Utility, Aggregators, Energy Consultants, DR resources, Regulatory Agencies) affected by the update should be given reasonable time to review, dispute, and approve/disapprove the update(s).

### Sequence Diagram



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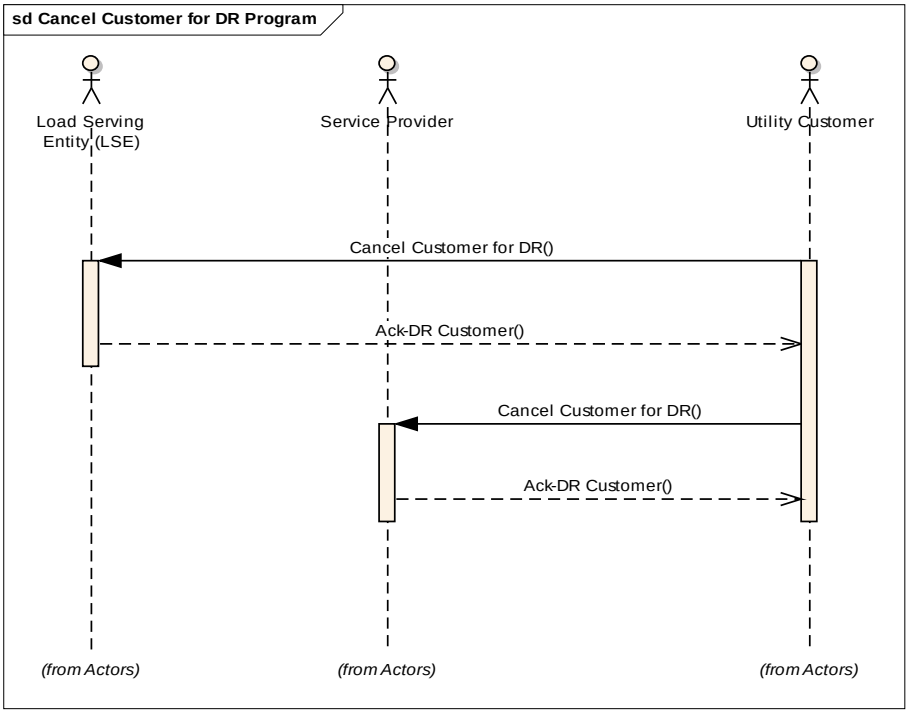
## REQ.14.3.2.4.2.3 Remove Customer from DR Program

### Description

Removing a Customer Entity from a DR Program enrollment must take into account any DR resource long term commitments in System Operator programs, and contractual obligations with Service Provider or Load Serving Entities. In addition, State and/or Federal regulatory agency filings and approvals must be considered prior to removing a customer enrollment from a DR program.

### Sequence Diagram



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## REQ.14.3.2.4.3 Administrate DR Resource

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

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

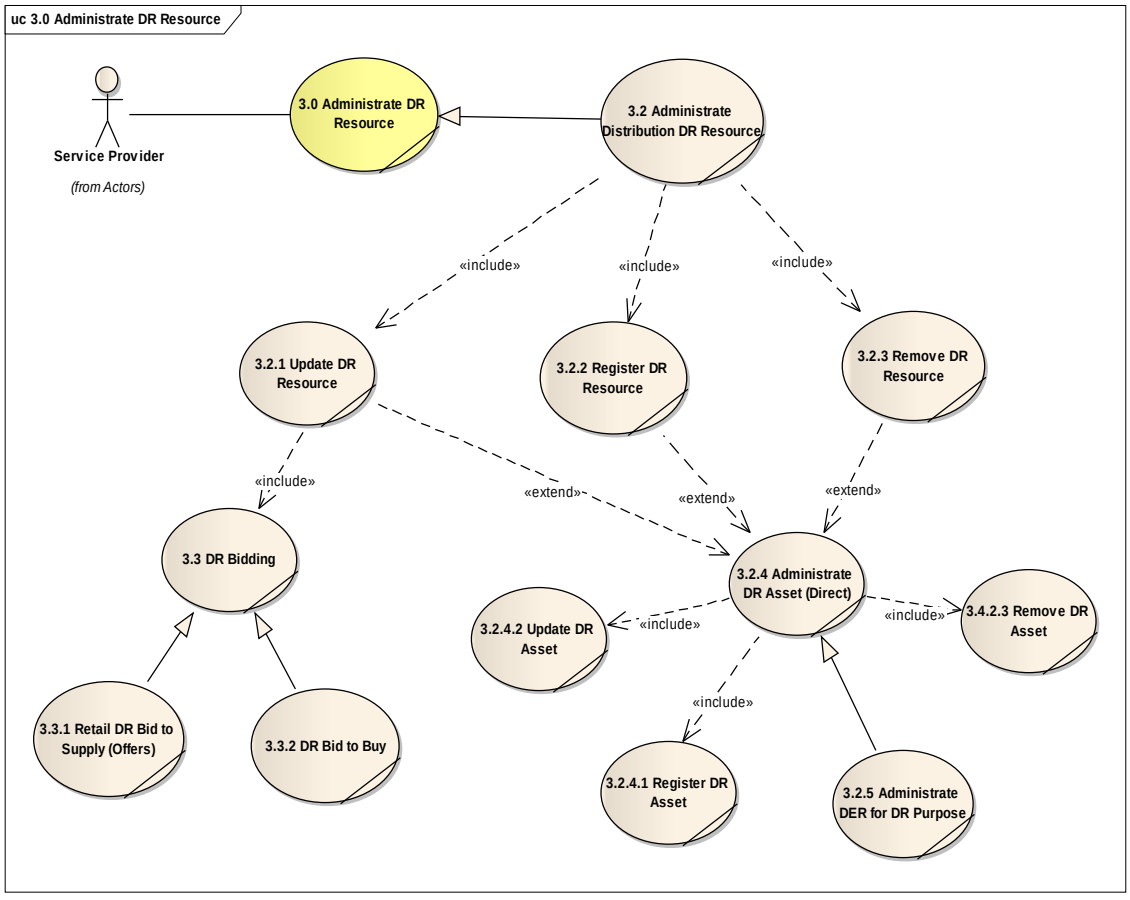


**Figure 4. Administrate DR Resources and/or Assets into DR Programs**

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### REQ.14.3.2.4.3.1 Administrate Distribution DR Resource

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

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

### REQ.14.3.2.4.3.2 Update DR Resource

#### Description

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

#### Data Requirements

| Attribute Name | Description |
|---|---|
| Asset-ID | This uniquely identifies a DR Asset |
| DR Resource Operational Constraints | These are constraints that define the amount load that can be made available during a DR event, including the following:<br>• Minimum load<br>• Maximum load. |
| DR Resource Bid | This is a bid from the DR Resource. See the DR Bidding use case for a description of the information requirements. |

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| Attribute Name | Description |
|---|---|
| DR Resource Schedule Constraints | These are a set of constraints that specify when the DR Resource will be available. It may contain such information as:<br>• Time of day schedule constraints<br>• Black out dates<br>• Maximum consecutive days of participation<br>• Maximum duration of DR event participation<br>• Minimum duration of DR event participation<br>• Max number of times per day the DR Resource may be called<br>• Minimum advanced notification necessary.<br>Provide details if DR asset or DR resource is in any other DR programs (wholesale and retail) |
| DR Resource Identifier | This identifies the DR Resource. |
| DR Resource Qualification | This shows the qualification of a DR resource for certain type(s) of DR programs |
| Effective-Start-Date | The date and time when the declared capabilities will be in effect. |
| Hourly-Capacity-Availability | The amount of capacity available for interruption by hour for the period defined by the effective start/end date, expressed in kW or MW with appropriate precision. |
| Message-Exchange-Pattern | The means by which price information is communicated to any party that is interested in this information. The following are valid options:<br>• In-Only<br>• Robust In-Only<br>• In-Out.<br>Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions. |
| Monthly-Capacity-Availability | The average capacity available for interruption by month for the period defined by the effective start/end date, expressed in Megawatts with appropriate precision. |

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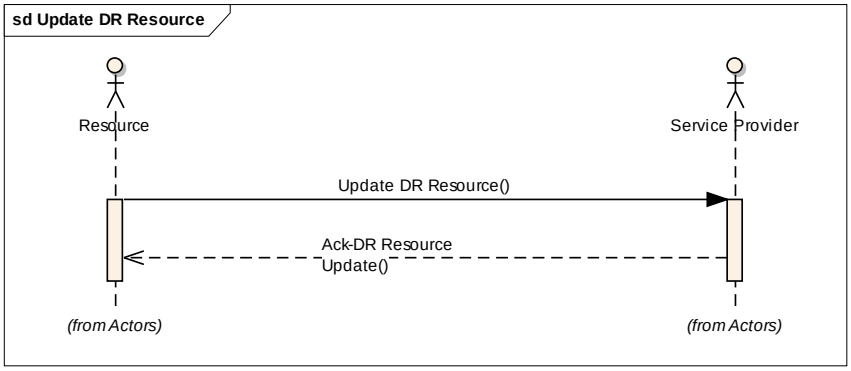
| Attribute Name | Description |
|---|---|
| Source-Authentication | The recipient must have some assurance that the message was produced by a reliable, authoritative party. This requires some ability to validate the authenticity of the source and integrity of the data (e.g., digital signature applied to a price message). |
| Temporary Opt-Out | This is used to temporarily opt out of DR Events and to override the normal operational constraints. The opt-out can be specified using the following criteria:<br>• All events in a program indefinitely<br>• Specific DR Event<br>• All events in a specific time period.<br>• Other triggered programs for which an asset or DR resource is already called upon (reduce double counting of available capacity) |

**Sequence Diagram**




### REQ.14.3.2.4.3.3 Register DR Resource

**Description**

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## Data Requirements

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

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| Attribute Name | Description |
|---|---|
| Location | An identifier to indicate the location of the asset/resource. |
| Location-type | A value used to interpret the value contained in the Location element. Examples of Location-type include:<br>• Zone<br>• Node<br>• Zip-code. |
| Maximum-Duration | The maximum amount of time the asset/resource is capable of delivering power (megawatts), this may be expressed in hours using decimal notation. For example, a value of 0.5 indicates a maximum duration of 30 minutes which the asset/resource can reduce power consumption by the level indicated in Available Capacity. |
| Message-Exchange-Pattern | The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options:<br>• In-Only<br>• Robust In-Only<br>• In-Out.<br>Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions. |
| Minimum-Duration | The minimum amount of time that an Asset/Resource Owner is willing to allow the resource/asset to be utilized during a DR event. It may be expressed in decimal format representing hours. For example, a value of 1.5 indicates that an asset/resource must be utilized for no less than one hour and 30 minutes during any DR event. |
| Parent-Resource ID | This is used by an Asset to indicate that it "belongs to" a particular Resource. Assets may be aggregated into a Resource, but are not required to be so aggregated. Resources are autonomous and may not be aggregated. |

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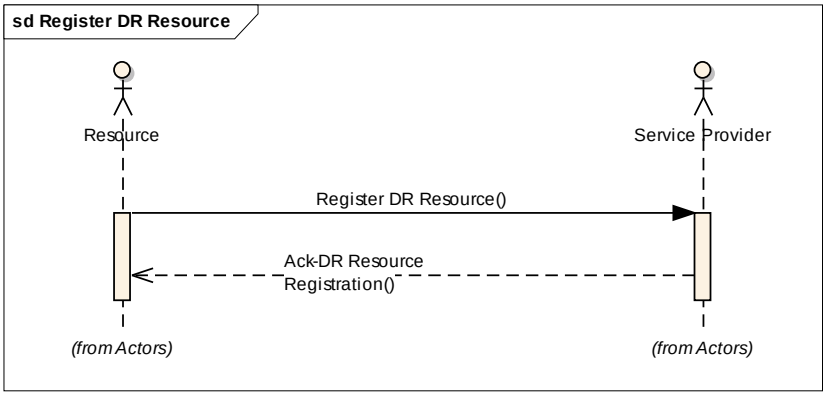
| Attribute Name | Description |
|---|---|
| Report-type | This indicates the type of report being issued by the Asset or Resource Owner. This is an enumerated value containing one of the following:<br>• REGISTRATION (to register a new asset/resource)<br>• CHANGE (refers to permanent changes)<br>• RETIREMENT.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

## Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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**Request Title:** Requirements Specifications for Retail Standard DR Signals - for NIST PAP09

#### REQ.14.3.2.4.3.4 Remove DR Resource

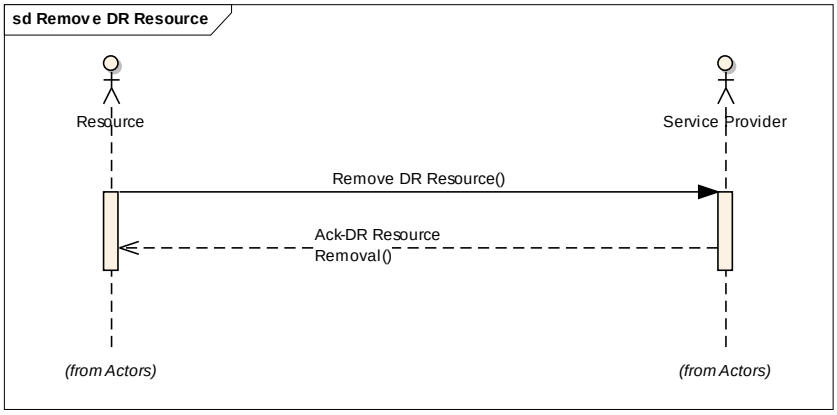
**Description**

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

**Data Requirements**

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

**Sequence Diagram**




### REQ.14.3.2.4.4 Administrate DR Asset (Direct)

#### REQ.14.3.2.4.4.1 Register DR Asset

**Description**

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## Data Requirements

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

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## Sequence Diagram

### REQ.14.3.2.4.4.2 Update DR Asset

#### Description

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

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

#### Data Requirements

| Attribute Name | Description |
|---|---|
| Asset Operator | The business entity that operates the DR assets |
| Asset Owner | The business entity that owns the DR assets |
| Asset Physical Location | The location of where the DR assets reside |
| Authorized Asset Servicers | The authorized service providers of the operation and maintenance of DR assets |
| Date of Registration and Last Update | Date of which the DR Assets registered for DR purpose. |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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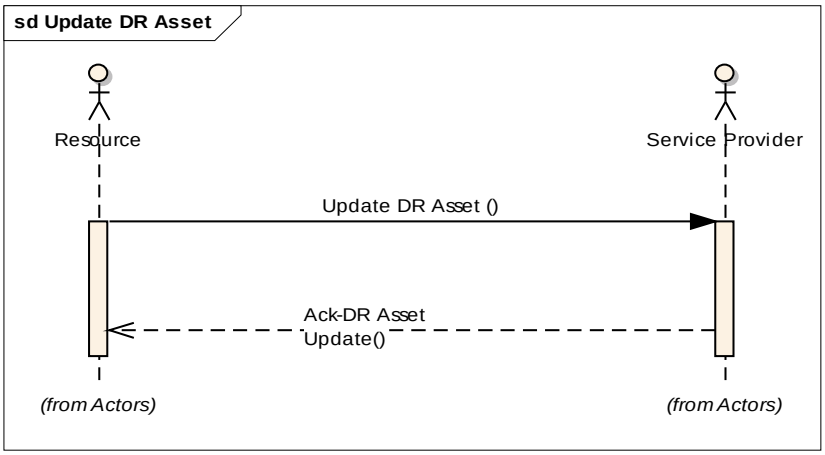
**Request No.: 2010 Retail Annual Plan Item 9(c)**
**Request Title: Requirements Specifications for Retail Standard DR Signals - for NIST PAP09**

| Attribute Name | Description |
|---|---|
| DR Asset Administrator | • System and Operator<br>• Distribution Utility<br>• Load Serving Entity<br>• Service Providers |
| DR Asset Availability and Status | Run Status, Set point, Override status, etc. |
| DR Asset Identifier | The unique identifier and name of the DR Assets. |
| DR Asset Physical Capabilities | Ramp Up/Down Rate, Maximum Capacity |
| DR Asset Product | Manufacturer, Model, Version, Date of Manufacturer |
| DR Asset Type | (DG, renewable, storage, curtailable or interruptible load) |
| DR Resources | The identifier of DR resources that the DR Assets belong to |
| State of Registration Process | The state/status of the registration process of the DR assets. |

## Sequence Diagram



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## REQ.14.3.2.4.4.3 Remove DR Asset

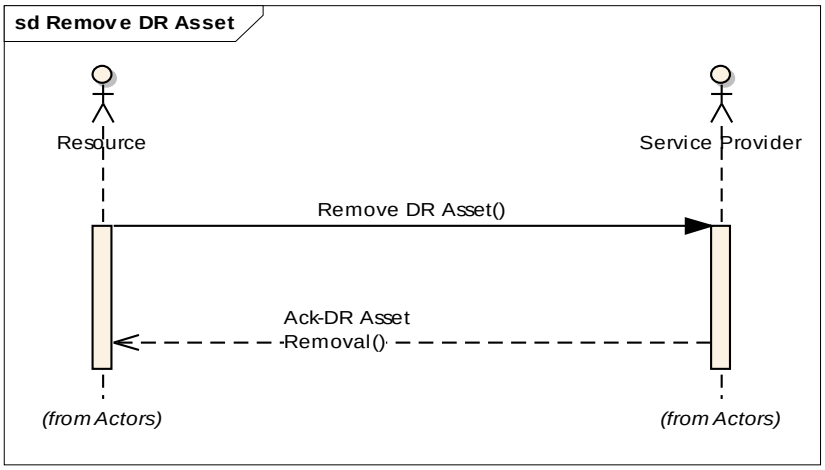
### Description

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

### Data Requirements

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

### Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.5 DR Bidding

### Description

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

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

Examples of retail DR Bidding programs include:

- Demand Bidding
- Capacity Bidding

Examples of types of ISO/RTO products that may be (or become) eligible for DR bidding include:

- Installed Capacity;
- Day-ahead Energy;
- Real-time Imbalance Energy;
- Ancillary Service Operating Reserve;
- Regulation

The above are wholesale products that retail DR capabilities may be (or become) aggregated to bid into. Required advances to establish linkages between purely retail DR bidding and ISO/RTO DR bidding programs are works in progress, and beyond the scope of this document.

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

## REQ.14.3.2.4.5.1 DR Bid to Supply (Retail Offers)

### Description

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

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

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

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

### Data Requirements (Generalized)

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

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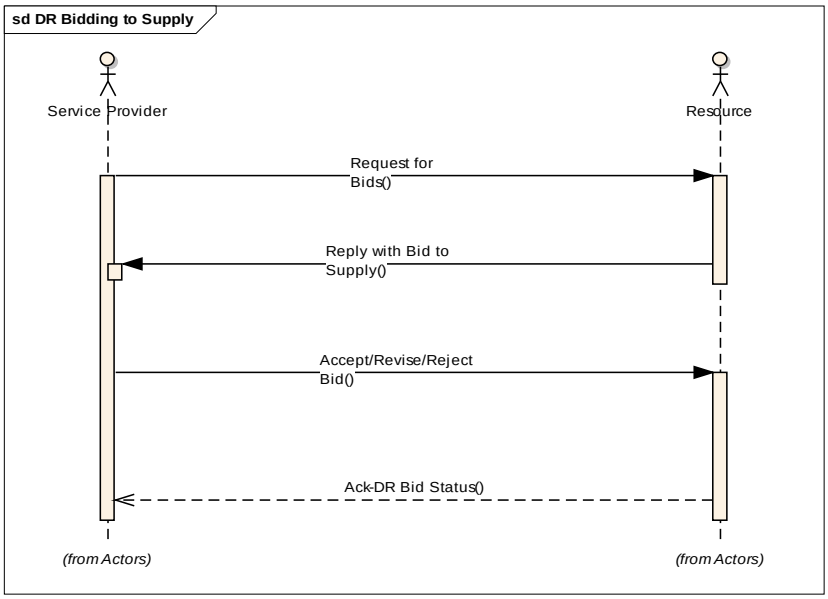
| Attribute Name | Description |
|---|---|
| Timestamp of Bid | The effective date(s) of an offer. |

## Data Requirements (Simplified Example of Retail DR Bidding)

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

## Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.5.2 DR Bid to Buy

### Description

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

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

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

### Data Requirements

| Attribute Name | Description |
|---|---|
| Bidder Identity | Identification of entity submitting a bid |
| Identity of Resource(s) | Identification of resources that physically support a bid |
| Bid structure | Prices and/or quantities in a bid to buy a service, or a demand schedule |
| Product/Service type | The Product/Service type being bid for purchase |
| Resource Availability | Instantaneous amount of demand response available for dispatch |
| Resource Capacity (Rated) | Rated or maximum demand of a resource |

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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**Request No.:** 2010 Retail Annual Plan Item 9(c)
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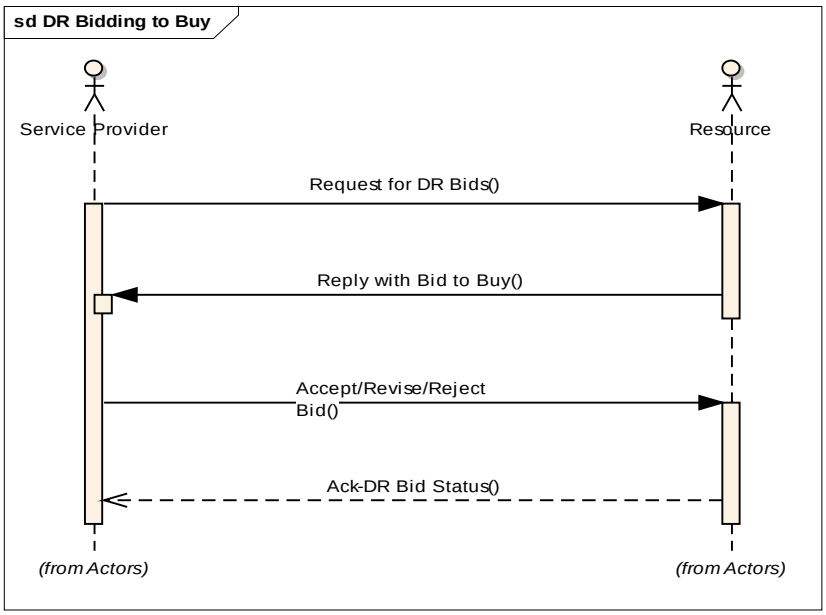
| Attribute Name | Description |
|---|---|
| Resource Physical Operating Capability | Ramp up/down rate and other resource-specific operating characteristics and constraints |
| Resource Type | Type of distributed resource |
| Timestamp of Bid | Timing associated with a bid |
| Trade Date or Period | The effective date(s) of a bid. |

## Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.6 Execute DR Event

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

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

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

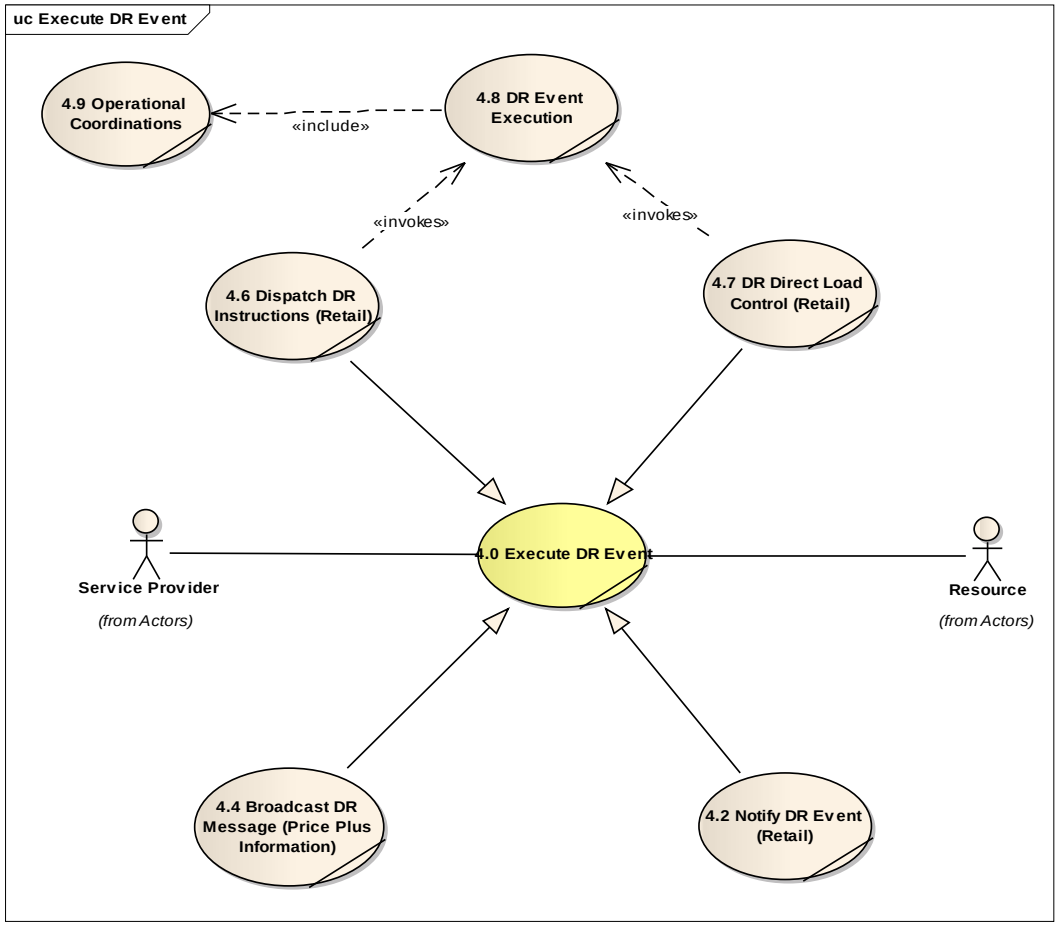


**Figure 5. Execute DR Events**

**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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## REQ.14.3.2.4.7 Notify DR Event (Retail)

### REQ.14.3.2.4.7.1 Advanced Notification for DR (Retail)

#### Description

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

#### Data Requirements

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

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| Attribute Name | Description |
|---|---|
| DR Resource Specifications | This specifies which DR Assets within a DR Resource should be used, and can be specified in the following fashion:<br>• Geographic location<br>• Grid location<br>• DR Asset group ID. |
| DR Resource Type ID | A program specific field that can be used to identify a type of DR Resource within a DR program. |
| Event Data | A collection of information that is associated with a DR event. An instance of such information represents a specific type of information that was defined to exist for DR events when the program was first developed and implemented. For example, a DR program may have been developed and implemented to use real-time pricing as the values that are sent when DR events are issued. In that case, the information would be prices. Furthermore, each type of information may have a schedule of values that are valid across the entire period for which the DR event is active. Therefore, a single type of information may have multiple values, each of which are valid during a different time period during the event. Each type of information has the following attributes when it is defined:<br>• name<br>• data type.<br>The following data types should be supported:<br>• PRICE_ABSOLUTE - Price number<br>• PRICE_RELATIVE - Change in price<br>• PRICE_MULTIPLE - Multiple of current price<br>• LOAD_LEVEL - Amount of load based on an enumeration, i.e. moderate, high, etc<br>• LOAD_AMOUNT - Fixed amount of load to shed in kW<br>• LOAD_PERCENTAGE - Percentage of load to shed, i.e. 10% |

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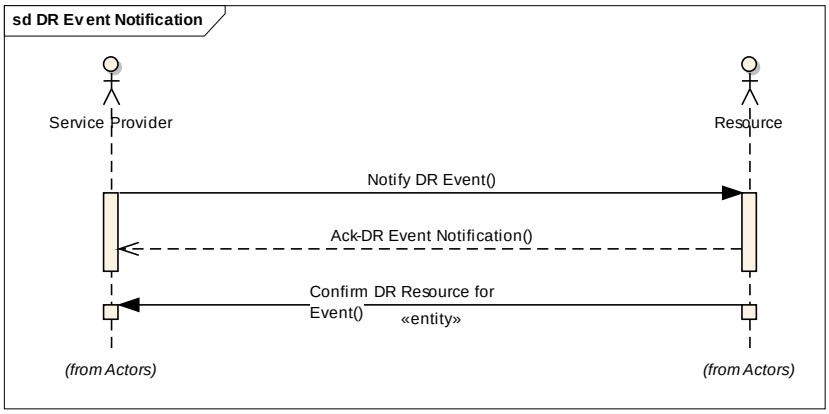
| Attribute Name | Description |
|---|---|
| | • GRID_RELIABILITY - Number signifying the reliability of the grid. |
| Event ID | An identifier for the DR Event that was created when the DR event was first issued. This should be a globally unique identifier for each Service Provider. |
| Event Schedule | A Schedule for the DR Event periods that includes the following:<br>• Notification date/time<br>• Event start date/time<br>• Ramp time (potentially randomized)<br>• Event end date/time (possibly specified as the duration). |
| Test Event Flag | This attribute signifies whether this is a test event or not. Test events may be issued by the Utility/ISO like other DR audit events. |

## Sequence Diagram



**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**

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

## REQ.14.3.2.4.7.2 Update a DR Event (Retail)

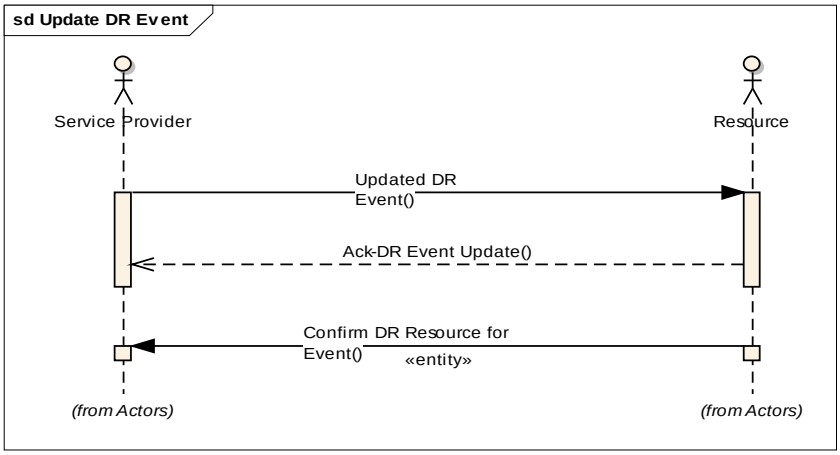
### Description

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

### Data Requirements

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

### Sequence Diagram



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## REQ.14.3.2.4.7.3 Cancel a DR Event (Retail)

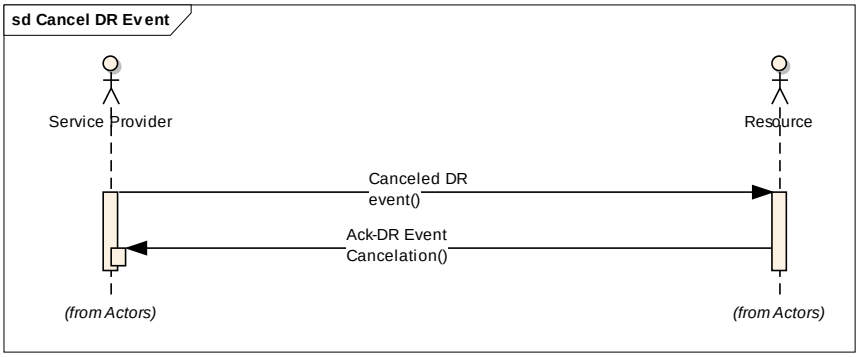
### Description

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

### Data Requirements

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

### Sequence Diagram



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## REQ.14.3.2.4.7.4 DR Resource Confirmation (Retail)

### Description

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

### Data Requirements

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

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**Sequence Diagram**

## REQ.14.3.2.4.8 Broadcast DR Message (Price Plus Information)

### Description

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

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

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

### DR Source of Power/Generation

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

Precondition:

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

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Post Condition:

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

## Data Requirements

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

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

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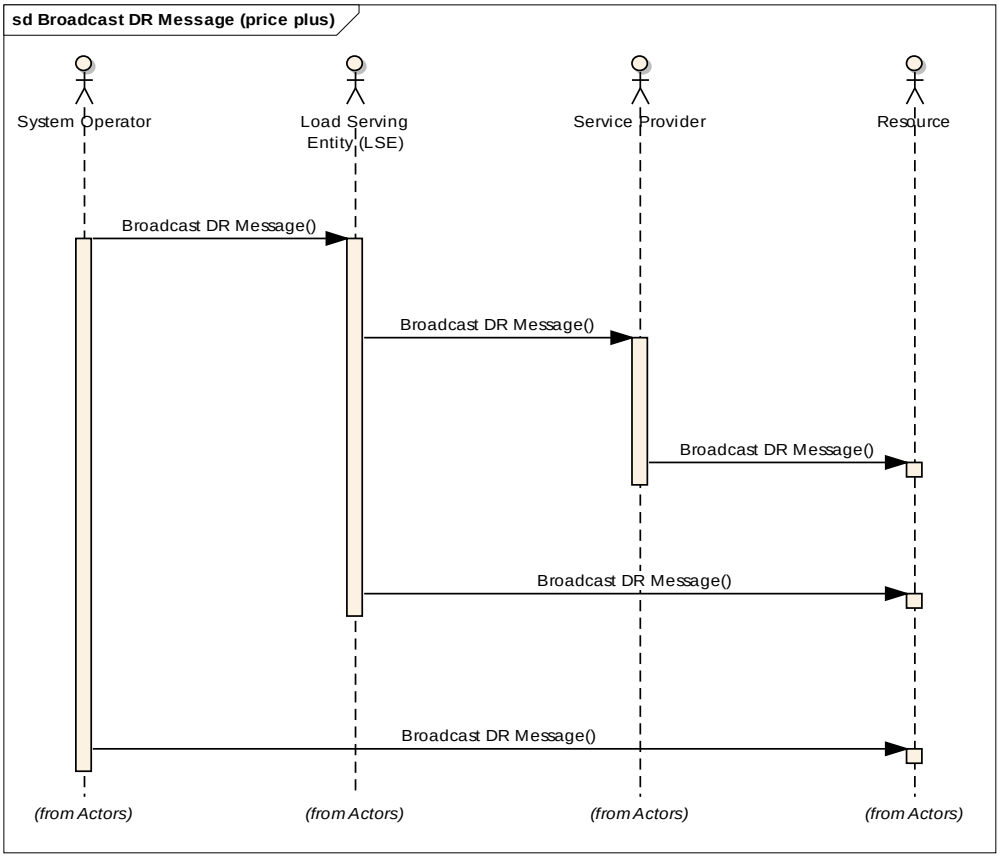
## Sequence Diagram




## REQ.14.3.2.4.9 Dispatch DR Instructions (Retail)

### Description

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

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

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## Data Requirements

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

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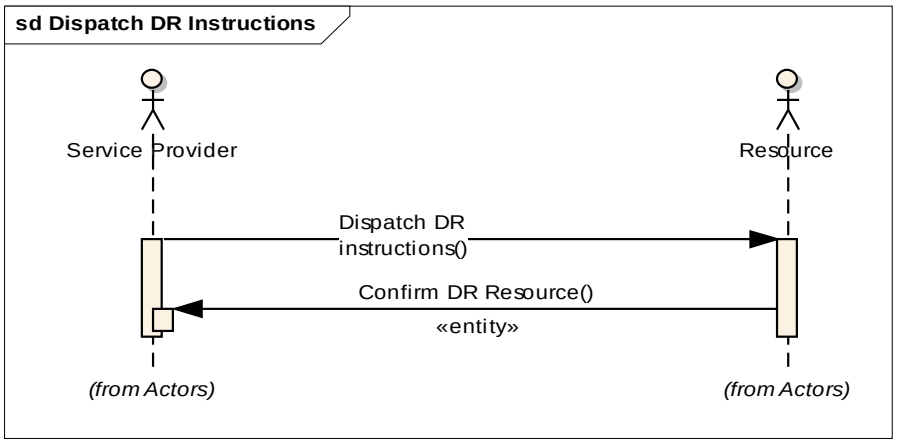
**Sequence Diagram**



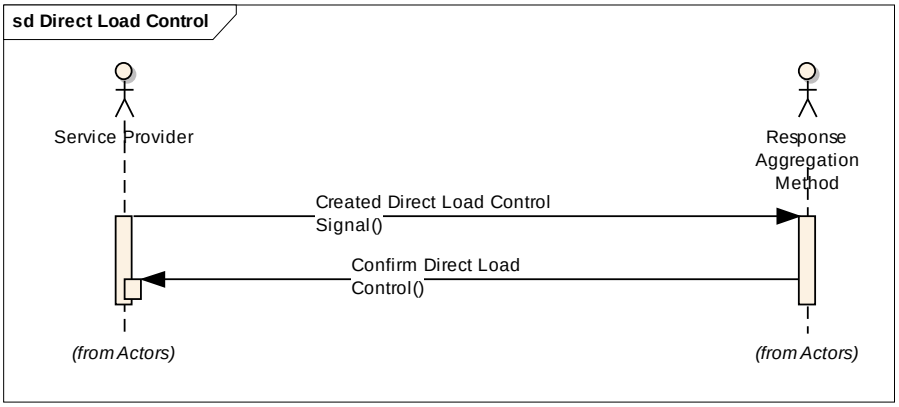

## REQ.14.3.2.4.10 DR Direct Load Control (Retail)

**Description**

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

See REQ.14.3.2.4.11.3, DR Execution - Direct Load Control (DLC) for more details.

**Sequence Diagram**



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## REQ.14.3.2.4.10.1 Monitor DR Event (DR Resource)

### Description

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

### Data Requirements

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

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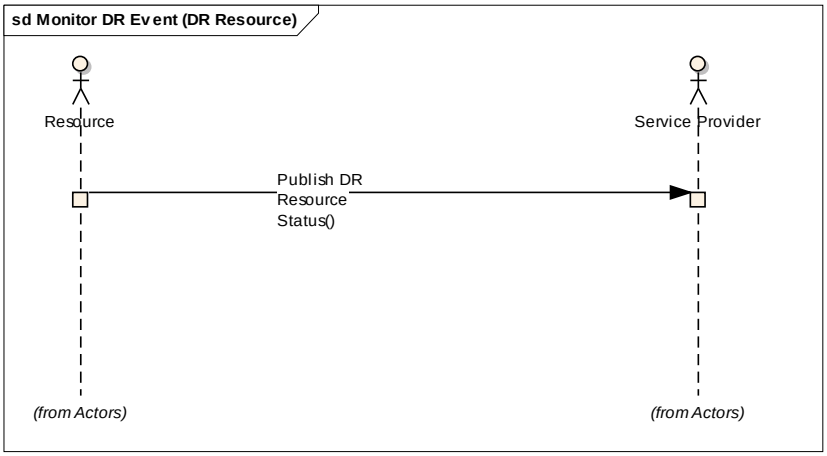
| Attribute Name | Description |
|---|---|
| Response Duration – Time Out or Held Until Released | Examples: Variable with Signal Up or Down (Regulation), 20 Minutes with Dispatched Release (Responsive Reserve), 1 or 2 Hour Time Out (Emergency Interruption), Multiple Hours (Peak Shifting) |

### Sequence Diagram




## REQ.14.3.2.4.10.2 Monitor DR Event (DR Asset)

### Description

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

### Data Requirements

| Attribute Name | Description |
|---|---|
| Exception Conditions | This is used to report that the load controller may not behave as commanded because of a variety of conditions including:<br>• Faults in device<br>• Customer override. |
| Load Control State | The state of the load, which includes both commanded states and user settings. This may include a schedule of future states if a particular control algorithm for the load controller is being executed. |

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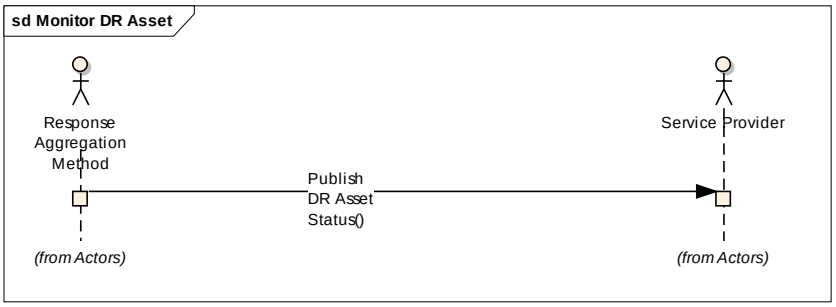
| Attribute Name | Description |
|---|---|
| Operational Constraints | Constraints on how the load may be controlled. This may include limits on the state of the load controller as well as schedules upon those constraints. |

**Sequence Diagram**




## REQ.14.3.2.4.11 DR Event Execution

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

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

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

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response may also be initiated by a customer in response to a market pricing signal

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

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

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

**REQ.14.3.2.4.11.1 DR Execution – Retail Time Pricing (RTP)**

**Description**

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

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

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charges are typically subject to a regulatory review and approval.

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

**Data Requirements**

The real-time DR price (RTP) signal requirements are similar to those specified in the DR signal specified in REQ.14.3.2.4.8.

**RTP Price Data**

| Attribute Name | Description |
|---|---|
| Effective-Date-Time Interval | The date and time interval which the price is in effect. |
| Price | Single of multiple valued price (e.g., for energy, demand, etc.) Expressed in decimal notation with a precision up to 6 decimal places. Prices MAY be either positive or negative |
| Currency | Identifier used to interpret the price element. |
| Unit-of-Measure | Indicates the unit of measure for which the price pertains (e.g., kW). |
| Product-Identifier | Identifies the type of product (e.g. energy, spinning reserve, etc.) which this price pertains. |
| Location | Location Identifier for the applicable price. |
| Location-type | A value used to interpret the value contained in the Location element. Examples of Location-type include:<br>• Zone (Load Aggregation Point)<br>• Zip-code<br>• USNG |
| Time Stamp | Indicates the Date and Time when this information was published. |
| Duration | The amount of time for which this price is valid, commencing at the Effective-Date- |

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| Attribute Name | Description |
|---|---|
| | Time specified. |
| Source-Authentication | The recipient of a "Price Message" must have some assurance that the message was produced by a reliable, authoritative party. |
| Message-Exchange-Pattern | The means by which price information is communicated to any party that is interested in receiving this information. The following are valid options:<br>• In-Only<br>• Robust In-Only<br>• In-Out<br>Refer to http://www.w3.org/TR/wsdl20-adjuncts/#patterns for complete descriptions. |
| Unique-Identifier | An identifier used to identify the message. Should be expressed as a URI in accordance with http://www.w3.org/TR/uri-clarification/#uri-schemes |

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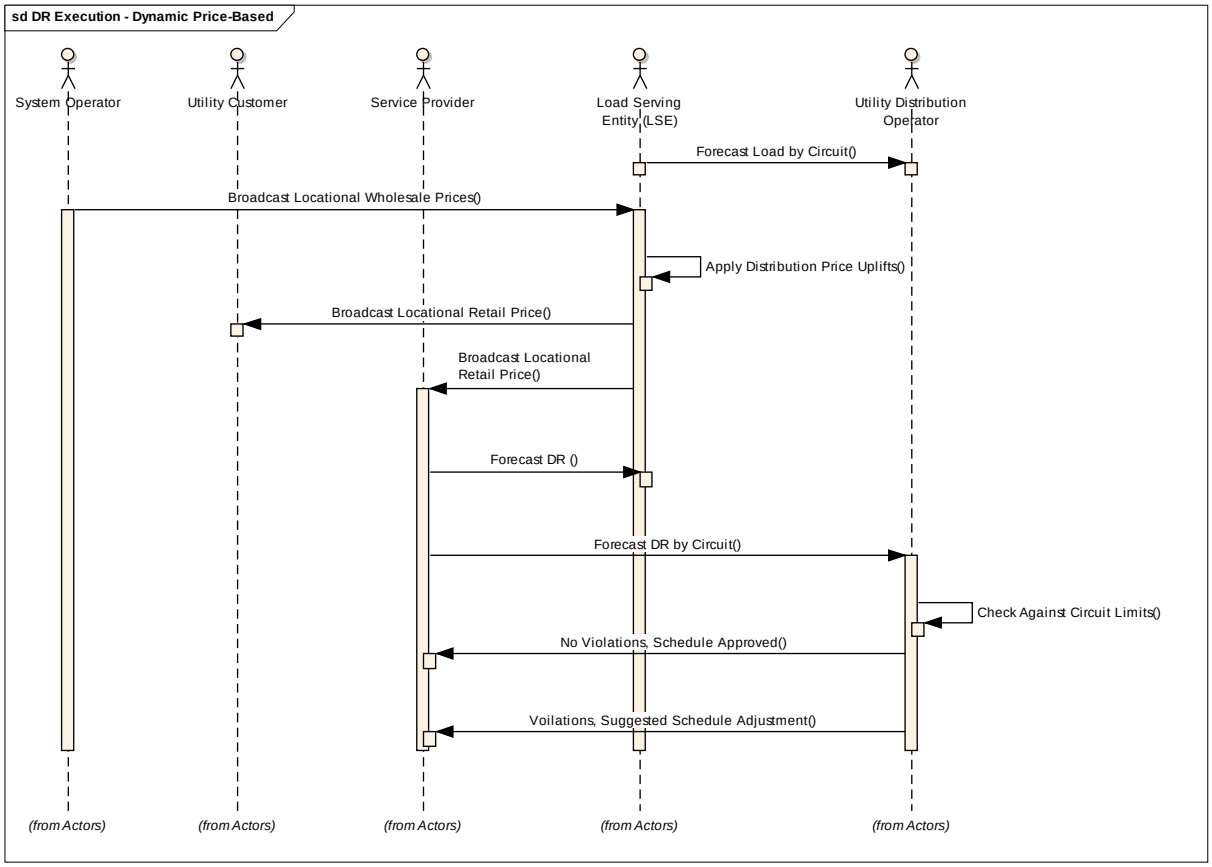
## Sequence Diagram




## REQ.14.3.2.4.11.2 DR Execution – Notification Based

### Description

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

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

At high penetration levels, the DR operation, especially on a day-ahead or hour ahead basis, need to be coordinated with the overall operations and supply scheduling process. As is shown in the Sequence Diagram below, this may require a

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timely update of the "locational" load forecast and an up-to-date nomination of the DR capabilities. This information may be supplied to the "system" and/or market operator to be incorporated in the overall supply and demand scheduling process. The DR capabilities are specified by the DR Provider to the System Operator based on a DR Program, a price curve, or other nomination protocol. The DR Provider may also inform the Load Serving Entity (LSE) of the locational available DR capabilities.

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

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

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

**Data Requirements**

The notification data elements are described in more detail in REQ.14.3.2.4.9.

| Attribute Name | Description |
|---|---|
| Dispatch Instructions | A collection of dispatch instructions that is associated with a DR event. This will include the amount of load to be reduced (or increased – in the cases of very low load levels and excess generation, e.g., wind ) |

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| Attribute Name | Description |
|---|---|
| DR Program Name | An identifier of the program for which a DR event was issued. |
| DR Resource ID | An identifier of the DR Resource for which a dispatch is intended. |
| Event ID | An identifier for the DR event that was created when the DR event was first issued. |
| Event Modification Number | A modification number for the DR event. |
| Event Schedule | Schedule for the DR Event periods, which includes the following:<br>• Notification date/time<br>• Event start date/time<br>• Event end date/time. |
| Test Event Flag | This attribute signifies whether this is a test event or not. |
| Source-Authentication | This is for authentication of the notification signal. |

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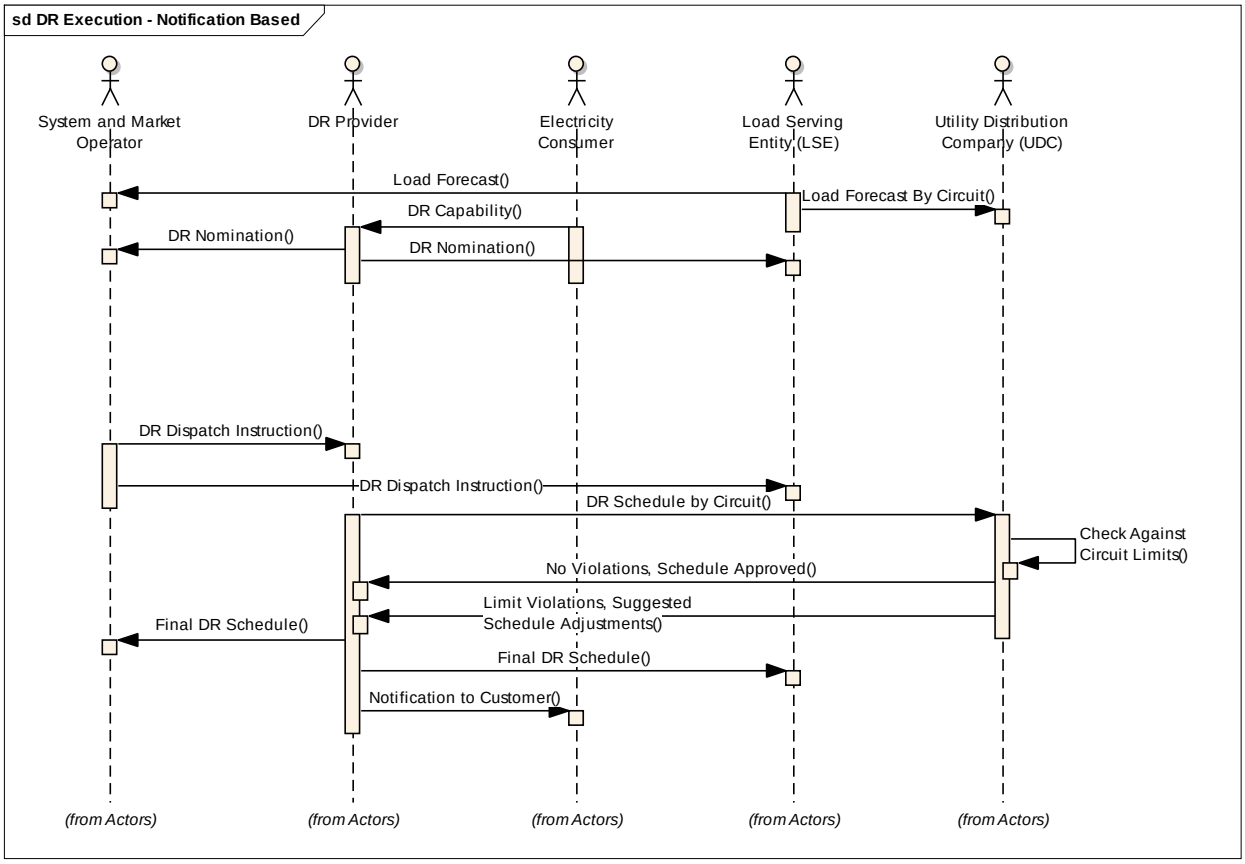
## Sequence Diagram




## REQ.14.3.2.4.11.3 DR Execution – Direct Load Control (DLC)

### Description

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

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

Direct Load Control is typically called for by a system operator, a transmission or distribution operator. It could be also issued by a Market Operator based on an ancillary service DR award,

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or by an LSE or DRP for an economic purpose. At high penetration levels, DLC operation needs to be coordinated with the distribution grid operator, the UDO.

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

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

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

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

**Data Requirements**

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

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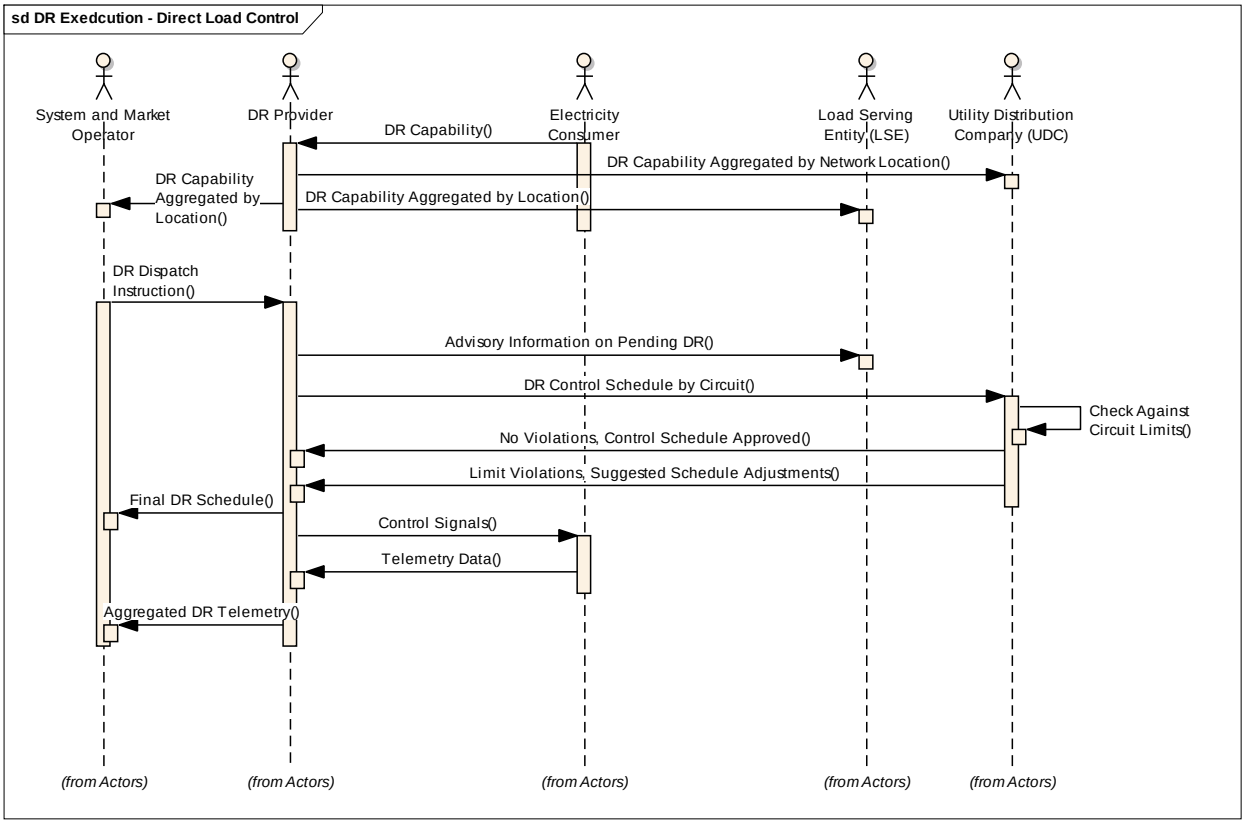
| Attribute Name | Description |
|---|---|
| DR Control Command | This may include multiple parameters Schedule for the DR initiation, or termination, and type/level of control. Please note that the control signal may be sent to an ~~building~~ EMS or a smart device with a multi-function control capability.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

## Sequence Diagram




## REQ.14.3.2.4.12 Operational Coordination

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

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

| Stake Holder | Key Responsibilities |
|---|---|
| Wholesale Market Operator | • Establish, administer, and operate wholesale demand response programs and markets;<br>• Determine and publish locational prices for wholesale demand response products;<br>• Improve energy market efficiencies (economics) by integrating demand response products and capabilities;<br>• Monitor compliance to wholesale DR instructions and financially settle with the participating stakeholders. |
| Transmission Grid / System Operator - Balancing Authority | • Monitor and maintain transmission grid reliability, and call upon wholesale demand-side (demand response) capabilities to address contingency/emergency conditions;<br>• Dispatch demand-side capabilities to balance supply and demand, e.g., mitigating impact of variable generation (e.g., wind).<br>• In regions with no organized wholesale energy market, economically dispatch available generation and demand resources including demand response to optimize supply economics. |
| Distribution Grid Operator – Utility Distribution Company | • Monitor and maintain the distribution grid reliability and the quality of power supply (e.g., voltage levels). Call upon DR to mitigate the distribution contingencies and reliability concerns.<br>• Review and approve the integration of distributed energy resources with the distribution grid.<br>• Assess the operational impact of distributed resources and demand response (DR/DER) on power quality and reliability of the distribution grid, approve high-penetration DR schedules (especially cold-load pickup operation).<br>• Coordinate with the respective Load Serving Entity and Energy Service Providers for the assessment of distribution service and loss compensation charges to retail customers. |
| Load Serving Entity | • Forecast load and economically schedule supply to meet demand at all times. Incorporate |

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| Stake Holder | Key Responsibilities |
|---|---|
| | demand response capabilities to improve load factor, reducing/shifting peak load.<br>• Establish and obtain regulatory approval for a fair and unbiased retail tariff for all customer classes. For real-time dynamic pricing (RTP) tariff, apply distribution service, loss compensation and other uplifts to the wholesale locational prices.<br>• Establish and administer demand response and distributed resource management programs including DR tariff.<br>• Meet regional requirements for Renewable Portfolio Standards compliance for power delivery.<br>• Aggregate and schedule DR capabilities in wholesale markets, manage DR programs.<br>• Manage customer metering and billing process. |

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

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

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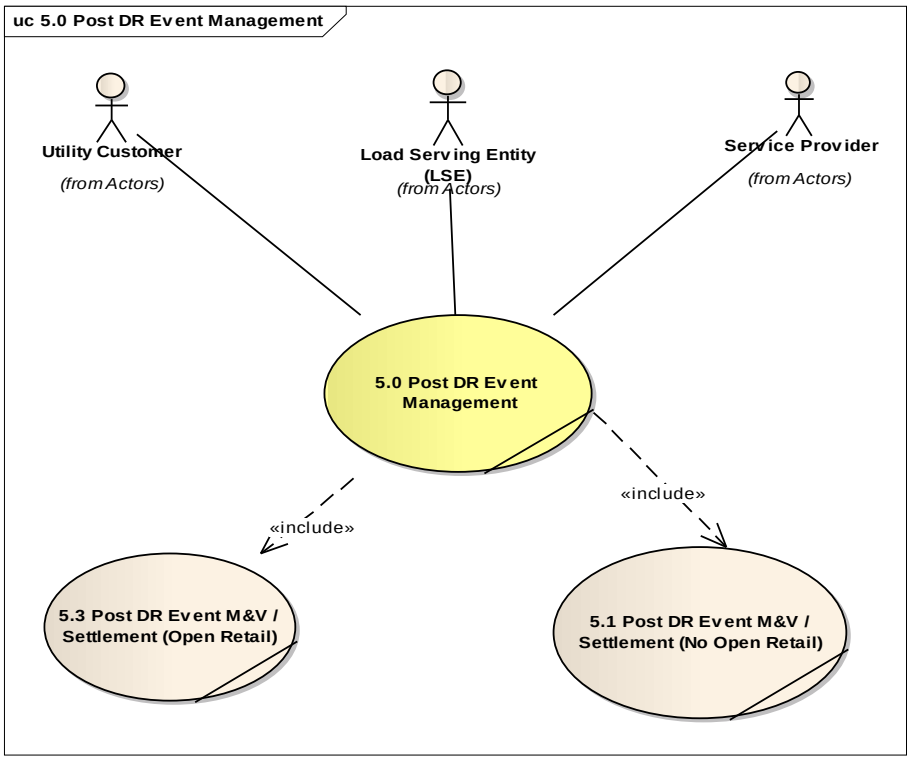
## REQ.14.3.2.4.13 Post DR Event Management

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



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| **For Quadrant:** | **Retail Electric Quadrant (REQ)** |
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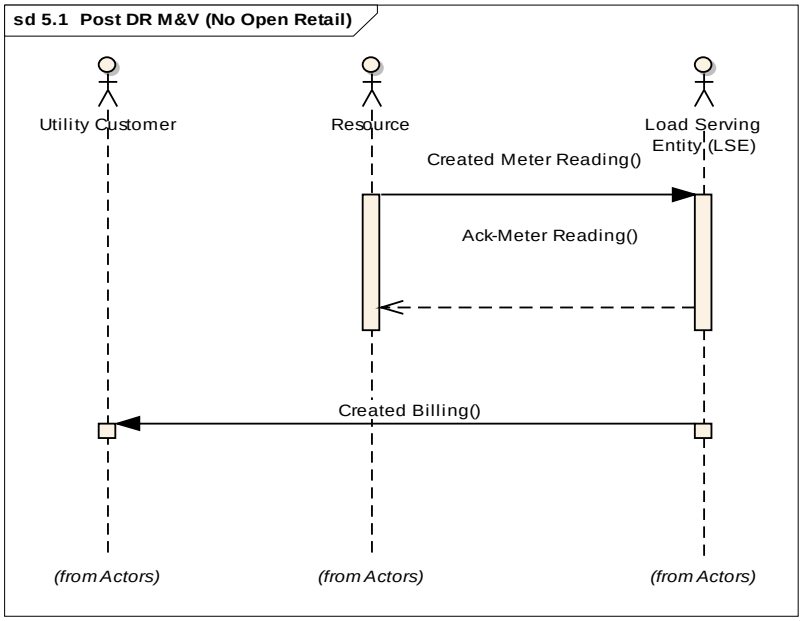
## REQ.14.3.2.4.13.1 Post DR Event M&V / Settlement (No Open Retail)

### Description

After DR Event has been completed, then Measurement and Verification (M&V) can confirm whether action has been taken or to measure the impact of the response. After the M&V, then the Financial Settlement is calculated and sent to the Electricity Customer[1]. This Use Case covers the scenarios with no Open Retail Markets.

### Sequence Diagram




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

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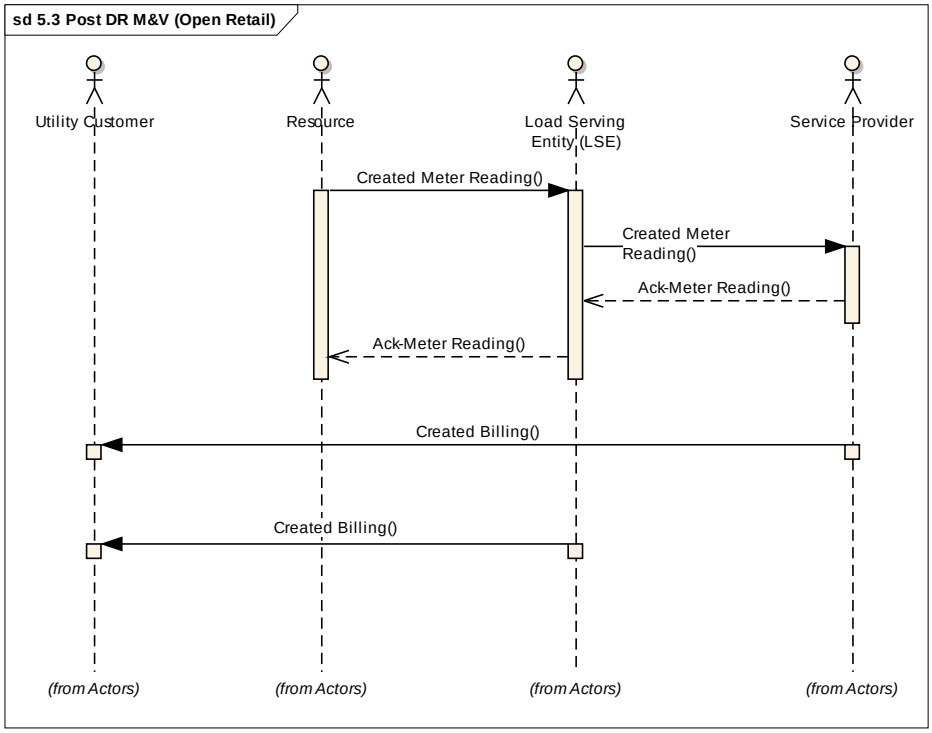
| **Request Title:** | **Requirements Specifications for Retail Standard DR Signals - for NIST PAP09** |

## REQ.14.3.2.4.13.2 Post DR Event M&V / Settlement (Open Retail)

### Description

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

### Sequence Diagram



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|---|---|
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## 4. Supporting Documentation

### a. Description of Request:

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

This recommendation specifically pertains to PAP 09[2], "Standard DR and DER Signals".

### b. Description of Recommendation:

See Section 3 Summary

### c. Business Purpose:

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

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

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

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

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

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

NAESB Smart Grid Standards Task Force Meeting Notes/Documents:

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

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

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

# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

**General Comments**

A. The documents being considered do not contain traditional NAESB Business Practice Standards content. Additional work will be necessary the convert these recommendation documents into Business Practice Standards, as it was a working assumption of the Smart Grid Task Force to deliver requirements only.

B. References in these Recommendations to 'Dispatch", "Markets", "Reliability" are made relative to DR and apply to DR resources only, and not Generation resources. NERC's compliance standards for Generation Resources are typically quite detailed, while compliance standards for DR resources are appropriately determined by the respective system operator specific to the DR product or service and the reliability need being addressed.

C. While the recommendations for PAP-03, PAP-04 and PAP-09 posted by NAESB are not business practice standards, they should not be misconstrued as a recommendation to change existing market designs or business rules across ISOs/RTOs; each ISO RTO has its own stakeholder process as the appropriate forum for making rule changes.

D. Although not explicitly stated in the PAP documents, compliance with orders from regulatory agencies, as they apply to DR in ISO/RTOs, is presumed.

E. It is our understanding that the contents of the documents are being presented as recommendations and are intended to be used neither as implementation templates nor for testing of interoperability. Rather, another step will be taken by the Organization for the Advancement of Structured Information Standards (OASIS) to deliver an information model, preferably reconciled with IEC 61970, which then could be implemented and tested.

F. The treatment of the glossary of terms – actors and definitions – is inconsistent across the recommendation documents — within the WEQ as well as the corresponding versions listed under REQ. In one case, the glossary of terms is in the recommendation without the diagram, in another it appears as an appendix, and in a third it appears in both the recommendation section *and* in an appendix. The highlighted wording regarding how the glossary will be incorporated into the WEQ-000 is unclear. The IRC requests that NAESB staff provide a clearer description to explain how the glossary of terms will be integrated into WEQ-000.

G. It is unclear how the data requirements work beginning in Phase 2 will be integrated with these recommendations if they are being passed through the standards approval process separately. This is of particular concern since PAP-03 and PAP09-Retail have partial lists of data requirements in the current recommendations. For consistency, the IRC recommends that all data requirements be removed from the Recommendations for PAPs 03/04/and 09 until the SGTF has completed Phase 2, where the data requirements will be identified for all three PAPs.

**PAP-SPECIFIC RECOMMENDATIONS**

***PAP-03***

1. "The term "wholesalers" in PAP03 should be modified to clarify whether it refers to energy marketers, energy service providers or ISOs and RTOs. Without this clarification, it is unclear to whom the proposed PAP03 standards apply

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

2. The use cases are very short. More elaboration needs to be given to the definitions and the samples should be elevated to fully described, testable use cases.

***PAP-04***

3. The IRC has identified that the following requirement from PAP04 as the only requirement applicable to wholesale markets and recommends that it be incorporated into the PAP09 wholesale document:

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

4. References to the term "wholesalers" in PAP04 do not apply to ISOs and RTOs, therefore, it is the understanding of the IRC that PAP04 would not apply to ISOs and RTOs.
5. The IRC recommends that PAP-04 be moved wholly into the REQ, where it can be applied to end-device and/or human communications without impact to or potential conflict with wholesale market operations.

***PAP-09 Retail***

6. As previously recommended in the IRC's informal comments in November 2009, the administration of DR products and services should be excluded from the scope of the retail use cases. Currently, language states that these processes will not be automated. If this is the case, they should not be included in a document that ultimately will lead to a machine-to-machine communication specification. Additionally, the processes for automating customer registration (as opposed to device enrollment) are likely to be handled in the future by a NAESB working group with a more global (i.e., not DR-centric) perspective. The IRC recommends removing the following sections:
    a. REQ.14.3.2.4.1 Administrate DR Program
    b. REQ.14.3.2.4.1.2 Create DR Program
    c. REQ.14.3.2.4.1.3 Update DR Program
    d. REQ.14.3.2.4.1.4 Remove DR Program
    e. REQ.14.3.2.4.2 Administrate Customer for DR
7. Our members believe that additional descriptions of the business processes are needed. The existing illustrations consist of Use Case Diagrams, which identify the Actors involved and the hierarchy of processes, and Sequence Diagrams, which identify the ordered messages that may

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NAESB PAP-03 / PAP-04 / PAP-09

be exchanged among the actors during the execution of the business processes. Activity Diagrams would better show the conditional flows and iterations that are common to these business processes and make the testing of use cases easier. Furthermore, alignment with the four governing business processes outlined in Figure 1 of the Wholesale document (page 12) would be extremely helpful. In fact, we would very much like to see integration with the wholesale business process Activity Diagrams, which have wholesale-retail integration points identified for further development by interested parties. IRC members will be made available to support such integration definition efforts should members of the REQ be interested in pursuing this activity in Phase 2.

8. The document defines DR-specific data elements (such as "Minimum Duration"), whereas the Wholesale document reuses generation/supply data elements (such as "Minimum Run Time"). These philosophies should be reconciled. See pp. 33-35, 39, and 40 for examples. As stated in cross-PAP recommendation E, this can be resolved by following the IRC recommendation that all data elements be removed from the current recommendations and submitted at a later date, when the Phase 2 data requirements work is complete.

**PAP-SPECIFIC RECOMMENDATIONS (DETAILED EDITS)**

***Common Introduction Language***

- Replace “United States of America with some overlaps to Canada” with “North America”
- 000-1: Replace “Reliability Authority (RA)” with “Regional Reliability Authority (RRA)”
- 000-2: For Response Method Aggregation, edit as follows: “…interval level consumption, e.g. ~~a site~~ **an RMA** may ~~also~~ be a physical entity ~~that may have~~ **with** its own meter…”

***PAP-03***

- Pg. 6 & Pg. 12: Replace “Demand Reduction” with “Demand Modification”
- Pg. 9: need to reconcile difference among TDSP / UDC / UDO
- Pg. 10: Definition of CPP is incorrect. Recommend the following change: “…at which time electric prices ~~may reflect the costs of electricity at the wholesale level~~ **are administratively adjusted to incentivize customers to actively modify their electricity usage**.”
- Pg. 10: Definition of PTR. Recommend the following change: “An incentive rate in which the utility pays **a rebate to** Customers ~~to~~ **who** reduce**d** demand during peak periods on critical days.”

***PAP-04***

- Pg 9: Replace “reducing” with “modifying”

***PAP-09 Retail***

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# ISO/RTO Council Comments

NAESB PAP-03 / PAP-04 / PAP-09

- Pg 15: REQ.14.3.2.3: Use Case Overview - End-to-end business process flow should be consistent with Wholesale DR Signals document
- Pgs 17, 37, 45, 53, 58: Eliminate specific references to wholesale markets
- Pg 17: change "interruption" to "modification" (2x places)
- Pg. 30: Definition for Maximum Duration. Change "The maximum amount of time the asset/resource is capable of ~~delivering power (megawatts)~~ **modifying its electricity usage".**
- Pg 30: the Parent-Resource ID concept needs to be reconciled with the terminology and hierarchical structure of resources used in the wholesale document.
- Pg 31: the Source-Authentication concept needs to be reconciled with the approach to security used in the wholesale document
- Ph 37: revise text as follows "The Bidder may be a Customer bidding with ~~either an energy retailer (e.g., LSE, ESP),~~ a Service Provider ~~(e.g., CSP, DRP),~~ or ~~a power marketer (i.e., wholesale market participant). The Bidder may also be~~ a Service Provider bidding ~~up~~ to a LSE ~~or power marketer.~~ "
- Pg 38: recommend proper use of bids and offers, i.e. bids are to buy and offers are to sell
- Pg 44 & 53: replace "shed" with "modify" (2x place)
- Pg 45: the concept of a "number signifying the reliability of the grid" has no basis in any reliability standards with which the IRC members are acquainted
- Pg 55: replace "de-energize" with "modification"
- Pg 58 – DR Execution – Retail Time Pricing (RTP): Replace this section with the following text: "Provide real-time or dynamic pricing (RTP) to retail customers so that customers can vary their demand based on pricing signals. RTP represents retail electricity rates that vary as a function of time."

***PAP-09 Wholesale***

- Pg. 9 – unresolved reference should be fixed

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Home Page: www.naesb.org

**NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)**
**APRIL 12, 2010**

**ACTIONS TO BE APPLIED TO WGQ VERSION 1.9 TO CREATE WGQ VERSION 2.0:**

Version 1.9 was published on September 30, 2009.

**2009-10:**

Final Actions:

2009 Annual Plan Item 3/2009 Annual Plan Item 2(a)/R07009 – Update Model ISDA North American Gas Annex, November 2004 to correspond to the updated Base Contract for Sale and Purchase of Natural Gas, dated September 5, 2005, in accordance with NAESB WGQ Request No. R07009 as adopted by the WGQ Executive Committee on October 29, 2009 - http://naesb.org/member_login_check.asp?doc=model_isda_addendum102909.pdf *(This is a model and does not require member ratification)*

Recommendations:

R09006 - Add a new data element "Contract" in the following Transaction Datasets for the NAESB WGQ Version 1.8 release: NAESB WGQ Standard No. 3.4.2, Payment Remittance and NAESB WGQ Standard No. 3.4.4, Service Requester / Charge Allowance Invoice – Formal Comment period ended February 26, 2010.
Recommendation: http://naesb.org/pdf4/r09006_rec.doc

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

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

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

Minor Corrections:

MC10009 - Errata for: NAESB WGQ Standard No.5.4.1 (Offer Download), NAESB WGQ Standard No.5.4.2 (Bid Download) and NAESB WGQ Standard No.5.4.3 (Award Download), Submitted by D. Davis, Williams Gas Pipeline - http://naesb.org/pdf4/wgq_mc10009.doc,
Recommendation: http://naesb.org/pdf4/wgq_mc10009_rec_040910.doc for WGQ EC consideration.

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

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

**North American Energy Standards Board**

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**NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)**
**APRIL 12, 2010**

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

MC10015 - Errata to NAESB WGQ Version 1.9 - Standard No.5.4.15 (Response to Upload of Request for Download of Posted Datasets), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee - http://naesb.org/pdf4/wgq_mc10015.doc - proposed recommendation to be reviewed by WGQ IR/Technical on April 13-15, 2010.

MC10016 - Errata for NAESB WGQ Version 1.9 Standard No.3.4.1 (Transportation/Sales Invoice), Submitted by D. Davis/M. Stender, Co-Chairs Information Requirements/Technical Subcommittee - http://naesb.org/pdf4/wgq_mc10016.doc - proposed recommendation to be reviewed by WGQ IR/Technical on April 13-15, 2010.

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

MC10012 –Errata for NAESB WGQ Internet Electronic Transport (Internet ET) Manual, Version 1.9 and NAESB RXQ Internet ET Manual Version 1.2: http://www.naesb.org/pdf4/wgq_req_rgq_mc10012.doc - notational ballot due March 5, 2010.

MC10001 - Revised - Minor Correction Submitted by M. Stender, El Paso Natural Gas to NAESB standard 5.4.1, 5.4.2 and 5.4.17 version 1.9: http://www.naesb.org/pdf4/wgq_mc10001_revised011210.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC10002/R09019 - Minor Correction (errata to Version 1.9) to modify three and add one new Allocation Transaction Type Code Values and modify the Allocation Transaction Type Matrix accordingly in the following data set: Allocation, NAESB WGQ Standard No. 2.4.3 (Note: This recommendation corrects the actions taken for R05028 which were published in Version 1.9.): http://www.naesb.org/pdf4/wgq_mc10002.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC10003 - Minor Correction to Version 1.9 NAESB WGQ Standard No. 2.2.4 – Shipper Imbalance (EDI Implementation: ASC X12 Mapping Guidelines and Data Element Cross Reference): http://www.naesb.org/pdf4/wgq_mc10003.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC10005 - Recommendation – Submitted by C. Burden, Williams Gas Pipeline – This request proposes the correction of language for the NAESB WGQ Version 1.9 release: NAESB WGQ Standard 4.3.16: http://www.naesb.org/pdf4/wgq_mc10005.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

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**NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)**
**APRIL 12, 2010**

MC10006 Recommendation – Submitted by C. Burden, Williams Gas Pipeline – This request proposes corrections to NAESB WGQ Standards Booklet 1 of 2, NAESB WGQ QEDM Standards Manual and NAESB WGQ Capacity Release Standards Manual to correct an error in wording: http://www.naesb.org/pdf4/wgq_mc10006.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC10007 Recommendation – Submitted by C. Burden, Williams Gas Pipeline – This request proposes corrections to NAESB WGQ QEDM Standards Manual, Version 1.9 to correct browser and plug-in information and a spelling correction: http://www.naesb.org/pdf4/wgq_mc10007.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC10008 Recommendation – Submitted by D. Davis / M. Stender, Chair / Co-Chair WGQ Information Requirements / WGQ Technical Subcommittees – This request proposes corrections to NAESB WGQ Standard Nos. 3.4.1 (Transportation/Sales Invoice) and 3.4.4 (Service Requester Level Charge/Allowance Invoice, Version 1.9 to correct the code values in the Code Values Dictionaries: http://naesb.org/pdf4/wgq_mc10008.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC09024 Recommendation - Submitted by M. Schmitz, Northern Natural Gas - This request proposes the addition of 1 code values for the data element "Validation Code (Detail)" in the following datasets for the NAESB WGQ Version 1.9 release: NAESB WGQ Standard 1.4.2 - Nomination Quick Response http://www.naesb.org/pdf4/wgq_mc09024_rec_011810.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC09033 Recommendation - Submitted by M. Schmitz, Northern Natural Gas - This request proposes the addition of 4 code values for the data element "Charge Type" in the following datasets for the NAESB WGQ Version 1.9 release: NAESB WGQ Standard 3.4.1 – Transportation / Sales Invoice: http://www.naesb.org/pdf4/wgq_mc09033_rec_011910.doc - approved by the WGQ EC on February 4, 2010. *(Effective date March 31, 2010)*

MC09032 Minor Correction to the Canadian Addendum, dated August 2, 2007 (NAESB Standard 6.3.1.CA) as submitted by K. Sappenfield, Chair, WGQ Contracts Subcommittee - http://naesb.org/pdf4/wgq_mc111209reqcom.doc - approved by the WGQ EC on October 29, 2009 *(Effective date December 14, 2009)*

**TIMELINE:**

- Version 2.0 is scheduled for publication no earlier than November 1, 2010 and no later than November 30, 2010.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

| | |
|---|---|
| Month - 4 | Subcommittee Recommendations Completed and sent out for comment |
| Month - 3 | EC Actions taken |
| Month - 2 | Ratifications sent out and completes, minor corrections applied |
| Month - 1 | Review of draft publication |
| Month - 0 | Date of Publication. |

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**NAESB UPDATE: VERSION 2.0 – WHOLESALE GAS QUADRANT (WGQ)**
**APRIL 12, 2010**

*Items not to be included:*

*R09017 – Develop a new ISDA Gas Confirmation Form for use with the ISD Gas Annex based on the current Confirmation Form under the NAESB Base Contract for Sale and Purchase of Natural Gas – http://naesb.org/member_login_form.asp?doc=wgq_rat011310_r09017_rec.doc - Ratification on February 12, 2010.*

*Attachment (Exhibit A):*
*http://naesb.org/member_login_form.asp?doc=wgq_rat011310_r09017_rec_attachment.doc*

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**NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)**
**APRIL 12, 2010**

**ACTIONS TO BE APPLIED TO WEQ VERSION 002.1 TO CREATE WEQ VERSION 002.2:**

Version 002.1 was published on March 11, 2009.

**2009-10:**

Final Actions:

2008 WEQ Annual Plan Item 5(a) – Review and develop business practice standards to support DR and DSM-EE programs – Ratified March 16, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2008_api5a.doc *(New WEQ-015)*

2009 WEQ Annual Plan Item 3(d) – Order 717, Standards of Conduct – Ratified June 15, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_api_3d.doc *(WEQ-001. WEQ-002, WEQ-003)*

2009 WEQ Annual Plan Item 2(a)(ii)(3) – Rollover Rights on Redirect on a Firm Basis – Ratified July 27, 2009 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_ap_2aii3.doc (*WEQ-001, WEQ-002, WEQ-003, WEQ-013)*

2009 WEQ Annual Plan Item 1(a), 3(a)(vii)/R05020 – Modifications to WEQ-004 Coordinate Interchange as approved by the WEQ EC on October 27, 2009 – Ratified December 14, 2009 - http://naesb.org/member_login_form.asp?doc=fa_weq_2009_api_1a_3avii_r05020.doc *(WEQ-001, WEQ-002, WEQ-003, WEQ-004, WEQ-013)*

Attachment: http://naesb.org/member_login_form.asp?doc=fa_weq_2009_api_1a_3avii_r05020_attach.doc

2009 WEQ Annual Plan Item 5(b) – Modify NAESB definition to address internal inconsistencies and inconsistencies with the NERC glossary – approved by the WEQ EC on February 2, 2010 – Ratified March 24, 2010 - http://naesb.org/member_login_check.asp?doc=fa_weq_2009_api5b.doc

Recommendations:

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

2009 WEQ Annual Plan Items 5(a)(2), 5(i)/R08004/R09011 – Multiple Annual Plan Items affecting WEQ-011 Gas/Electric Coordination – Formal comment period ended November 2, 2009 - http://naesb.org/pdf4/weq_2009_api_5a2_5i_r08004_r09011_rec.doc

Attachments:

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

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

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

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**NAESB UPDATE: VERSION 002.2 – WHOLESALE ELECTRIC QUADRANT (WEQ)**
**APRIL 12, 2010**

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

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

2009 WEQ Annual Plan Item 2(a)(i)(1-8) – Develop business practice standards to better coordinate the use of the transmission system among neighboring transmission providers. Such business practice standards would be based on recommendations from NERC's Long Term ATC/AFC Task Force and would involve revised procedures for the ATC calculation and/or revised protocols as determined by the final order. Development is using joint standards development process with NERC. Request R050004 was expanded to include the Order No. 890 (Docket Nos. RM05-25-000 and RM05-17-000) and Order No. 890-A (Docket Nos. RM05-17-001, 002 and RM05-25-001, 002), "Preventing Undue Discrimination and Preference in Transmission Services," issued April 11, 2007). Group 3: Network Service on OASIS – Recommendation currently under development by the WEQ OASIS Subcommittee http://naesb.org/weq/weq_oasis.asp

Minor Corrections:

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

**TIMELINE:**

- Version 002.2 is scheduled for publication end of second quarter 2010.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

| | |
|---|---|
| Month - 4 | Subcommittee Recommendations Completed and sent out for comment |
| Month - 3 | EC Actions taken |
| Month - 2 | Ratifications sent out and completes, minor corrections applied |
| Month - 1 | Review of draft publication |
| Month - 0 | Date of Publication. |

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**NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ)**
**APRIL 12, 2010**

**ACTIONS TO BE APPLIED TO RETAIL VERSION 1.2 TO CREATE RETAIL VERSION 1.3:**

Version 1.2 was published on December 31, 2009.

**2009-10:**

Final Actions:

None to date

Recommendations:

2009 Retail Annual Plan Item 1/R05016 – Develop Technical Electronic Implementation Standards and Data Dictionaries (*Book 9: Customer Billing and Payment Notification via Uniform Electronic Transaction*) – approved by the Retail ECs on February 3, 2010.

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

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

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

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

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

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

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

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

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

Retail 2009 Annual Plan Item 10a and 10c - Service Request, Disconnection and Reconnection in the Registration Agent Model – formal comment period ends May 7, 2010.

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

Minor Corrections:

MC10012 –Errata for NAESB WGQ Internet Electronic Transport (Internet ET) Manual, Version 1.9 and NAESB RXQ Internet ET Manual Version 1.2: http://www.naesb.org/pdf4/wgq_req_rgq_mc10012.doc - notational ballot due March 5, 2010.

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**NAESB UPDATE: VERSION 1.3 – RETAIL ELECTRIC AND RETAIL GAS QUADRANT (REQ/RGQ)**
**APRIL 12, 2010**

**TIMELINE:**

- Version 1.3 is scheduled for publication in 2011.
- To back into this date – all standards should be ratified by date of publication, and EC actions should be taken one month prior, to publication, all subcommittee actions should be taken three months prior to publication.

| | |
|---|---|
| Month - 4 | Subcommittee Recommendations Completed and sent out for comment |
| Month - 3 | EC Actions taken |
| Month - 2 | Ratifications sent out and completes, minor corrections applied |
| Month - 1 | Review of draft publication |
| Month - 0 | Date of Publication. |

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**April 5, 2010**
**Via email and posting**

| | |
|---|---|
| **TO:** | **NAESB Executive Committee (EC) Members, posting for interested parties** |
| **FROM:** | NAESB Office |
| **cc:** | EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below |
| **RE:** | NAESB Triage Actions Pending for R10001 and R10002 |

Dear Triage Subcommittee and EC members,

We have two requests to triage – R10001 and R10002 -- provided below as hyperlinks. The NAESB office recommends the following actions:

For R10001, submitted by Amy Burden, Brenda Horton, and Kathryn Burch on behalf of Enbridge, Kern River Gas Transmission and Spectra Energy Transmission:

> 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 update the NAESB Wholesale Gas Quadrant (WGQ) Quadrant Electronic Delivery Mechanism (QEDM) Manual to add the ability to provide Informational Postings reports downloads in a CSV file format, the request should be assigned jointly to the WGQ Business Practices Subcommittee (BPS) and the WGQ Electronic Delivery Mechanisms (EDM) Subcommittee. There was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the WGQ BPS and WGQ EDM.

For R10002, submitted by James Tillet on behalf of Endeavor Engineering Inc.:

> This request is (1) found within scope; (2) to be assigned jointly to the Wholesale Electric Quadrant (WEQ) and the Retail Electric Quadrant (REQ); and (3) because it is a request to create common interfaces and data structures necessary for enrolling demand response sites into a demand response program, the request should be assigned to the WEQ/REQ DSM-EE Subcommittee. 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 WEQ/REQ DSM-EE Subcommittee.

If you have any questions on a specific request, please contact the requestor directly -- their email addresses are provided as links with the requests. 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 April 20, triage notes will be posted on the NAESB web site indicating that the Triage Subcommittee and the EC agrees with the above actions, and the requests will be forwarded to the chairs of the subcommittees to which they have been assigned.

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**April 28, 2010**
**Via email and posting**

| | |
|---|---|
| **TO:** | **NAESB Executive Committee (EC) Members, posting for interested parties** |
| **FROM:** | NAESB Office |
| **cc:** | EC Alternates, Submitters, Subcommittee Chairs of Subcommittees noted in text below |
| **RE:** | NAESB Triage Actions Taken for R10001 and R10002 |

Dear Triage Subcommittee and EC members,

Tow requests were sent out for review and determination of disposition on April 2, 2010, all provided below as hyperlinks. There were no requests for conference cal for discussion, and there were no comments received. The requests were triaged as follows:

For R10001, submitted by Amy Burden, Brenda Horton, and Kathryn Burch on behalf of Enbridge, Kern River Gas Transmission and Spectra Energy Transmission:

> 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 update the NAESB Wholesale Gas Quadrant (WGQ) Quadrant Electronic Delivery Mechanism (QEDM) Manual to add the ability to provide Informational Postings reports downloads in a CSV file format, the request should be assigned jointly to the WGQ Business Practices Subcommittee (BPS) and the WGQ Electronic Delivery Mechanisms (EDM) Subcommittee. There was nothing in the request indicating that it should be assigned a high priority, therefore, it should be addressed in the normal course of business of the WGQ BPS and WGQ EDM.

For R10002, submitted by James Tillet on behalf of Endeavor Engineering Inc.:

> This request is (1) found within scope; (2) to be assigned jointly to the Wholesale Electric Quadrant (WEQ) and the Retail Electric Quadrant (REQ); and (3) because it is a request to create common interfaces and data structures necessary for enrolling demand response sites into a demand response program, the request should be assigned to the WEQ/REQ DSM-EE Subcommittee. 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 WEQ/REQ DSM-EE Subcommittee.

If you have any questions on a specific request, please contact the requestor directly -- their email addresses are provided above. The noted dispositions for the requests and the requests themselves were forwarded to the Triage Subcommittee and the EC members on April 2. . There were no dissenting comments received. As such, the requests are considered in scope and assigned to the indicated subcommittees for development. Please note that this communication serves as notice to the subcommittee chairs of the subcommittees to which the requests are assigned.

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS**
**As Approved by the NAESB Board of Directors on March 25, 2010**

| | 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<br>Status: Not Started | 4th Q, 2010 | TEIS |
| 2. | Develop NAESB Certification checklist criteria for Retail Quadrants to be used in the NAESB Certification Program. The certification checklist may address test scripts, a checklist of items to be tested, data connectivity for test scripts and EDM testing.<br>Status: Not Started. Dependent upon publication of Version 2.0 at a minimum, but more dependent upon completion of Customer Choice efforts, expected 1st Q 2011 at the earliest. | 2011 | Ad Hoc EC Certification Group |
| 3. | Review and develop needed model business practices for a standardized method for quantifying benefits, savings, cost avoidance and/or the reduction in energy demand and usage derived from the implementation of demand side management and energy efficiency programs. This effort will include demand side response, energy efficiency programs and metering, including the 'curtailment service provider' program. The wholesale and retail demand response work groups and the Smart Grid task force should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other. | Ongoing | Joint WEQ/REQ DSM Subcommittee |
| | a. Develop glossary for business practice standards<br>Status: Ongoing | Ongoing | Joint WEQ/REQ DSM Subcommittee |
| | b. Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets.[5] This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.<br>Status: Underway (An estimated completion date will be established in 1st Q, 2010 after the new subcommittee has been formalized) | 4th Q, 2010 | Joint WEQ/REQ DSM-EE Subcommittee |
| | c. Support the second phase of retail development of model business practice standards for demand response programs<br>Status: Underway | 2nd Q, 2010 | REQ Section of the Joint WEQ/REQ DSM Subcommittee |
| 4. | Billing and Payments | | |
| | a. Develop Process Flows to be included as models in Book 3 – Billing and Payments<br>Status: Underway | 2nd Q, 2010 | BPS |
| | b. If the development of Process Flows indicate a gap in the model business practices, then develop new model business practices to address the gap.<br>Status: Underway | 2nd Q, 2010 | BPS |

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS**
**As Approved by the NAESB Board of Directors on March 25, 2010**

| | Item Number & Description[1] | Completion[2] | Assignment[34] |
|---|---|---|---|
| 5. | Model Business Practices User Guide<br>Add a new section to Book 0 to describe what Books have been developed, how the Books are laid out, and revised the title of the Book to reflect the additions<br>Status: Underway | 3rd Q, 2010 | BPS |
| 6. | Additional Registration Agent Processes | | |
| | a. Review all existing Model Business Practices to determine if the Customer Information process is already covered, and if necessary develop any new Model Business Practices required<br>Status: Completed | 1st Q, 2010 | BPS |
| | b. Review all existing Model Business Practices to determine if the disconnection and reconnection process is already covered, and if necessary develop any new Model Business Practices required.<br>Status: Completed | | |
| | i. Create MBPs for disconnection/reconnection initiated by the supplier<br>Status: Completed | 4th Q, 2009 | BPS |
| | ii. Create MBPs for disconnection/reconnection initiated by the distribution company<br>Status: Completed | 4th Q, 2009 | BPS |
| | c. Review all existing Model Business Practices to determine if there are other Registration Agent Model processes not covered, and develop a prioritized list of those processes, if any.<br>Status: Underway | 3rd Q, 2010 | BPS |
| | d. Develop Model Business Practices and Process Flows for those Registration Agent Model processes on the prioritized list developed in (c) above, if any.<br>Status: Underway | 3rd Q, 2010 | BPS |
| | e. Develop Technical Electronic Implementation Standards and Data Dictionaries to support Model Business Practices of Book 14 – Service Requests, Disconnections and Reconnections in the registration Agent Model<br>Status: Underway | 3rd Q, 2010 | IR/TEIS |
| | f. Develop Technical Electronic Implementation Standards and Data Dictionaries to support any Model Business Practices developed in (d) above<br>Status: Underway | 3rd Q, 2010 | IR/TEIS |
| 7. | Supplier Certification<br>Develop practices for Distribution Companies to register/certify new Suppliers when they seek to begin doing business in the Distribution Company's service area.<br>Status: Not Started | 4th Q, 2010 | BPS |

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 ANNUAL PLAN for the RETAIL GAS and ELECTRIC QUADRANTS**
**As Approved by the NAESB Board of Directors on March 25, 2010**

| | Item Number & Description[1] | Completion[2] | Assignment[34] |
|---|---|---|---|
| 8. | Supplier Marketing Practices<br>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.<br>Amongst the topics to be considered for inclusion on the statement would be the following:<br>• the most important terms of the Supplier agreement, such as the contract's term and termination fee provisions;<br>• training and identification of Supplier marketing representatives;<br>• protocols for Supplier in-person and telephone contacts with customers;<br>• added measures for protecting non-English speaking customers; and<br>• Processes for handling customer complaints and resolving disputes arising from Supplier marketing activities.<br>Status: Not Started | 4th Q, 2010 | BPS |
| 9. | Develop Smart Grid Wholesale and Retail Electric Standards | | |
| | a. Develop Requirements and Use Cases for PAP 03 – Pricing Model | | |
| | i. Phase 1<br>Status: Completed | 1st Q, 2010 | Joint WEQ/REQ SGS Task Force |
| | ii. Phase 2<br>Status: Underway | 2nd Q, 2010 | Joint WEQ/REQ SGS Task Force |
| | b. Develop Requirements and Use Cases for PAP 04 – Scheduling Model | | |
| | i. Phase 1<br>Status: Completed | 1st Q, 2010 | Joint WEQ/REQ SGS Task Force |
| | ii. Phase 2<br>Status: Underway | 2nd Q, 2010 | Joint WEQ/REQ SGS Task Force |
| | c. Develop Requirements and Use Cases for PAP 09 – Demand Response/Distributed Energy Resources | | |
| | i. Phase 1<br>Status: Completed | 1st Q, 2010 | REQ Section of the Joint WEQ/REQ SGS Task Force |
| | ii. Phase 2<br>Status: Underway | 2nd Q, 2010 | REQ Section of the Joint WEQ/REQ SGS Task Force |

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| | Item Number & Description[1] | Completion[2] | Assignment[34] |
|---|---|---|---|
| | d. Act as a convener (develop and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies) and develop business practice standards as needed and assigned to NAESB for PAP 10 – Standard Energy Usage Information<br>Status: Underway | 2nd Q, 2010 | Joint WEQ/REQ SGS Task Force |
| 10. | Reserved (Items added under action item 6) | | |
| 11. | Master List of Defined Terms: Review the definitions of all Defined Terms in Book 0 – Master List of Defined Terms, including other Ratified Terms not yet published, and revise the definitions of all Defined Terms not specifically related solely to the competitive marketplace to broaden their applicability to conform to NAESB's expanded scope.<br>Status: Not Started | 2nd Q, 2010 | Glossary |

**Program of Standards Maintenance & Fully Staffed Standards Work[6]**

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

**Provisional Activities**

**Joint Effort:**

Modify TPA as necessary.

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

Review existing body of model business practices for consistency and develop or modify model business practices as needed.

**Retail Electric Quadrant Effort Only:**

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

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

Develop business practice standards for cap and trade programs for green house gas (See action item 6h).

**Retail Gas Quadrant Effort Only:**

Examine Wholesale Gas Quadrant Non-EDM Standards for applicability to retail business practices.

Settlement Process: Reconcile energy schedules and energy delivered by suppliers within a given market.

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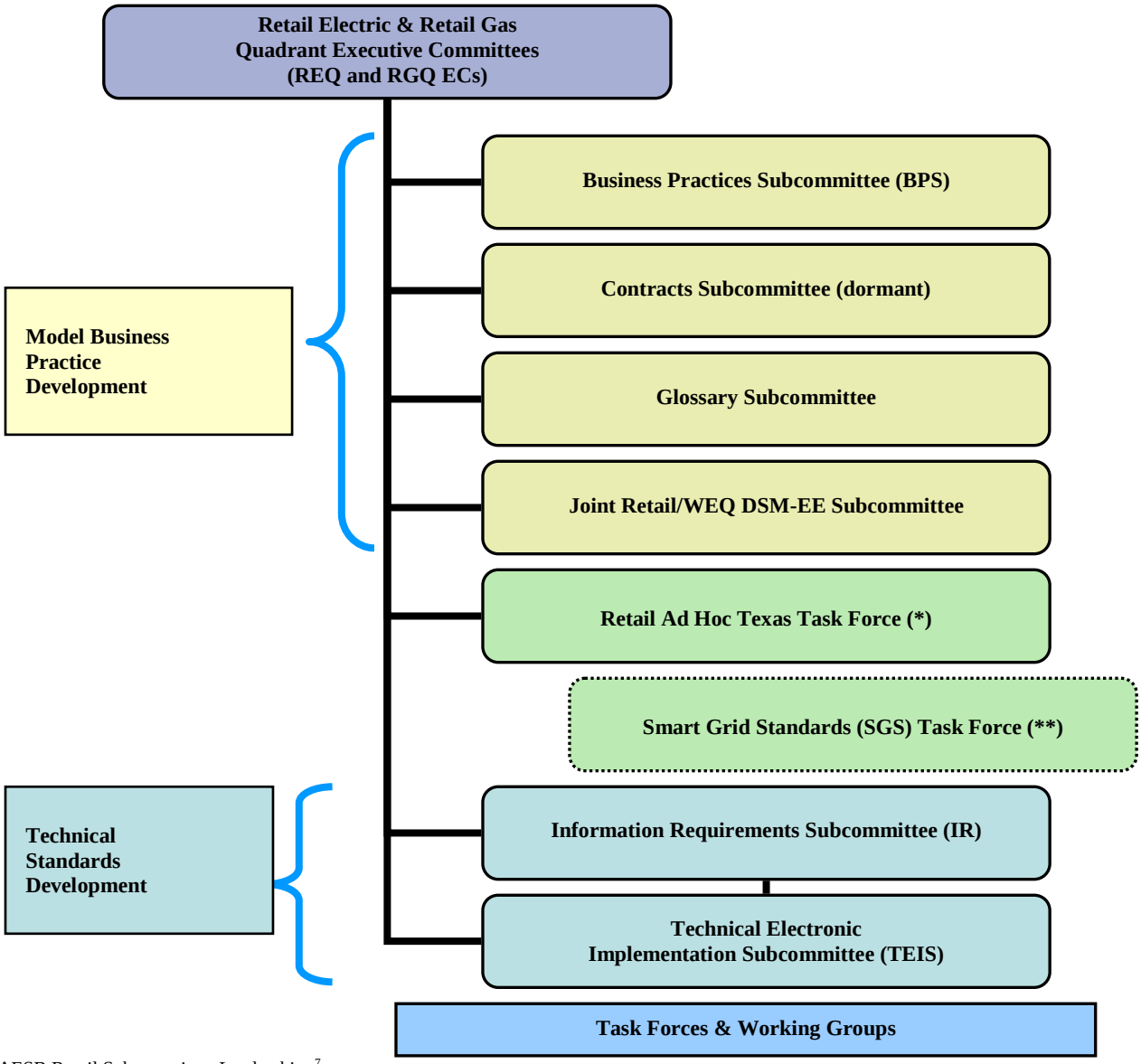


NAESB Retail Subcommittee Leadership: [7]

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

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

(**) The Smart Grid Task Force 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 to the NAESB Board Smart Grid Strategic Steering Committee. The group is chaired by Brent Hodges, Wayne Longcore, Joe Zhou and Robert Burke.

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Retail 2010 Annual Plan End Notes:

1 As outlined in 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 is expected to be split into several separate subcommittees to support concurrent development of separate standards sets. The split is to take place at the end of May after which the assignments will be modified.

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

[6] This work is 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.

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

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April 1, 2010

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

**FROM:** Jonathan Booe, NAESB Staff Attorney

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

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

## 1. Administration and Welcome

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

## 2. Adoption of the Agenda and Minutes

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

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

## 3. Membership and Financial Report

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

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

## 4. Reports from Board Committees

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

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

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

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

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

**5. Report from Advisory Council**

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

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issues. Ms. McQuade encouraged the NAESB Board members to attend in conjunction with the winter NARUC meeting.

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

Mr. Considine gave a presentation concerning smart energy and the normalization of markets to increase engagement and innovation. He noted that the smart grid initiative, while primarily focused on the electric market, would be more appropriately referred to as the smart energy initiative. Many of the activities currently underway to develop the smart grid will have far reaching implications that will impact a broad group of energy industry participants, including those in the wholesale and retail natural gas markets. His presentation can be found on the NAESB website through the following hyperlink: http://www.naesb.org/pdf4/bd032510a2.pdf.

**7. Updates on Specific Efforts**

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

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

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

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

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

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

**8. 2010 Executive Committee Reports**

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

**9. Plan for June 2010 Board Meeting**

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

**10. Old and New Business**

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

**11. Adjourn**

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

**12. Board Attendance and Voting Record (Vacancies Omitted)**

| WGQ PRODUCERS SEGMENT | | ATTENDANCE |
|---|---|---|
| Richard D. Smith | Regulatory & Compliance Manager, Noble Energy Inc. | |
| Mark Stultz | Vice President – Policy and Regulatory Affairs, US America Gas and Power, BP Energy Company | In Person |
| Keith Sappenfield | Regional Director – US Regulatory Affairs, EnCana Oil & Gas (USA), Inc. | Phone |
| Randy E. Parker | Global Regulatory Advisor, ExxonMobil Gas and Power Marketing Company | |
| Pete Frost | Director – Regulatory Affairs, ConocoPhillips Gas and Power Marketing | In Person |

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**12. Board Attendance and Voting Record (Vacancies Omitted)**

| | | |
|---|---|---|
| **WGQ PIPELINE SEGMENT** | | |
| Cathie Legge | Manager – Customer Service, Alliance Pipeline, LP | |
| Bill Grygar | Vice President, Panhandle Eastern Pipe Line | Phone |
| Susanna B. Barry | Vice President – Commercial Operations, Tennessee Gas Pipeline Company | In Person |
| Richard Kruse | Senior Vice President, Spectra Energy Transmission | In Person |
| **WGQ LOCAL DISTRIBUTION COMPANY (LDC) SEGMENT** | | |
| Craig Colombo | Energy Trader III, Dominion Resources | |
| Adrian Chapman | Vice President – Regulatory Affairs & Energy Acquisition, Washington Gas | Phone |
| Mike Novak | Asst. General Manager, National Fuel Gas Distribution Corporation | |
| Lee Stewart | Senior Vice President, Gas Transmission, Southern California Gas Company | |
| **WGQ END USERS SEGMENT** | | |
| Valerie Crockett | Senior Program Manager – Energy Markets & Policy, Tennessee Valley Authority | In Person |
| Timothy W. Gerrish | Director of Origination-Energy Marketing and Trading, Florida Power & Light | |
| Tina Burnett | Natural Gas Resources Administrator, The Boeing Company | Phone |
| Lori-Lynn C. Pennock | Senior Fuel Supply Analyst, Salt River Project | In Person |
| Jim Templeton | Principal, Comprehensive Energy Services | In Person |
| **WGQ SERVICES SEGMENT** | | |
| Steve Abbey | Manager of Regulatory Affairs – Marketing Department, Anadarko Energy Services Company | |
| Rusty Braziel | Managing Director, Bentek Energy, LLC | |
| Paul Kahler | Midstream Regulatory Advisor, Cenovus Energy Inc. | |
| Lori Leeder | Relationship Manager/Business Development – Asset Optimization, Vega Energy Partners, Ltd | Phone |
| **REQ SERVICE PROVIDERS/SUPPLIERS SEGMENT** | | |
| Jim Minneman | Controller, PPL Solutions LLC | In Person |
| J Cade Burks | Executive Vice President of ista | |
| Austin Morris | Managing Partner – Energy, SunGard Consulting Services, LLC | In Person |
| **REQ UTILITIES SEGMENT** | | |
| David Koogler | Director – State Regulation, Dominion Virginia Power | In Person |
| Dennis Derricks | Director Regulatory Policy and Analysis, Wisconsin Public Service Corporation | |
| Ruth Kiselewich | Director – Demand Side Management Programs, Baltimore Gas & Electric Company | |
| Debbie McKeever | Market Advocate, Oncor | In Person |

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**12. Board Attendance and Voting Record (Vacancies Omitted)**

| | | | |
|---|---|---|---|
| **REQ END USERS/PUBLIC AGENCIES SEGMENT** | | | |
| James P. Cargas | Senior Assistant City Attorney, City of Houston | | |
| **WEQ TRANSMISSION SEGMENT** | | **SUBSEGMENT** | |
| Dan Klempel | Director Transmission Regulatory Compliance, Basin Electric Power Cooperative | Muni/Coop | |
| Chuck Feagans | Senior Manager, Reliability Policy, Tennessee Valley Authority | Fed/State/Prov. | Phone |
| John E. Lucas | Director – Transmission Policy and Services, Southern Company Transmission | IOU | In Person |
| Jill Horswell | Director Transmission, Southern California Edison | at large | Phone |
| Edward J. Davis | Policy Consultant, Entergy Services, Inc. | at large | In Person |
| **WEQ GENERATION SEGMENT** | | | |
| Douglas L. Curry | Administrator and CEO, Lincoln Electric System | Muni/Coop | |
| Belinda Thornton | General Manager – Energy Origination, Tennessee Valley Authority | Fed/State/Prov. | |
| Lou Oberski | Director – Electric Market Policy, Dominion Resources Services, Inc. | IOU | In Person |
| Wayne Moore | Regulatory Affairs & Energy Policy Director and Compliance Officer – Generation, Southern Company Services, Inc. | IOU | |
| Gloria Godson | Vice President Energy Policy, Conectiv Energy Supply, Inc. | Merchant | |
| Shah Hossain | Senior Regulatory Specialist, Westar Energy, Inc. | at large | |
| **WEQ MARKETERS/BROKERS SEGMENT** | | | |
| Roy True | Manager of Regulatory and Market Affairs, ACES Power Marketing | Muni/Coop | In Person |
| Jeff Ackerman | Manager – Colorado River Storage Project Energy Management and Marketing Office, Western Area Power Administration | Fed/State/Prov. | Phone |
| Gavin Cunningham | Manager – FirstEnergy Solutions Corp. | at large | In Person |
| Jack Cashin | Senior Manager of Policy, Electric Power Supply Association (EPSA) | at large | |
| Sam Forrest | Vice President – Energy Marketing and Trading, Florida Power & Light | IOU | |
| R. Scott Brown | Vice President and Director, Exelon Generation Power Team | IOU | In Person |
| **WEQ DISTRIBUTION/LOAD SERVING ENTITIES (LSE) SEGMENT** | | | |
| Arthur G. Fusco | Vice President and General Counsel, Central Electric Power Cooperative Inc. | Muni/Coop | Phone |
| Paul McCurley | Manager – Power Supply, National Rural Electric Cooperative Association | Muni/Coop | |
| Nelson Peeler | Vice President System Operations, Duke Energy | IOU | In Person |

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**12. Board Attendance and Voting Record (Vacancies Omitted)**

| | | | |
|---|---|---|---|
| Joe Hartsoe | Managing Director – Federal Policy, American Electric Power Service Corp. | at large | Phone |
| Bruce Ellsworth | New York State Reliability Council | At-Large | In Person |
| **WEQ END USERS SEGMENT** | | | |
| Jesse D. Hurley | Chief Executive Officer, Shift Research, LLC | at large | In Person |
| Aaron Breidenbaugh | Senior Manager – Regulatory Affairs and Public Policy – New York, EnerNOC, Inc. | at large | |
| Thomas G. Dvorsky | Director of the Office of Electricity, Gas, and Water at the New York State Department of Public Service, rep. National Association of Regulatory Utility Commissioners | Regulator | |
| Rick Lentz | Fellow with SunGard | at large | |
| Michehl Gent | Open Access Technology International, Inc. | At-Large | In Person |
| **WEQ INDEPENDENT GRID OPERATORS/PLANNERS** | | | |
| Michael Desselle | Vice President Process Integrity, Southwest Power Pool | | In Person |
| Kent Saathoff | Vice President of System Operations, ERCOT | | In Person |
| Kevin Kirby | Vice President Market Operations, ISO New England, Inc. | | In Person |
| Rana Mukerji | Vice President Market Structures, New York Independent System Operator, Inc. (NYISO) | | Phone |
| Andy Ott | Senior Vice President Marketing, PJM Interconnection, LLC | | Phone |
| Bill Phillips | Vice President Standards Compliance & Strategy, Midwest ISO (MISO) | | In Person |
| Peter Sergejewich | 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) | | Phone |
| David A. Wollman | Leader, Smart Grid Team – Standards and Electrical Metrology Groups, National Institute of Standards and Technology (NIST) | | Phone |
| **RGQ SERVICE PROVIDERS/SUPPLIERS SEGMENT** | | | |
| Leigh Spangler | President, Latitude Technologies Inc. | | Phone |
| Dave Darnell | President & CEO, Systrends USA | | |
| Greg Lander | President, Capacity Center | | |
| **RGQ DISTRIBUTORS SEGMENT** | | | |
| Alonzo Weaver | Vice President of Engineering and Operations, Memphis Light, Gas & Water Division (APGA) | | |
| Ralph Cleveland | Senior Vice President – Engineering and Operations, AGL Resources, | | In Person |

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**12. Board Attendance and Voting Record (Vacancies Omitted)**

Inc.

**13. Other Attendance**

| Name | Organization | Attendance |
|---|---|---|
| Jonathan Booe | NAESB | In Person |
| Bill Boswell | NAESB | In Person |
| Kathryn Burch | Spectra Energy Transmission | In Person |
| Christopher Burden | Williams Gas Pipeline | In Person |
| Toby Considine | University of North Carolina | In Person |
| Lorraine Cross | Cross & Company | In Person |
| Cory Cummings | NAESB | In Person |
| Dale Davis | Williams Gas Pipeline | In Person |
| Rufus Gladney | Consumers Energy Co. | In Person |
| Mark Gracey | El Paso Gas Pipeline Company | In Person |
| Bill Griffith | El Paso Natural Gas | In Person |
| John Goodin | California ISO | Phone |
| Susan Munson | ERCOT | In Person |
| Sylvia Munson | SunGard Energy Systems | In Person |
| Rae McQuade | NAESB | In Person |
| Phil Precht | Baltimore Gas and Electric | Phone |
| Denise Rager | NAESB | In Person |
| Barbara Rehman | Bonneville Power Administration | Phone |
| Ed Skiba | Midwest ISO | In Person |
| Veronica Thomason | NAESB | In Person |
| Nancy Traweek | California ISO | Phone |
| Kim Van Pelt | Panhandle Eastern Pipeline | In Person |
| Jill Vaughn | Preferred Legal Services | In Person |
| Charles Yeung | SPP | In Person |
| Kathy York | Tennessee Valley Authority | In Person |
| Randy Young | Boardwalk Pipeline Partners | Phone |

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**via posting**

**TO:** NAESB Web Site for Posting

**RE:** Notes from the NAESB Advisory Council Meeting – February 13, 2010

**DATE:** March 1, 2010

**NORTH AMERICAN ENERGY STANDARDS BOARD ADVISORY COUNCIL MEETING NOTES**
**Renaissance Washington Hotel – Washington, DC**
**February 13, 2010 – 4:00 PM to 6:00 PM Eastern**

## 1. Welcome

Mr. Ellsworth opened the meeting and welcomed the Advisory Council members and observers. The attendees introduced themselves around the table. Mr. Culliton provided antitrust guidance. The agenda[1] as posted was adopted without opposition.

## 2. Primer: The development of a standard from introduction through approval and publication

Mr. Buccigross guided attendees through the NAESB standards development process using a slideshow presentation[2]. A summary of his presentation and related commentary follows.

He stated that NAESB's participatory philosophy, balanced organizational structure, robust and multi-tiered voting process yields a well-distilled final standard that adheres to the American National Standards Institute's principles of openness, balance, due process and consensus.

Mr. Boswell noted that a particular standard under development will occasionally reach an impasse due to uncertainty regarding an underlying policy aim. He expressed his appreciation that open lines of communication permit NAESB to consult regulators for policy clarification in such cases. He further stated that it does not advocate before regulators or seek to establish policy direction, but seeks to implement articulated policies.

Mr. Buccigross referred attendees to the NAESB Certificate at Article 2, Section 1, which defines the organization's scope as the promotion of streamlined transactional processes that foster competition and market efficiency in the electric and natural gas industries. He added that over 800 cross-spectrum industry volunteers per month assist in the drafting of these standards; the development process typically takes 12 months, although technical complexities and regulatory compliance timelines vary from standard to standard. Mr. Buccigross presented the details of this process to attendees on-screen. NAESB has been able to develop standards from start to finish in as short as 4 months when there is strong executive direction and championship, underlying policies are unambiguous and there is visible and vocal support from regulators for the urgency.

Ms. McQuade noted that the recording of minority positions and their treatment at each step along the way helps to address potential due process concerns. It was noted that the Board is responsible for providing strategic direction and establishing a budget, it does not participate directly in standards development – it does however set the stage for standards development through the annual plans, a tool of the Board. The Board identifies items on the plans and provides the priorities for all development.

Mr. Ellworth observed that NAESB has generated over 2000 standards through a largely volunteer process; Messrs. Boswell and Buccigross added that transaction and implementation costs to affected businesses have been greatly reduced as a result. Ms. McQuade noted that the emergence of NAESB has provided a collaborative venue for the

[1] The agenda may be downloaded at: http://naesb.org/pdf4/advisory021310ma.doc.

[2] The presentation may be downloaded at: http://naesb.org/pdf4/advisory021310primer.pdf.

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industry to interact with regulators in the implementation of policy through the adoption of standards. Mr. Freitas asked whether it was possible to quantify the savings benefit provided by the adoption of any particular standard; Mr. McAllister added that FERC orders contain estimated implementation costs. Noting that the universal adoption of electronic transactions, made possible by NAESB standards, has resulted in a more robust, efficient and open marketplace, Mr. Buccigross indicated that he would further research Mr. Freitas' question and provide the Council with a response.

Continuing the presentation, Mr. Buccigross related that NAESB and NERC have developed a process for the joint development of standards that affect both reliability and commercial interests. After the presentation of this process, several attendees expressed satisfaction that the relationship between the two organizations has evolved into an open collaboration; Mr. Ellsworth called this maturation a credit to both organizations.

Mr. Buccigross next detailed NAESB's voting procedures before giving an overview of the mechanics of making minor corrections and creating interpretations. He opened the floor to questions.

Mr. Boswell added that NAESB standards are themselves copyrighted; he referenced a FERC decision from December 2009 that underlined this status.

**3. Update on Quadrant Activities and Strategic Directions**

Mr. Ellsworth suggested combining this agenda item with the next (NAESB's role relative to federal and state regulators, the Department of Energy, the Department of Commerce and the National Institute of Standards & Technology) in order to facilitate discussion; none were opposed.

- WEQ 2010 Annual Plan[3] and Issues

Ms. York presented key items from the WEQ 2010 Annual Plan. She called particular attention to item 1(a) Parallel Flow Visualization/Mitigation for Reliability Coordinators in the Eastern Interconnection. She stated that this effort is intended to better identify congestion and tailor relief in affected areas, through changes to the frequency of data collection, the data organization and the data collected itself. This information is provided to a toll administered by NERC, the Interchange Distribution Calculator. After the changes are made to the IDC, the original IDC and the .revised IDC will run parallel for a period of 12-18 months, before it is determined whether to switch over to the revised IDC. Ms. York also mentioned the following ongoing efforts: 1) the creation of entirely new standards for network service on OASIS; 2) the transition of the TSIN registry from NERC to NAESB; and, 3) the development of demand response, demand-side management, and energy efficiency standards. She also noted the intent to pursue the directives in FERC Order No. 676(e) beginning in June 2010.

Special attention was called to item 12 on the WEQ Provisional Items relating to FERC's National Action Plan on Demand Response. In particular, Ms. McQuade asked for guidance as to whether continued NAESB efforts in response to FERC's directive would be a direction the Advisory Council would suggest NAESB undertake, or should this item remain with the stakeholder processes administered by the ISOs and RTOs. While standards can and do incorporate regional or operational differences to support flexibility in the market, the need for such differences are also identified. The question goes to the heart of the issue of how standards if pursued could impact individual ISO program designs and terms in tariffs. Mr. Ellsworth asked the Advisory Council members to consider this issue and respond to Ms. McQuade at their convenience

Mr. Camp mentioned that, while measurement and verification standards may reasonably be expected to be uniform, there are certain state-by-state processes contemplated in the National Action Plan. He suggested close coordination between retail and wholesale segments in these areas. Ms. McQuade observed that both wholesale and retail DR and Smart Grid standards are under concurrent and coordinated development to ensure that differences between the two markets can be accommodated, but only if those differences are understood by both groups and determined that they are needed.

[3] The WEQ Annual Plan is available at: http://www.naesb.org/pdf4/weq_2010_annual_plan.doc.

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Ms. York next announced NAESB's role in the development of the Smart Grid Priority Action Plans (PAPs). After this presentation was made, Ms. McQuade brought up a procedural issue: since NAESB has been given the exclusive responsibility to respond to certain PAPs using its unique process, yet NIST is accountable for the overall Smart Grid project's completion, how should NAESB file its finished product at FERC. Mr. Wollman expressed a preference that NAESB include its PAP efforts into its established filing procedures at FERC, which is also agreeable to FERC staff. The standards should be submitted in late second quarter 2010 to the FERC as part of the WEQ Version 2.2 standards filing.

Mr. Ellsworth asked if additional PAPs were expected and, if so, whether any of them were likely to fall to NAESB to complete. Mr. Wollman replied that the Smart Grid Interoperability Panel had just finished a new PAP relating to IEC standards for wind energy; he added that this effort was likely to be tasked to NAESB. Ms. McQuade also noted that automated demand response enrollment may undertaken by NAESB, it it may bear some similarities to existing NAESB retail standard for enrollments for customer choice programs.

- Retail 2010 Annual Plan[4] and Issues

Ms. McQuade presented the Retail Annual Plan. She asked that the Advisory Council provide information on the robustness and relevancy of the annual plan standards development vis-à-vis the small number of participants. Mr. Gee asked if NAESB had considered qualification for federal stimulus funds, stating that in his view a strong case could be made. Mr. Freitas stated that DOE could consider funding a staff position at NARUC for support of NAESB and retail standards development. Ms. McQuade stated that if state regulators join NAESB the companies that operate within their jurisdictions might follow. Mr. Camp offered to make various organizations to which he belongs aware of NAESB's Retail efforts and urge them to consider participating in NAESB. The Advisory Council can provide input to Ms. McQuade at its convenience.

- WGQ 2010 Annual Plan[5] and Issues

Mr. Buccigross presented the WGQ Annual Plan. He stated that this segment's efforts were largely focused on modernizing certain outdated mechanisms in the standards. As an example, he noted that the industry has shifted from the use of EDI; EBB has become universal. He confirmed that Sandia National Laboratories still approves all standards. It was asked to the Advisory Council if the WGQ annual plan items identified provided adequate relevance and support of the wholesale gas market. The Advisory Council can provide input to Ms. McQuade at its convenience.

**4. New Business**

- Ideas and Suggestions from the Floor

A brief discussion ensued about the emerging build-out of $CO_2$ pipelines. Mr. Gee noted that such a build-out is required since it is not possible to run $CO_2$ through the existing natural gas pipeline infrastructure. The observation was also made that there remains a significant unresolved issue: whether the federal government or individual states have jurisdiction over $CO_2$ pipeline siting decisions. Ms. Crockett asked attendees for written comments about $CO_2$ pipelines before June 2010. Ms. Cross observed that a significant amount of information needs to be exchanged relating to the quantification of released greenhouse gases to avoid double-counting. She also noted that the upcoming climate bill and the reporting requirements for transparency reporting may well require additional standards development by NAESB that would impact both the wholesale gas and electric markets.

- Election of Chair for 2010

Mr. Boswell nominated Mr. Ellsworth to continue as the NAESB Advisory Council Chair for 2010; Mr. Ellsworth was unanimously re-elected.

[4] The Retail Annual Plan is available at: http://www.naesb.org/pdf4/retail_2010_annual_plan.doc

[5] The WGQ Annual Plan is available at: http://www.naesb.org/pdf4/wgq_2010_annual_plan.doc

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**5. Adjourn**

The meeting was adjourned at 6:20 PM Eastern by consensus.

**6. Attendance**

| | |
|---|---|
| **Advisory Council Members in Attendance** | |
| Bruce Ellsworth, Chair | New York State Reliability Council |
| Vicky Bailey | Anderson Stratton Enterprises |
| Alex DeBoissiere | Duane, Morris |
| Christopher Freitas | Department of Energy |
| Robert Gee | The Gee Strategies Group |
| Annunciata Marino | Pennsylvania Public Utilities Commission |
| Thom Pearce | Ohio Public Utilities Commission |
| **Board Members in Attendance** | |
| Jim Buccigross | 8760 |
| Ralph Cleveland | AGL Resources |
| Valerie Crockett | Tennessee Valley Authority |
| Lori-Lynn Pennock | Salt River Project |
| **Guests in Attendance** | |
| Irene Ladner | Unaffiliated |
| David Wollman | National Institute of Standards and Technology |
| Bruce McAllister | Federal Energy Regulatory Commission |
| Ward Camp | Landis+Gyr |
| Grace Soderberg | Edison Electric Institute |
| Kathy York | Tennessee Valley Authority |
| Lorraine Cross | Cross & Company |
| **NAESB Staff in Attendance** | |
| Rae McQuade | NAESB President |
| Bill Boswell | NAESB General Counsel |
| James Culliton | NAESB Meeting Administrator/Staff Attorney |
| Veronica Thomason | NAESB Staff |

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**via posting**

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

Dear Critical Infrastructure Committee Members,

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

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

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

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

**Discussion and Adoption of the Scope & Mission of the Committee**

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

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

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

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

**Other Business/Next Meeting and Action Items:**

Ms. McQuade reviewed the action items from the meeting:

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

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

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

**Adjourn:**

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

**Work Papers Provided for the Meeting:**

**Meeting Related Documents:**

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

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

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

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

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

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

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

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

**CRITICAL INFRASTRUCTURE COMMITTEE MEMBERS**

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

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

**OTHER ATTENDEES**

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

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March 10, 2010

**NAESB AT A GLANCE: MONTHLY UPDATE**

**UPDATE ON e-TAG TESTING:** Mr. Harshbarger, co-chair of the Joint Electric Scheduling Subcommittee, provided the update on e-Tag testing in preparation of implementing e-Tag version 1.8.1. E-Tag is a method of communicating interchange schedules between operating entities of the bulk electric system to ensure a common understanding of the nature of a transaction. Version 1.8.1 does not contain any changes to the schema; most of the changes were made to the way in which information is processed. The formal vendor testing occurred during the first two weeks of February, 2010. At the conclusion of the first two weeks of testing, the vendors agreed to continue testing, which delayed implementation by two weeks. On the first of March, vendors concluded testing and the cutover date was updated to March 30, 2010.

**UPDATE ON NITS:** Mr. Wood of Southern Company, and co-chair of the WEQ OASIS subcommittee provided a review of the NAESB progress on NITS. Since the last monthly update call, the OASIS subcommittee has met twice in person and held one conference call. They have completed the application and evaluation of NITS and are currently working on modifications to the application. The next OASIS subcommittee meeting is scheduled for Tuesday, March 23, 2010 from 9:00 am to 4:00 pm Central. The next face-to-face OASIS subcommittee meeting is scheduled for April 13-15 in Little Rock, AR, hosted by Entergy.

**UPDATE ON DSM-EE EFFORTS:**

Wholesale Demand Response Activities: Mr. True, chair of the wholesale demand response work group and co-chair of the DSM-EE subcommittee, provided an update on the wholesale demand response work. Two conference calls have been held in 2010 to continue to address the EC Demand Response Task Force's action items. The wholesale demand response work group created three task forces (glossary, model business practices and performance evaluation methods) to accomplish this work. The glossary task force has met twice to review and synchronize the wholesale and retail demand response glossary terms. The model business practice task force and performance evaluation methods task force will both meet tomorrow, March 11, to kick off their efforts.

Retail Demand Response Activities: Ms. Cummings, NAESB counsel, provided the update on the retail demand response efforts. The retail demand response work group has met twice to review the formal comments that were submitted to them by the Retail Electric EC after approval of the first phase of retail demand response standards. In those two meetings they have reviewed approximately half of the comments that were submitted on the standards. The comments include proposed additions and deletions of the standards. The work group's comment matrix includes these comments, as well as the response of the retail demand response work group. The next retail demand response work group meeting is scheduled for Thursday, April 22 from 9:00 am to 11:00 am Central.

Retail Energy Efficiency Activities: Mr. Loper, co-chair of the retail energy efficiency work group, provided the update. The retail EE work group has met twice to discuss the scope of work to be developed. The biggest challenge has been deciding whether or not to include evaluation with measurement and verification. The group ultimately agreed to include evaluation within the scope of their work product. The work group has also discussed the level of detail necessary for this effort. They ultimately agreed to focus on a high level guidance and will use the National Action Plan for Energy Efficiency guide, specifically chapters 3-5, as guidance for standards development.

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**UPDATE ON SMART GRID ACTIVITIES:** Mr. Booe, NAESB counsel, provided an update on the ongoing Smart Grid activities. This week, four documents were distributed for formal comment:

1. PAP03: Requirements Specifications for Common Electricity Product and Pricing Definition: http://www.naesb.org/pdf4/weq_2010_ap6a_retail_2010_ap9a_rec.doc
2. PAP04: Requirements Specifications for Common Scheduling Mechanism for Energy Transactions: http://www.naesb.org/pdf4/weq_2010_ap6b_retail_2010_ap9b_rec.doc
3. PAP09: Requirements Specifications for Wholesale Standard DR Signals: http://www.naesb.org/pdf4/weq_2010_ap_6c_rec.doc
4. PAP09: Requirements Specifications for Retail Standard DR Signals: http://www.naesb.org/pdf4/retail_2010_ap_9c_rec.doc

The Smart Grid Task Force is now addressing the phase II efforts to further refine and develop the detail of these specifications for PAP03, 04 and 09. They will also address tasks 5 and 6 for PAP10, which addressed standardization of usage information. Task 5 will involve the creation of a usage communication questionnaire and task 6 will consolidate use cases and requirements for existing and planned energy communications. The Smart Grid Task Force meets every Thursday from 2:00 pm to 4:00 pm Central.

**UPDATE ON THE REGISTRY RFP:** Ms. McQuade provided the update. The Request for Proposals on the Electric Industry Registry Administrator was released February 22, with a request that all proposals be returned by close of business on May 21. The registry is a tool currently administered by NERC, but is being transferred to NAESB, as a more appropriate venue.

**UPDATE ON TLR AND PARALLEL FLOW VISUALIZATION:** Mr. Busbin provided the update. During the development of this work product, the subcommittee has addressed issues and approaches to be taken associated with prioritizing generation to load flows, in particular the prioritization of firm and non-firm. This issue of firm flow subordination to non-firm flow can be found in FERC Docket RM10-9 – NOI for Transmission Loading Relief Reliability Standard and Curtailment Priorities currently out for comment. The deadline for returning comments to FERC on this NOI is March 29, 2010. While the NOI is more specific to NERC activities, there is a strong correlation between NERC and NAESB on this issue. The WEQ BPS will meet on March 17-18 in Norristown, PA to continue discussion on this issue.

**ADVISORY COUNCIL UPDATE:** Mr. Ellsworth, Chairman of the NAESB Advisory Council, presented the update. The Advisory Council meeting is an opportunity for NAESB to provide an update on its activities and for the Advisory Council to provide input to NAESB on their efforts. Issues were discussed regarding every quadrant in NAESB. For WEQ, the council discussed whether or not to develop standards that could impact program design; the Retail Quadrants discussed how to increase participation; and the WGQ discussed areas that could benefit from standardization.

**NEXT CONFERENCE CALL:** The next Monthly Update Call is scheduled for May 26, 2010 from 1-2 PM Central. The agenda and any work papers will be posted on the Monthly Update page of the NAESB website: http://www.naesb.org/monthly_update.asp. We hope you can join us. If there are particular topics you would like to see covered or would like to receive additional information, please contact the NAESB Office (713)356-0060, naesb@naesb.org.

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**NAESB Monthly Update Conference Call, Participant List**

**March 10, 2010 2:00 PM Eastern**

| Name | Organization |
|---|---|
| Manisha Aggarwal | Portland Natural Gas Transmission |
| Philip Bedingfield | Georgia Public Service Commission |
| Jonathan Booe | NAESB |
| Christopher Burden | Williams Gas Pipeline |
| Jim Busbin | Southern Company |
| Warren Clark | Avista |
| Cory Cummings | NAESB |
| Rhonda Denton | BP |
| Bruce Ellsworth | New York State Reliability Council |
| Chris Fan | ConEdison |
| Marilyn Franz | NV Energy |
| Bill Gallagher | Vermont Public Power Supply Authority |
| John Goodin | California ISO |
| Michelle Greening | PPL Energy Plus |
| Bob Harshbarger | Puget Sound Energy |
| Josh Hoepner | DTE Energy |
| Rachel Hogge | Dominion |
| Wayne Lewis | Progress Energy |
| Joe Loper | Itron, Inc. |
| John Lucas | Southern Company |
| Rae McQuade | NAESB |
| Avygdor Moise | Future DOS R&D, Inc. |
| Marcie Otondo | Arizona Public Service |
| Lee Pedowicz | North East Power Coordination Council |
| Sig Peplowski | New York State Department of Public Service |
| Brad Petzold | Enbridge |
| Alan Pritchard | Duke Energy |
| Judy Ray | Southern Company |
| Barbara Rehman | BPA |
| Guy Ridgely | Midwest ISO |
| Norberto Rivera | ConEdison |
| Ed Skiba | Midwest ISO |
| Roy True | ACES Power |
| JT Wood | Southern Company |

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**NORTH AMERICAN ENERGY STANDARDS BOARD**

**2010 Annual Plan for the Wholesale Gas Quadrant as Approved by the Board of Directors on March 25 ,2010**

| Item Description | Completion[1] | Assignment[2] |
|---|---|---|
| **1. Gas-Electric Interdependency** | | |
| Respond to directives of FERC Order No. 698 issued 6-25-07, Docket Nos. RM05-5-001 and RM96-1-027 as related to the NAESB reports submitted in Docket No. RM05-28-000: | | |
| a. Provide for Enhanced Granularity for Public Utilities in Identifying Critical Operational Flow Orders. (R08020)<br>Status: Completed | 4th Q, 2009 | BPS, IR/Tech jointly with WEQ BPS |
| **2. Promotion of a More Efficient Capacity Release Market** | | |
| Review FERC Order Nos. 712 and 712A and modify NAESB standards as appropriate (Docket Nos. RM08-1-000, RM08-1-001). | | |
| a. Review recent FERC order on flow-through of Discounted or Negotiated Rates (Docket No. RP09-70 et al, October 15, 2009) and develop business practice standards as appropriate<br>Status: Not Started | 2nd Q, 2010 | BPS/Interpretations |
| **3. Capacity Release EDI Review** | | |
| Review capacity release transactions upload and related responses to determine suitability for EDI | | |
| a. Develop Business Practice Standards as appropriate<br>Status: Underway | 2nd Q, 2010 | BPS |
| b. Prepare fully staffed recommendation<br>Status: Underway (Adjustments may be made to Completion Dates based on report from Item 3.a) | 3rd Q, 2010 | BPS, IR/Technical |
| **4. Customer Security Administration** | | |
| Review and develop standards as appropriate to support Customer Security Administration Standards (Comment Submittal, 10-29-07)<br>Status: Not started (Scoping to take place 2nd Q, 2010 after which a Completion Date will be set) | 2010 | BPS |
| **5. Electronic Delivery Mechanisms** | | |
| Review minimum technical characteristics in Appendices B, C, and D of the WGQ QEDM Manual, and make changes as appropriate.<br>Status: Not Started | 2nd Q, 2010 | EDM |
| **6. FERC Strategic Plan FY2009-2014** | | |
| a. For the FERC Strategic Plan, under the section "Promote efficient design and operation of natural gas facilities", review and develop standards as needed to support EBB posting requirements regarding waste heat feasibility (NAESB Standard No. 4.2.23)<br>Status: Underway | 2nd Q, 2010 | BPS |

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**2010 Annual Plan for the Wholesale Gas Quadrant as Approved by the Board of Directors on March 25 ,2010**

| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| **7.** | **Common Codes** | | |
| a. | Review common code specifications for common location codes and determine if changes are necessary to the existing specifications to support both intrastate and interstate pipelines<br>Status: Not Started | 4th Q, 2010 | BPS |
| | **Program of Standards Maintenance & Fully Staffed Standards Work** | | |
| | Business Practice Requests | Ongoing | Assigned by the EC[3] |
| | Continue review against plan for migration to ANSI ASC X12 new versions as needed and coordinate such activities with DISA. | Ongoing | ANSI X12 Subcommittee |
| | Information Requirements and Technical Mapping of Business Practices | Ongoing | Assigned by the EC[3] |
| | Interpretations for Clarifying Language Ambiguities | Ongoing | Assigned by the EC[3] |
| | Maintenance of Code Values and Other Technical Matters | Ongoing | Assigned by the EC[3] |
| | Maintenance of Contracts Standards | As Requested | Contracts Subcommittee |
| | Maintenance of eTariff Standards | As Requested | Assigned by the EC[3] |
| | **Provisional Activities** | | |
| 1 | Review and develop standards as needed, related to Docket No. RM09-2-000, (Contract Reporting Requirements of Intrastate Natural Gas Companies). | | |
| 2 | Review and develop standards as needed related to the FERC Strategic Plan 2009-2014 | | |

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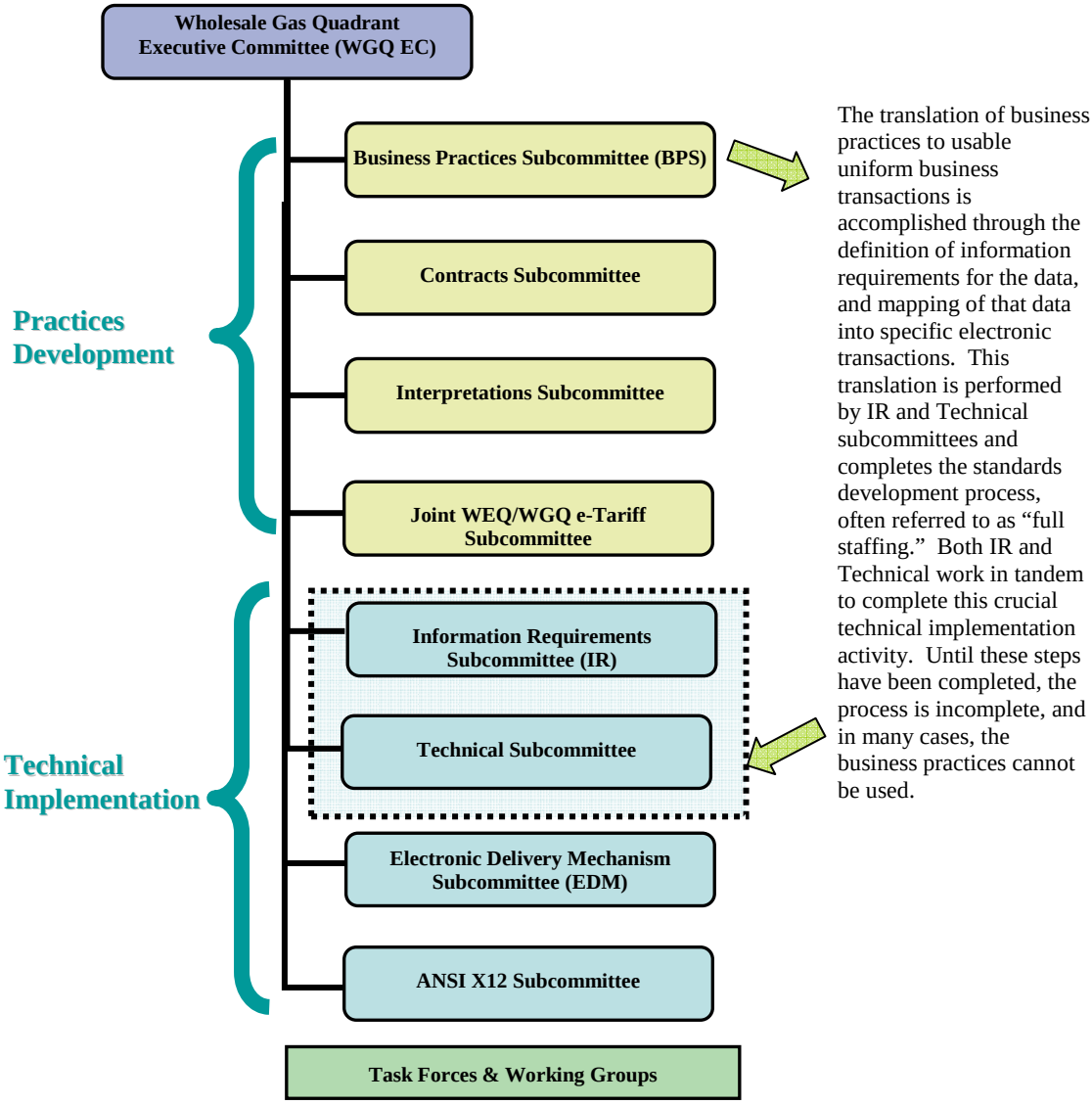


The translation of business practices to usable uniform business transactions is accomplished through the definition of information requirements for the data, and mapping of that data into specific electronic transactions. This translation is performed by IR and Technical subcommittees and completes the standards development process, often referred to as "full staffing." Both IR and Technical work in tandem to complete this crucial technical implementation activity. Until these steps have been completed, the process is incomplete, and in many cases, the business practices cannot be used.

**NAESB 2010 WGQ EC and Subcommittee Leadership:**

Executive Committee: Jim Buccigross, Chair and Dale Davis, Vice-Chair
Business Practices Subcommittee: Kim Van Pelt, Valerie Crockett, Steve Abbey, Mike Novak and Richard Smith
Information Requirements Subcommittee: Dale Davis
Technical Subcommittee: Mike Stender, Kim Van Pelt
Contracts Subcommittee: Keith Sappenfield
Electronic Delivery Mechanism Subcommittee: Leigh Spangler, Christopher Burden
Interpretations Subcommittee: Paul Love
Joint WEQ/WGQ e-Tariff Subcommittee: Keith Sappenfield, Jane Daly

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**End Notes, WGQ 2010 Annual Plan:**

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

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

[3] The EC assigns maintenance of existing standards on a request-by-request basis.

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
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| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| **1** | **Develop business practices standards as needed to complement reliability standards** | | |
| | Develop business practice standards to support and complement NERC reliability standards, NERC policies and NERC standards authorization requests (SARs) using the NERC/NAESB Coordination Joint Standards Development Process as appropriate. Current NAESB activities underway to develop business practice standards that are supportive of this annual plan item are: | | |
| | a) Parallel Flow Visualization/Mitigation for Reliability Coordinators in the Eastern Interconnection. | 2010 | BPS |
| | Note: Consideration should be given to provisional item 4. Work is being coordinated with the NERC IDC Working Group. | | |
| | Status: Underway | | |
| | b) Time Error and Inadvertent (BAL-004 and BAL-006) Coordination with NERC | TBD | TIMTF |
| | Status: Monitor. (Upon initiation of this item by NAESB. a completion date will be determined. Based on discussions with NERC staff regarding the Balancing Authority Controls Standards Drafting Team's timeline the completion date has been changed to tbd.) | | |
| | c) DCS and AGC (BAL-002 and BAL-005) Coordination with NERC | TBD | TIMTF |
| | Status Monitor. (Upon initiation of this item by NAESB. a completion date will be determined. Based on discussions with NERC staff regarding the Balancing Authority Controls Standards Drafting Team's timeline the completion date has been changed to tbd.) | | |
| **2** | **Develop business practice standards in support of the FERC RM05-25-000 and RM05-17-000 (OATT Reform)[1]** | | |
| | a) Develop version 2 business practice standards to better coordinate the use of the transmission system among neighboring transmission providers. Such business practice standards would be based on recommendations from NERC's Long Term ATC/AFC Task Force and would involve revised procedures for the ATC calculation and/or revised protocols as determined by the final order. | | |
| | Status: Underway | | |
| | Development is using joint standards development process with NERC. Request R050004 was expanded to include the Order No. 890 (Docket Nos. RM05-25-000 and RM05-17-000) and Order No. 890-A (Docket Nos. RM05-17-001, 002 and RM05-25-001, 002), "Preventing Undue Discrimination and Preference in Transmission Services," issued April 11, 2007). | | |
| | i) Group 3: Network Service On OASIS | | |
| | 1) Use of OASIS to Make Electronic Requests to Designate and Terminate Network Resource | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |

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

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| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| 2) | Ability to Query Requests to Designate and Terminate Network Resources and Allow for Queries of All Information Provided with Designation Requests | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| 3) | Masking of Designated Network Resource Operating Restrictions and Generating Cost Information | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| 4) | Procedural Requirements for Submitting Designations over new OASIS Functionality | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| 5) | Specify How Designated Network Service Informational Postings are Posted on OASIS | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| 6) | Develop standards for the treatment of OASIS Requests when the Customer Fails to Provide the Necessary Attestation | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| 7) | Procedural Requirements for Submitting Both Temporary and Indefinite Terminations of Network Resources | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| 8) | Procedures for Submitting and Processing Requests for Concomitant Evaluations of Transmission Requests and Temporary Terminations | 2nd Q, 2010 | OASIS |
| | Status: Underway | | |
| ii) | Group 4: Pre-Emption; Request No. R05019 | | |
| 1) | Pre-Emption | 2011 | OASIS |
| | Status: Not Started | | |
| 2) | Request No. R05019 | 2011 | OASIS |
| | Status: Not Started | | |

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| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| iii) | Group 5: Paragraph 1377[2] – Group 5 work should precede group 4 work | | |
| | 1) Paragraph 1377 | 4th Q, 2010 | OASIS |
| | Status: Underway | | |
| | 2) Re-Bid Of Partial Service across Multiple Transmission Providers' Systems | 4th Q, 2010 | OASIS |
| | Status: Underway, Scoping Group identified in 2-2-10 WEQ EC meeting | | |
| | 3) Group DNR requests from a system with point-to-point requests on other systems for synchronization | 2nd Q, 2010 | OASIS |
| | Status: Not Started | | |

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

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| Item Description | Completion[1] | Assignment[2] |
|---|---|---|
| iv) Group 6: Miscellaneous (Paragraphs 1390[3] and 1627[4] of FERC Order No. 890) | | |
| 1) Paragraph 1390 of Order 890 | 2011 | OASIS |
| Status: Not Started | | |
| 2) Paragraphs 1627 of Order 890 | 2011 | OASIS |
| Status: Not Started | | |
| 3) Redispatch Cost Posting to allow for posting of third party offers of planning redispatch services. | 2011 | OASIS |
| Status: Not Started | | |
| b) Develop the needed business practices as companion to the NERC standards for ATC related efforts | | |
| i) Develop standards to support existing Request No. R05004. | | |

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

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

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| Item Description | Completion[1] | Assignment[2] |
|---|---|---|
| 1) The processing of transmission service requests, which use TTC/ATC/AFC, in coordination with NERC changes to MOD 001 where the allocation of flowgate capability based on historical Network Native Load impacts the evaluation of transmission service requests, requiring the posting of those allocation values in conjunction with queries of service offerings on OASIS<br>Status: Underway | 2nd Q, 2010 | OASIS |

**3 Develop business practices standards to improve the current operation of the wholesale electric market and develop and maintain business practice and communication standards for OASIS and Electronic Scheduling**

a) Develop and/or maintain business practice standards as needed for OASIS and electronic scheduling. Specific items to address include:

| | | | |
|---|---|---|---|
| i) | Network Services: Determine and develop needed business practice standards or other support is needed to support use of OASIS for Network Service transactions (R04006E). (Related to AP 2(a)(iii))<br>Status: Underway | 2nd Q, 2010 | OASIS |
| ii) | Registry (TSIN): Determine and develop needed business practice standards to support the registry functions currently supported by NERC (R04037, R06027). | | |
| | 1) Transition the TSIN Registry from NERC to NAESB as the enhanced Electric Industry Registry (EIR), (R06027).<br>Status: Underway | 2010 | NAESB/NERC Administration, JESS |
| iii) | Document procedures used to implement the displacement/interruption terms of the Pro Forma tariff (R05019).<br>Status: Deleted as a duplicate of 2009 AP item 2.a.ii.2 | 2011 | OASIS |
| iv) | Make remaining incremental enhancements to OASIS as an outgrowth of the NAESB March 29, 2005 conference on the future of OASIS (R05026).<br>Scoping statement completed by SRS and assignments made to BPS and OASIS. | | |
| | 1) Eliminate Masking of TSR tag source and sink when requested status is denied, withdrawn refused, displaced, invalid, declined, annulled or retracted<br>Status: Not Started | 2011 | OASIS |
| | 2) Initiate standard that eliminates the disparity of posting "sensitive" information. This standard should also include procedures of user certification that allows access to this class of information.<br>Status: Underway (upon further development of this item by NAESB, a completion date will be determined) | 2011 | OASIS |

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| | | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|---|
| | 3) | Enhance the TSR result postings to allow showing of (i) limiting transmission elements and (ii) available generation dispatch options that would allow acceptance of reservation request.<br><br>Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined) | 2011 | OASIS |
| v) | | Develop, coordinate interoperability testing, and implement e-Tag version 1.8.1<br><br>Status: Underway | 1st Q, 2010 | JESS |
| vi) | | Review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6. [note: this is a new item]<br><br>Status: Not started – dependent on currently projected NERC activity (upon initiation of this item by NAESB, a completion date will be determined) | 2010 | JESS |
| b) | | Develop and/or maintain standard communication protocols and cyber-security business practices as needed. | | |
| i) | | Develop PKI certification program for e-Tag and OASIS<br><br>Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined) | 2010 | Board Certification Program Committee |
| ii) | | Develop PKI standards for OASIS.<br><br>Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined) | 2011 | OASIS |
| iii) | | Develop Industry Implementation Plan for meeting PKI Standard requirements for e-tagging.<br><br>Status: Underway. Full e-Tag implementation (server & client side) is linked to the transition of the Registry from NERC to NAESB and NAESB implementation.. | TBD – dependent on item above (i) and EIR | JESS |

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**NORTH AMERICAN ENERGY STANDARDS BOARD**
**2010 ANNUAL PLAN for the WHOLESALE ELECTRIC QUADRANT**
**As Approved by NAESB Board of Directors on March 25, 2010**

| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| **4** | **Review and develop business practices standards to Demand Response, Demand Side Management and Energy Efficiency Programs**<br><br>Review and develop needed model business practices for a standardized method for quantifying benefits, savings, cost avoidance and/or the reduction in energy demand and usage derived from the implementation of demand side management and energy efficiency programs. This effort will include demand side response, energy efficiency programs and metering, including the 'curtailment service provider' program. | | |
| a) | Review the NAESB Business Practices for Measurement and Verification of Wholesale Electricity Demand Response (WEQ-015) in conjunction with the IRC developed Demand Response Matrix and identify business practice requirements that could be improved or made clearer through the addition of specific technical detail. The wholesale and retail demand response work groups and the Smart Grid task force should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other.<br><br>Status: In Progress | Phase 2 | WEQ Section of the Joint WEQ/REQ DSM-EE Subcommittee |
| b) | For each performance evaluation type/service type combination identified in WEQ-015, using the IRC matrix as a starting point, assess and determine what standards or guidelines, if any, should be developed to aid all participants in the use of measurement and verification methods for demand response programs in organized wholesale electric markets. If the determination is made that standards or guidelines will be developed, those items will be added as sub-items to 4(b).<br><br>Status: In Progress | Phase 2 | WEQ Section of the Joint WEQ/REQ DSM-EE Subcommittee |
| c) | Develop glossary for business practice standards<br><br>Status: Ongoing | Ongoing | Joint WEQ/REQ DSM Subcommittee |
| d) | Develop business practice standards used to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets.[3] This includes developing business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that included energy efficiency or a stand-alone Energy Efficiency Portfolio Standard.<br><br>Status: Underway (An estimated completion date will be established in 1st Q, 2010 after the new subcommittee has been formalized) | 2010 | Joint WEQ/REQ DSM-EE Subcommittee |
| **5** | **Maintain existing body of Version 2.x standards** | | |
| a) | Make consistency changes to Version 2.2 standards as directed by the WEQ Leadership Committee on December 12, 2007 OASIS Consistency Changes (R08001, R08002, R08003, R08005)<br><br>Status: Not Started (upon initiation of this item by NAESB, a completion date will be determined) | 2011 | OASIS |

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| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| b) | Consistent with ¶51 of FERC Order No. 890-A, add AFC and TFC values to the "System_Attribute" data element of the NAESB Standard WEQ-003: OASIS S&CP Data Dictionaries. (R08011)<br>Status: Not Started. This Standards Request was assigned to the OASIS in May 2008. | 2011 | OASIS |
| c) | Correct WEQ 013-2.6.7.2. – Resale off OASIS (R08027)<br>Status: Not Started | TBD | OASIS |
| d) | Add language to WEQ-001-4 Online Negotiation and Confirmation process to clarify Table 4-3 (R09003)<br>Status: Not Started | TBD | OASIS |
| e) | Create a new OASIS mechanism that allows for the merger of like reservations without the use of the resale mechanism (R09015)<br>Status: Not Started | TBD | OASIS |
| **6.** | **Develop Smart Grid Wholesale and Retail Electric Standards -** The wholesale and retail demand response work groups and the Smart Grid task force should actively and timely communicate and coordinate work products to ensure consistency between the three work groups. Each work group should take into account the work products developed by the other. | | |
| a) | Develop requirements and use cases for PAP 03 – Pricing Model | | |
| i). | Phase 1<br>Status: Completed | 1st Q, 2010 | Joint WEQ/REQ SGS Task Force |
| ii) | Phase 2<br>Status: Underway | 2nd Q, 2010 | Joint WEQ/REQ SGS Task Force |
| b) | Develop requirements and use cases for PAP 04 – Scheduling Model | | |
| i) | Phase 1<br>Status: Completed | 1st Q, 2010 | Joint WEQ/REQ SGS Task Force |
| ii) | Phase 2<br>Status: Underway | 2nd Q, 2010 | Joint WEQ/REQ SGS Task Force |
| c) | Develop requirements and use cases for PAP 09 – Demand Response/Distributed Energy Resources | | |
| i) | Phase 1<br>Status: Completed | 1st Q, 2010 | WEQ Section of the Joint WEQ/REQ SGS Task Force |
| ii) | Phase 2<br>Status: Underway | 2nd Q, 2010 | WEQ Section of the Joint WEQ/REQ SGS Task Force |

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| | Item Description | Completion[1] | Assignment[2] |
|---|---|---|---|
| d) | Act as a convener (develop and implement a plan to expedite harmonized standards development and adoption within the associated standards bodies) and develop business practice standards as needed and assigned to NAESB for PAP 10 – Standard Energy Usage Information<br>Status: Underway | 2nd Q, 2010 | Joint WEQ/REQ SGS Task Force |
| **7.** | **Develop or modify standards to Support FERC Order No. 676-E, (Docket No. RM 05-5-013)** | | |
| a) | Review standards 001-14.1.3 and 001-15.1.2 based on FERC Order No. 676-E (See ¶ 39[5])<br>Status: Not Started | 2011 | OASIS |
| b) | Develop standards to support the Transmission Provider right to reassess the availability of conditional firm (See ¶ 72[6])<br>Status: Not Started | 2011 | OASIS |
| c) | Prepare status reports every six months regarding the development of standards for the coordination of transmission service requests across multiple transmission systems (See ¶ 105[7]). This annual plan item is tied to Annual Plan Item 2(a)(iii)<br>Status: Not Started | Ongoing | NAESB Office |

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

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

[7] 105. We agree that insufficient progress has been made on this issue. While we acknowledge that development of standards addressing this issue is included in NAESB's 2009 WEQ Annual Plan, we nevertheless urge NAESB to address this issue as soon as possible. Accordingly, we request that NAESB provide the Commission with a status report concerning its progress on this issue every six months, counting from the date this final rule is published in the Federal Register, until NAESB's adoption of the applicable standard(s).

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**PROVISIONAL ITEMS**

1 Develop and or modify business practices related to support of NERC effort on the NERC Resources and Transmission Adequacy (Project 2009-05 Resource Adequacy Assessment).

2 Develop business practices for allocating capacity among requests received during a submittal window Order 890-A (Docket Nos. RM05-17-001, 002 and RM05-25-001, 002 - Paragraph 805).

3 Determine any needed NAESB action in support of the Interchange Distribution Calculator (IDC) and develop any necessary standards.

4 Prepare recommendations for future path for TLR (equity concerns) in concert with NERC, which may include alternative congestion management procedures[4]. Work on this activity is dependent on completing 2010 WEQ Annual Plan 1.a (Parallel Flow Visualization/Mitigation for Reliability Coordinators in the Eastern Interconnection).

5 Develop complementary standards that align with NERC Project 2008-01 Voltage and Reactive Control, for which a white paper is expected after the SAR is authorized to proceed by the NERC Standards Committee.

6 Develop NAESB business practices as needed to complement NERC reliability standards for FAC-012 and FAC-013.

7 Determine NAESB action needed to support FERC Action Plan for Smart Grid Technology.

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

9 Conduct assessment to determine if Electric Industry Requirements documented in WEQ-011 Gas / Electric Coordination should be considered reliability requirements and transition to NERC.

10 Develop needed business practice standards for organization/company codes for NAESB standards – and address current issues on the use of DUNs numbers. Common code usage is linked to the transition of the Registry from NERC to NAESB.

11 Support the second phase of retail development of model business practice standards for demand response programs (Shown as Item 3e on the Retail 2010 Annual Plan).

12 Review the need for, and develop standards where appropriate, in response to issues raised by FERC's National Action Plan on Demand Response.

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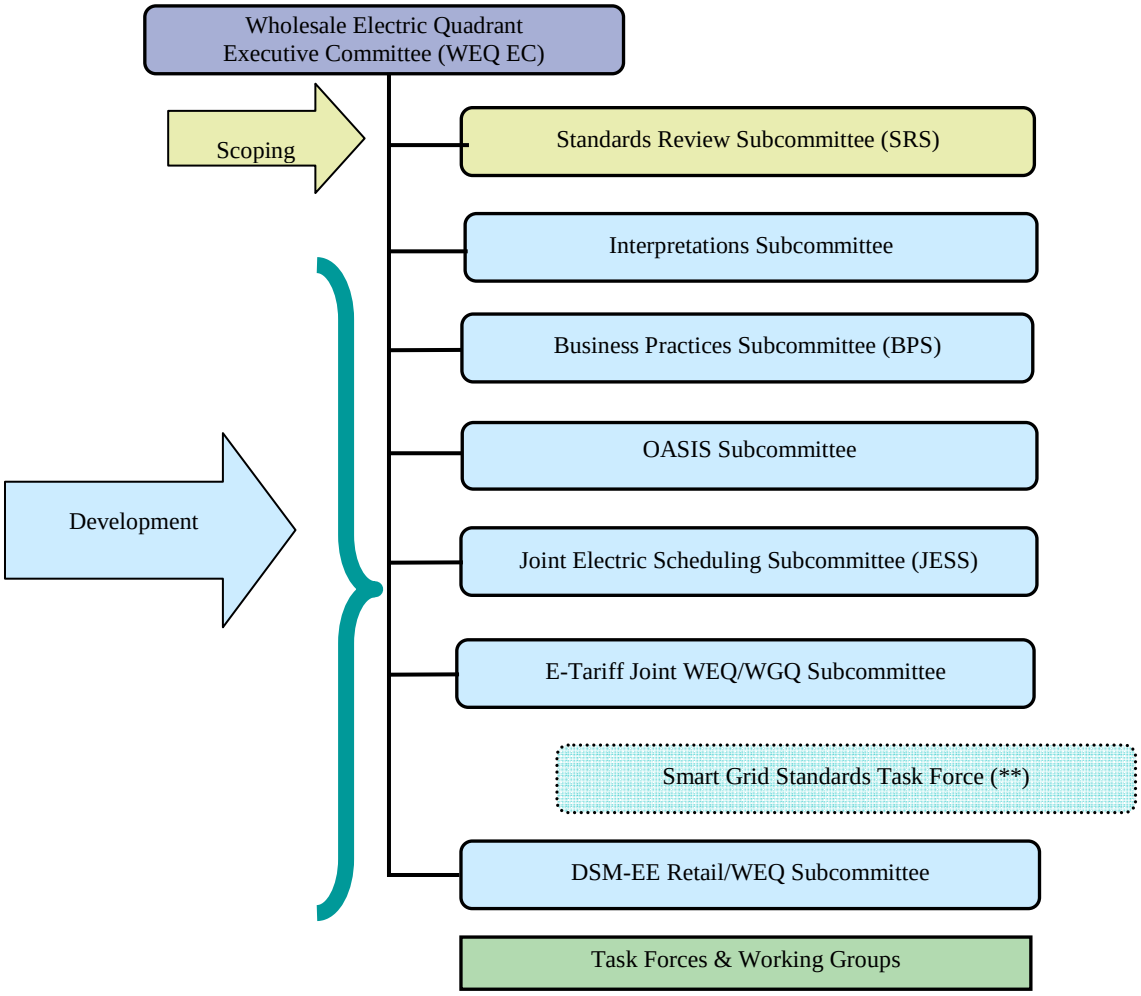
## WHOLESALE ELECTRIC QUADRANT EXECUTIVE COMMITTEE AND SUBCOMMITTEE STRUCTURE




**NAESB WEQ EC and Subcommittee Leadership**:
Executive Committee: Kathy York (WEQ EC Chair) and Alan Johnson (WEQ EC Vice Chair)
Standards Review Subcommittee: Narinder Saini, Ed Skiba
Interpretations Subcommittee: Robert Schwermann
Business Practices Subcommittee & Task Forces: Jim Busbin (TLR), Ed Skiba
Open Access Same Time Information System (OASIS): Paul Sorenson, J.T. Wood, Marcie Otondo
Joint Electric Scheduling Subcommittee (JESS): Bob Harshbarger (NAESB), Jim Hansen (NERC)
e-Tariff Joint WEQ/WGQ Subcommittee (e-Tariff): Jane Daly (WEQ), Keith Sappenfield (WGQ)
DSM-EE REQ/WEQ Subcommittee: Ruth Kiselewich and David Koogler (Retail), Roy True and Paul Wattles (WEQ)

(**) The Smart Grid Task Force is a joint group of the retail electric and wholesale electric quadrants with other standards development groups such as OASIS (Organization for the Advancement of Structured Information Standards, not Open Access Same Time Information Systems related to NAESB standards and FERC actions), CalConnect, FIX and UCAIug, among others. Direction may be given from NIST, DoE or FERC and the group reports to the NAESB Board Smart Grid Strategic Steering Committee. The group is chaired by Brent Hodges, Joe Zhou, Wayne Longcore and Robert Burke.

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**End Notes WEQ 2010 Annual Plan:**

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

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

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

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

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April 28, 2010
Filed Electronically

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street N.E., Room 1A
Washington, D.C. 20585

RE: Time Error Correction Reliability Standard (Docket No. RM09-13-000)

Dear Ms. Bose:

The North American Energy Standards Board ("NAESB") herewith submits these comments in response to the Notice of Proposed Rulemaking on Time Error Correction Reliability Standard issued by the Federal Energy Regulatory Commission ("FERC" or "Commission") on March 18, 2010. The comments describe the related NAESB standards development for the NAESB standards for time error corrections (WEQ-006).

The report is being filed electronically in Microsoft® Word® 2003 and in Adobe Acrobat® Portable Document Format (.pdf). The report is 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 NAESB work products.

Respectfully submitted,
*Rae McQuade*
Ms. Rae McQuade
President & COO, North American Energy Standards Board

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April 28, 2010

cc: 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

Mr. Thomas R. Sheets, 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, Senior Legal Advisor, 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. Ralph Cleveland, Chairman and CEO, North American Energy Standards Board
Mr. William P. Boswell, General Counsel, North American Energy Standards Board

Mr. David Cook, General Counsel, North American Electric Reliability Corporation
Mr. Andrew Rodriquez, North American Electric Reliability Corporation

**UNITED STATES OF AMERICA**

**FEDERAL ENERGY REGULATORY COMMISSION**

| | | |
|---|---|---|
| **Time Error Correction** | **)** | **Docket No. RM09-13-000** |
| **Reliability Standard** | **)** | |
| | **)** | |

## COMMENTS OF THE NORTH AMERICAN ENERGY STANDARDS BOARD

The North American Energy Standards Board ("NAESB") is pleased to provide these comments in response to the Federal Energy Regulatory Commission's ("FERC" or the "Commission") Notice of Proposed Rulemaking on Time Error Correction Reliability Standard ("NOPR").[1] The North American Electric Reliability Corporation ("NERC") time error correction reliability standard has a complementary set of NAESB business practices. The sets of standards were developed and coordinated across NERC and NAESB, both American National Standards Institute accredited standards development organizations, and these comments describe our efforts.

NAESB has developed standards (NAESB WEQ-006 standards) complementary to the NERC time error correction standards (BAL-004). The Version 001.0 WEQ-006 standards were incorporated by reference on July 21, 2008 in FERC Order No. 676-C, Docket No. RM05-5-005.[2] The Version 002.1 standards were incorporated by reference on November 24, 2009 in FERC Order No. 676-E, Docket No. RM05-5-013,[3] omitting the incorporation of WEQ-006. For Version 001.0 and Version 002.1 of the NAESB time error correction standards, the development was fully coordinated to ensure that the business practices developed were supportive and complementary to the NERC reliability time error correction standards. For Version 002.1 of the NAESB standards, the Commission excluded action on WEQ-006 noting,

[1] The Time Error Correction Reliability Standard Notice of Proposed Rulemaking, 130 FERC ¶61,201 (March 18, 2010).

[2] FERC Order No. 676, 18 C.F.R. §38.2 (2008), *can be accessed from* http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=11754625.

[3] FERC Order No. 676, 18 C.F.R. §38.2 (2009), *can be accessed from* http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12205059.

"The Version 002.1 Standards also revise the Manual Time Error Correction Standards (WEQ-006) to maintain consistency with revised NERC Standard BAL-004, but we are not incorporating this standard by reference because the Commission's consideration of the revised BAL-004 is still pending. Thus, the earlier version of WEQ-006 will remain in force." Appendix A shows the NAESB development for Version 002.1 of the NAESB standard WEQ-006, and is redlined against Version 001.0 to highlight the differences.

The effort to develop both the NERC and NAESB time error correction standards were coordinated and indeed, the two development groups shared many of the same participants. Should additional modifications to the standards be needed, NAESB will work with NERC to ensure that the NAESB work products are complementary and supportive of the NERC reliability standards. Regarding filing of the standards and to reinforce the coordination between both groups, NAESB will work with NERC to either prepare coordinated filings for the time error correction standards, or if filed on separate schedules, NAESB will clearly identify the time error correction standards affected and the work undertaken by NERC.

We appreciate the opportunity to provide these comments, to support the Commission's directives, to collaborate with NERC, and to develop standards for time error corrections.

Respectfully submitted,

*Rae McQuade*

Rae McQuade
President, North American Energy Standard Board

**Version 001.0 WEQ-006 Standards, October 31, 2007 with redlines applied for Version 002.1**

Below is an extract from the final action[4] that modified Version 001.0 WEQ-006 Manual Time Error Correction Standards and is now present in Version 002.1.

Summary:

Revisions to the NERC the BAL-004 Standard remove inappropriate requirements on reliability coordinators who voluntarily agree to serve as Interconnection Time Monitors. NERC was concerned that if these changes are not made that "it is likely that one or more reliability coordinators may no longer voluntarily agree to perform the service."

The NAESB Standards Review Subcommittee requested that the NAESB Business Practice WEQ-006 (Manual Time Error Correction) be reviewed/revised so that the NAESB standard is in lock step with the NERC standard. Under the current NAESB requirements, a Reliability Coordinator voluntarily acting as the Interconnection Time Monitor is required to meet the NAESB requirements and is subject to FERC sanctions if found to be in violation of their tariff for not meeting the NAESB requirements. A similar case can be made for the NAESB Interconnection Time Monitor requirements as was made on the NERC side. It is likely that one or more Reliability Coordinators still will not voluntarily agree to act as the Interconnection Time Monitor if they are subject to financial penalties for performing a voluntary function.

In reviewing the Business Practice we also identified references to National Bureau of Standards which should be changed to National Institute of Standards and Technology (NIST). The National Bureau of Standards name was changed to NIST in 1988 as a part of the Omnibus Trade and Competitiveness Act.

Below is the NAESB Version 001.0 WEQ-006 Manual Time Error Correction standards with redlines to show the modifications that resulted in Version 002.1. If there are no redlines, then Version 001.0 and Version 002.1 text is identical.

**WEQ-006 Manual Time Error Correction**

~~Purpose~~ Introduction

Interconnection frequency is normally scheduled at 60.00 Hz and controlled to that value. The control is imperfect and over time the frequency will average slightly above or below 60.00 Hz resulting in mechanical electric clocks developing an error relative to true time. This Standard specifies the procedure to be used for reducing the error to within acceptable limits of true time.

Applicability

Balancing Authorities, Interconnection Time Monitor

Definition of Terms

006-0.1 Balancing Authority (BA) – The entity responsible for integrating resource plans ahead of time, maintaining load-interchange-generation balance within a Balancing Authority Area, and supporting Interconnection frequency in real time.

006-0.2 Balancing Authority Area (BAA) - An electrical system bounded by interconnection (tie-line) metering and telemetry, where the Balancing Authority controls (either directly or by contract) generation to maintain its Interchange Schedule with other Balancing Authority Areas and contributes to frequency regulation of the Interconnection.

006-0.3 Frequency Bias Setting - A value, in MW/0.1 Hz, set into a Balancing Authority's AGC equipment to represent a Balancing Authority's response to a frequency deviation.

[4] The complete final action can be accessed from: http://naesb.org/member_login_form.asp?doc=fa_2008_weq_api_6a_r07019.doc.

006-0.4 Interchange Schedule - The planned energy exchange between two adjacent Balancing Authorities.

006-0.5 Interconnection – Any one of the three major electric system networks in North America: Eastern, Western, and ERCOT.

006-0.6 Interconnection Time Monitor – An entity that monitors Time Error and initiates and terminates Time Error Corrections.

006-0.7 Leap Second - A Leap Second is a second of time added to Coordinated Universal Time to make it agree with astronomical time to within 0.9 seconds. Historically, Leap Seconds are implemented as needed on June 30th or December 31st. (National Institute of Standards and Technology)

006-0.8 Time Error – Accumulated time difference between time based on Interconnection frequency and the National Bureau of Standards ~~time~~ and Technology Time.

006-0.9 Time Error Correction - An offset to the Interconnection's scheduled frequency to correct for accumulated Time Error.

006-0.10 WECCNet – A messaging system used by the Western Electric Coordinating Council (WECC) for use by participating utility's dispatchers and network administrators.

Business Practice Requirements

006-1 Each Balancing Authority shall participate in Time Error Correction unless it is operating asynchronously to its Interconnection.

006-1.1 Balancing Authorities operating asynchronously who establish their own time error control bands, shall notify the Interconnection Time Monitor of the bands being utilized, and shall also provide notification if they are changed.

006-2 An Interconnection Time Monitor shall exist for each Interconnection.

006-3 The Interconnection Time Monitor shall calibrate its time error device at least annually against the ~~National Bureau of Standards time~~National Institute of Standards and Technology Time.

006-4 TIME ERROR INITIATION

Time error corrections ~~shall~~should start and end on the hour or half-hour, and notice ~~shall~~ should be given at least one hour before the time error correction is to start or stop. Time Error corrections shall last at least one hour, unless terminated by a Reliability Coordinator. Time Error corrections for fast time shall not be initiated between 0400-1100 Central Time except for in the Western Interconnection. All Balancing Authorities within an Interconnection shall make all Time Error corrections directed by the Interconnection Time Monitor for its Interconnection. All Balancing Authorities within an Interconnection shall make Time Error Corrections at the same rate.

006-5 INTERCONNECTION TIME MONITORING

Each Interconnection Time Monitor shall monitor time error and ~~shall~~make a reasonable effort to initiate or terminate corrective action orders according to the following table:

| Time Seconds | Initiation | | Termination | |
|---|---|---|---|---|
| | East | West | East | West |
| Slow | -10 | -5 | -6 | ±0.5 |
| Fast | +10 | +5 | +6 | ±0.5 |

006-6 TIME ERROR CORRECTION LABELING

Time error correction notifications shall be labeled alphabetically on a monthly basis (A-Z, AA-AZ, BA-BZ,…).

006-7 TIME CORRECTION OFFSET

Each Balancing Authority, when requested, shall participate in a Time Error Correction by one of the following two methods:

006-7.1 FREQUENCY OFFSET

The Balancing Authority may offset its frequency schedule in accordance to the directives of the Interconnection Time Monitor, leaving the Frequency Bias Setting normal.

006-7.2 SCHEDULE OFFSET

If the frequency schedule cannot be offset as directed by the Interconnection Time Monitor, the Balancing Authority may offset its net Interchange Schedule (MW) by an amount equal to the computed bias contribution during an equivalent frequency deviation`.

006-8 INTERCONNECTION TIME ERROR NOTIFICATION

On the first day of each month, the Interconnection Time Monitor shall issue a notification of time error accurate to within 0.01 second to all Reliability Coordinators within the Interconnection to assure uniform calibration of time standards.

006-9 WESTERN INTERCONNECTION TIME ERROR NOTIFICATION

Within the Western Interconnection, the Interconnection Time Monitor shall provide the accumulated time error (accurate to within 0.001 second) to all Balancing Authorities on a daily basis at 1400 PDT/PST using the WECCNet. The alphabetic designator shall accompany time error notification if a time error correction is in progress.

006-10 After the premature termination of a manual time correction, a slow time correction can be reinstated after the frequency has returned to 60.00 Hz or above for a period of ten minutes. A fast time correction can be reinitiated after the frequency has returned to 60.00 Hz or lower for a period of ten minutes. At least one hour shall elapse between the termination and re-initiation notices.

006-11 TIME CORRECTION ON RECONNECTION

When one or more Balancing Authorities have been separated from the Interconnection, upon reconnection, they shall adjust their time error devices to coincide with the time error of the Interconnection Time Monitor. The Balancing Authorities shall notify the Interconnection Time Monitor they are ready to receive the necessary adjustment to time error as soon as possible after reconnection.

006-12 LEAP SECONDS

Balancing Authorities using time error devices that are not capable of automatically adjusting for Leap Seconds shall arrange to receive advance notice of the Leap Second and make the necessary manual adjustment in a manner that will not introduce an improper Interchange Schedule into their control system.

131 FERC ¶ 61,022
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Part 38

[Docket No. RM05-5-017; Order No. 676-F]

# Standards for Business Practices and Communication Protocols for Public Utilities

(Issued April 15, 2010)

AGENCY: Federal Energy Regulatory Commission.

ACTION: Final Rule

SUMMARY: The Federal Energy Regulatory Commission (Commission) is amending its regulations at 18 CFR 38.2 to incorporate by reference business practice standards adopted by the Wholesale Electric Quadrant of the North American Energy Standards Board (NAESB) to categorize various demand response products and services and to support the measurement and verification of these products and services in wholesale electric energy markets. This rule ensures that participants in wholesale energy markets where demand response products are administered receive standardized access to information that will enable them to participate in those markets and addresses performance evaluation methods appropriate to use for demand response products. This rule facilitates the ability of demand response providers to participate in electricity markets, reducing transaction costs and providing an opportunity for more customers to participate in these programs, especially customers that operate in more than one

organized market. It also provides a foundation for further business practice standardization efforts, and participants in the NAESB process can use these standards to identify those elements for which standardization would be beneficial. Further, adoption of measurement and verification standards will improve the methods and procedures for measuring accurately the performance of demand response resources and assist in monitoring demand response services for potential manipulation.

EFFECTIVE DATE: This rule will become effective **[**insert date 30 days after publication in the **FEDERAL REGISTER**]. Dates for implementation of the standards are provided in the Final Rule. This incorporation by reference of certain publications in the rule is approved by the Director of the Federal Register as of [insert date 30 days after publication in the **FEDERAL REGISTER**].

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Standards for Business Practices and Communication Protocols for Public Utilities — Docket No. RM05-5-017

ORDER NO. 676-F

FINAL RULE

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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Jon Wellinghoff, Chairman;
Marc Spitzer, Philip D. Moeller,
and John R. Norris.

Standards for Business Practices and Communication Protocols for Public Utilities — Docket No. RM05-5-017

ORDER NO. 676-F

FINAL RULE

(Issued April 15, 2010)

1. The Federal Energy Regulatory Commission (Commission) is amending its regulations at 18 CFR 38.2(a) (which establish standards for business practices and electronic communications for public utilities)[1] to incorporate by reference business practice standards adopted by the Wholesale Electric Quadrant (WEQ) of the North American Energy Standards Board (NAESB) to categorize various demand response products and services and to support the measurement and verification of these products and services in wholesale electric energy markets. We also take this opportunity to update 18 CFR 38.2(b) to reflect NAESB's new address.

2. These standards identify operational information about demand response products that system operators need to make available to participants in markets where such products are offered and address performance evaluation methods appropriate to use for

[1] 18 CFR 38.2(a).

demand response products. They also facilitate the ability of demand response providers to participate in electricity markets, reducing transaction costs and providing an opportunity for more customers to participate in these programs, especially customers that operate in more than one organized market. In addition, these standards provide a foundation for further business practice standardization efforts, which participants in NAESB's WEQ process can use to identify those elements for which standardization would be beneficial. Further, adoption of measurement and verification standards will improve the methods and procedures for measuring accurately the performance of demand response resources and assist in monitoring demand response services for potential manipulation.

## I. Background

3. NAESB is a private consensus standards developer that divides its activities among four quadrants, each of which is composed of members from all segments of its respective industry.[2] NAESB is an accredited standards organization under the auspices of the American National Standards Institute (ANSI). NAESB's procedures are designed to ensure that all industry members can have input into the development of a standard, whether or not they are members of NAESB, and each wholesale electric standard that NAESB's WEQ adopts is supported by a consensus of the seven industry segments: End

[2] The four quadrants are the wholesale and retail electric quadrants and the wholesale and retail natural gas quadrants.

Users, Distribution/Load Serving Entities, Transmission, Generation, Marketers/Brokers, Independent Grid Operators/Planners and Technology/Services. Under the WEQ process, for a standard to be approved, it must receive a super-majority vote of 67 percent of the members of the WEQ's Executive Committee with support from at least 40 percent of each of the seven industry segments.[3] For final approval, 67 percent of the WEQ's general membership must ratify the standards.[4] NAESB's standards are voluntary. However, the Commission has made compliance with these standards mandatory in those instances where it has incorporated such standards by reference into its regulations.

4. In 2006, the Commission adopted Order No. 676, a Final Rule that incorporated by reference business practice standards adopted by NAESB applicable to public utilities.[5] Since 2006, the NAESB consensus industry stakeholder process has reviewed the NAESB business practice standards for public utilities with a view to creating a more efficient marketplace and it has adopted revisions that, in a number of instances, the

[3] Under NAESB's procedures, interested persons may attend and participate in NAESB committee meetings, and phone conferences, even if they are not NAESB members.

[4] See Standards for Business Practices and Communication Protocols for Public Utilities, Order No. 676, FERC Stats. & Regs. ¶ 31,216, n.5 (2006), reh'g denied, Order No. 676-A, 116 FERC ¶ 61,255 (2006).

[5] Id.

Commission has made mandatory by incorporating the standards by reference into the Commission's regulations.[6]

5. NAESB began work on the development of business practice standards pertaining to the measurement and verification of demand response products and services in July 2007, when the NAESB WEQ Demand Side Management - Energy Efficiency (DSM) subcommittee began work on this issue. This effort led to the adoption and ratification by NAESB of measurement and verification standards early in 2009. Key to obtaining consensus on the initial set of standards was the agreement to proceed with further work on more detailed technical standards for the measurement and verification of demand response resources.

6. On April 17, 2009, NAESB filed a report informing the Commission that it had adopted an initial set of business practice standards to categorize various demand response products and services and to support the measurement and verification of these products and services in wholesale electric energy markets. The NAESB report recognized that these standards would need to be followed by the development of more detailed technical standards for the measurement and verification of demand response

[6] Standards for Business Practices and Communication Protocols for Public Utilities, Order No. 676-E, Final Rule, 74 FR 63288 (Dec. 3, 2009), FERC Stats. & Regs. ¶ 31,299 (2009), Order No. 676-D, order granting clarification and denying reh'g, 124 FERC ¶ 61,317 (2008), Order No. 676-C, Final Rule, FERC Stats. & Regs. ¶ 31,274 (2008), Order No. 676-B, Final Rule, FERC Stats. & Regs. ¶ 31,246 (2007).

products and services in independent system operator/regional transmission organization (ISO/RTO) footprint areas.

7. After a review of NAESB's April 2009 Report, the Commission issued a notice of proposed rulemaking on September 17, 2009 that proposed to amend the Commission's regulations at 18 CFR 38.2 to incorporate by reference the consensus standards adopted by NAESB's WEQ on March 16, 2009 (NAESB Phase I M&V Standards).[7] NAESB has initiated specific plans to improve and adopt additional technical standards (Phase II M&V Standards).[8] In the Phase I M&V NOPR, the Commission specifically requested

[7] Standards for Business Practices and Communication Protocols for Public Utilities, Notice of Proposed Rulemaking, 74 FR 48173 (Sep. 22, 2009), FERC Stats. & Regs. ¶ 32,646 (2009) (Phase I M&V NOPR).

[8] Item 4a of NAESB's 2010 Annual Plan calls for the WEQ to review the NAESB Business Practices for Measurement and Verification of Wholesale Electricity Demand Response (WEQ-015) in conjunction with the Demand Response Matrix developed by the ISO/RTO Council and to identify business practice requirements that could be improved or made clearer through the addition of specific technical detail. The ISO/RTO Council's 2009 "North American Wholesale Electricity Demand Response Program Comparison" may be viewed at the ISO/RTO Council's website at "www.isorto.org." The Annual Plan provides that wholesale and retail demand response work groups and the Smart Grid task force should actively and timely communicate and coordinate work products to ensure consistency among the three work groups. The Annual Plan further provides that each work group should take into account the work products developed by the other groups.

Item 4b of NAESB's 2010 Annual Plan calls for the WEQ, using the ISO/RTO Council's matrix as a starting point, to review each performance evaluation type/service type combination identified in WEQ-015 to assess and determine what standards or guidelines, if any, should be developed to aid all participants in the use of measurement and verification methods for demand response programs in organized wholesale electric

(continued…)

comments on whether the Commission should establish a deadline for the development of these remaining critical standards and, if so, what that deadline should be.

8. In response to the Phase I M&V NOPR, comments were filed by 19 entities.[9]

## II. Discussion

### A. Overview

9. In this Final Rule, the Commission is revising its regulations at 18 CFR 38.2 to incorporate by reference the NAESB Phase I M&V Standards. The new standards will facilitate development of standardized business practices for measuring and verifying demand resource products and services for the wholesale electric market. In addition, they will help create a framework for a more seamless electronic marketplace by providing consistent terms and definitions that can be used in electronic protocols across both the wholesale and retail electric markets. Further, adoption of measurement and

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markets. If the determination is made that standards or guidelines will be developed, those items will be added as sub-items to 4(b).

Item 4c of NAESB's 2010 Annual Plan calls for the WEQ to develop a glossary of terms used in demand response business practice standards.

Item 4d of NAESB's 2010 Annual Plan calls for the WEQ to develop business practice standards to measure and verify energy reductions that are made to comply with a Renewable Portfolio Standard that includes energy efficiency or a stand-alone Energy Efficiency Portfolio Standard as part of an overall effort to measure and verify reductions in energy and demand from energy efficiency in wholesale and retail markets.

[9] The entities that filed comments and the abbreviations used in this Final Rule to identify these entities are listed in Appendix A.

verification standards will improve the methods and procedures for measuring accurately the performance of demand response resources and assist in monitoring demand response services for potential manipulation.

10. The NAESB Phase I M&V Standards were approved by the WEQ and ratified by the NAESB membership under NAESB's consensus procedures.[10] As the Commission found in Order No. 587,[11] adoption of consensus standards is appropriate because the consensus process helps ensure the reasonableness of the standards by requiring that the standards draw support from a broad spectrum of industry participants representing all segments of the industry. Moreover, since the industry itself has to conduct business under these standards, the Commission's regulations should reflect those standards that have the widest possible support. In section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTT&AA), Congress affirmatively requires federal agencies to use technical standards developed by voluntary consensus standards organizations, like NAESB, as a means to carry out policy objectives or activities

[10] This process first requires a super-majority vote of 67 percent of the members of the WEQ's Executive Committee with support from at least 40 percent of each of the seven industry segments, which are enumerated in P 3, supra. For final approval, 67 percent of the WEQ's general membership voting must ratify the standards.

[11] Standards for Business Practices of Interstate Natural Gas Pipelines, Order No. 587, 61 FR 39053 (July 26, 1996), FERC Stats. & Regs., ¶ 31,038 (1996).

determined by the agencies unless use of such standards would be inconsistent with applicable law or otherwise impractical.[12]

11. The specific NAESB standards that we are incorporating by reference in this Final Rule are business practices for Measurement and Verification of Wholesale Electricity Demand Response. The standards have three sections; the first section (Introduction and Definition of Terms) contains an overview of the standards and definitions, the second section (Standards 015-1.0 through 015-1.15) contains standards on Provision of Wholesale Electric Demand Response Energy, Capacity, Reserve and Regulation Products, and the third section (Standards 015-1.16 through 015-1.30) contains standards on the five performance evaluation methodologies: (1) Maximum Base Load; (2) Meter Before / Meter After; (3) Baseline Type-I (Interval Meter); (4) Baseline Type-II (Non-Interval Meter); and (5) Metering Generator Output.

12. The NAESB Phase I M&V Standards also provide a foundation for further business practice standardization efforts, and participants in the WEQ process can use these standards to identify those elements for which standardization would be beneficial. We believe that development of the Phase II M&V Standards to which NAESB has committed will help improve the methods and procedures for measuring accurately the performance of demand responders. Such standards also will facilitate the ability of

[12] Pub. L. No. 104-113, § 12(d), 110 Stat. 775 (1996), 15 U.S.C. § 272 note (1997). This requirement is further discussed at P 48, infra.

demand response providers to participate in electricity markets, in particular customers and aggregators that may participate in multiple markets. Standards for measuring and verifying demand response can help these customers reduce the transaction costs of participating in these markets.

13. Because of the importance of moving forward on the development and adoption of the Phase II M&V Standards, we urge NAESB to complete its development of these standards within one year, as discussed below. If NAESB is unable to meet this goal, we request that it file with the Commission within one year, a report of the progress it has made, as well as the areas in which consensus has not been reached.

14. We address below the issues raised by the commenters.

### B. NAESB Phase I M&V Standards

#### 1. Adoption of NAESB Phase I M&V Standards

##### a. Comments

15. Nearly all the commenters support the proposal to incorporate the NAESB Phase I M&V Standards by reference. California Commission, Comverge, EEI, EnerNOC, EPSA, Indiana Commission, ISO/RTO Council, NARUC, NRECA, Public Interest Orgs, SDG&E, TVA and Westar all express support for the proposal. For example, EnerNOC asserts the NAESB Phase I M&V Standards address a need within the industry to develop consistent measurement and verification (M&V) practices across the country. While NRECA and Indiana Commission raised concerns about the costs of obtaining NAESB

standards, addressed below, they did not oppose the incorporation by reference of the NAESB Phase I M&V Standards.

#### b. Commission Determination

16. The Commission is revising its regulations at 18 CFR 38.2 to incorporate by reference the NAESB Phase I M&V Standards. The new standards define terms and definitions that can be used to facilitate communications and provide standards for measurement and verification methodologies for demand resources in wholesale electric markets.

### 2. Clarification of Jurisdictional Concerns

17. As we explained in the Phase I M&V NOPR, the NAESB Phase I M&V Standards will enhance transparency and consistency in the methodology used to measure and verify demand response products in wholesale markets administered by the ISOs and RTOs.[13]

#### a. Comments

18. FirstEnergy, the California Commission and NARUC all caution that these standards are only applicable in the wholesale energy market and that the states have jurisdiction over retail demand response programs, meters and infrastructure.

19. FirstEnergy argues that the Commission's involvement in demand response activities must continue to acknowledge that the states have jurisdiction in retail markets.

[13] Phase I M&V NOPR at P 10.

Similarly, NARUC states that the Commission should continue to work closely with the states to outline jurisdictional boundaries with respect to the standards being proposed in the NAESB process.

**b. Commission Determination**

20. We agree with the commenters that the NAESB Phase I M&V Standards that we are incorporating by reference in this Final Rule are applicable to wholesale energy markets under the Commission's jurisdiction and nothing in this Final Rule is intended to interfere with the states' jurisdiction over retail demand response programs.

**3. Nomenclature**

21. The NAESB Phase I M&V Standards include 40 definitions. These definitions "identify basic product categories, i.e., energy service, capacity service, reserve service and regulation service. They identify the measurement and verification characteristics of demand response products and services offered in organized wholesale electricity markets, such as reduction deadlines, advance notification instructions, telemetry accuracy, and communication protocols."[14]

**a. Comments**

22. ELCON suggests in several instances that the definition included in the NAESB Phase I M&V Standards should be revised to add more specificity. For example, it would add further operating characteristics to the definitions of Normal Operations,

[14] Id. at P 6.

Recovery Period and Demand Resource Availability Measurement.[15] Additionally, ELCON suggests several edits and clarifications to these same terms and to the definition of Triggering Events and Telemetry.[16] EPSA, likewise, asserts the standards in their current form do not provide enough detail to ensure demand response resources receive comparable treatment to those of other resources.[17]

**b. Commission Determination**

23. We find the definitions included in the NAESB Phase I M&V Standards adequate for the purposes of Phase I and we will incorporate them by reference as proposed in the Phase I M&V NOPR. Also, as we noted above, item 4c of the WGQ 2010 Action Plan is devoted to the formulation of a glossary of demand response terminology. ELCON and EPSA may pursue their concerns about the need for greater specificity in the definition of demand response terms by continuing their participation in the NAESB process.

[15] ELCON Comments at 4-7.

[16] Id. at 5.

[17] EPSA Comments at 4.

### C. Phase II M&V Standards

#### 1. Proper Organization(s) to Develop Phase II M&V Standards

##### a. Comments

24. Nearly all the comments support NAESB as the proper organization to develop the Phase II M&V Standards.[18] For example, ISO/RTO Council asserts the NAESB process has been an effective way to bring demand response organizations together to create the NAESB Phase I M&V Standards. Comverge commends the efforts of NAESB to develop this initial set of standards. EPSA also supports the NAESB process and notes the ANSI-certified consensus-based approach is an effective means to craft standards. Comverge expresses appreciation to NAESB for its efforts and is supportive of its efforts that ensure increased demand response participation.

25. By contrast, Duke is the sole commenter raising an objection to the continuing role of NAESB in developing the Phase II M&V Standards. Duke contends that the ISOs and RTOs are in a better position to develop these standards, due to regional differences.

[18] See supporting comments on this subject by Comverge, Curtailment Specialists, EEI, EPSA, ISO/RTO Council, NARUC and Westar. FirstEnergy also supports these efforts, although it cautions that we need to keep jurisdictional concerns in mind. See discussion at P 18-19, supra. TVA also stresses the need for the proper coordination of efforts. See P 39, infra. The objections of Industrial Coalitions on its preference for the Commission developing all standards are discussed in P 42, infra.

### b. Commission Determination

26. In our view, NAESB is best suited to develop these common Phase II M&V Standards. The NAESB DSM subcommittee has the membership and participation of demand response providers, ISOs, RTOs, public utilities and trade groups.

27. The continued cooperation and efforts of all these participants in the NAESB Phase II M&V Standards process will create an environment conducive to creating transparent and consistent standards for the measurement and verification of demand response resources offered into wholesale electricity markets. Furthermore, the efforts of a single group sponsored by NAESB will allow for more efficient participation in the standards development process and will help provide greater consistency than might be possible from the individual efforts sponsored by six separate regional organizations.

28. Improvement in measurement and verification standards will work to ensure that the performance of demand response resources can be accurately quantified. Standardization of measurement and verification methods also will help to reduce costs for customers participating in multiple markets. Without consistent standards, customers and demand response providers that participate in more than one RTO or ISO would then have to incur the costs of developing different business processes to adapt to the differing RTO/ISO requirements, increasing the cost and complexity of their business. Furthermore, the Phase II M&V Standards should help achieve greater efficiency in the operation and evaluation of the performance of demand response products and services.

### 2. Guidance on the Scope of the Phase II M&V Standards

#### a. Comments

29. Many of the commenters find that NAESB's development of Phase II M&V Standards and the Commission's incorporation by reference of such standards will have the benefit of creating additional consistency and standardization across markets. These same commenters also noted the benefits to adoption of a common terminology for M&V methods. For example, Public Interest Orgs supports the standardization of M&V business rules and asserts that such standardization will increase participation, eliminate gaming opportunities and enable aggregators to overcome varying business practices. EPSA also finds benefit in the Commission acting to reduce needless and costly disparities among the ISOs and RTOs, but is concerned that the standards provide too much deference to ISO/RTO policies and that this will hinder efforts to standardize demand response rules. ELCON does not object to the role of NAESB in developing the Phase II M&V Standards, but finds that the process needs improvement in Phase II so that the concerns of demand response providers are given more consideration and the views of ISOs and RTOs are given less deference.[19]

30. SDG&E supports the adoption of standards that promote transparency and consistency across markets. SDG&E further states that adopting consistent standards

[19] ELCON Comments at 3.

across ISOs and RTOs could reduce barriers to demand response providers who operate in multiple markets. Industrial Coalitions states the standardization of demand response practices across power markets will improve their business objectives.[20] Comverge supports Phase II M&V Standards that would simplify baseline approaches and expand the deployment of demand response. ISO/RTO Council notes approvingly that the use of common terminology has accelerated the development of retail standards as well as supported development of other demand response initiatives. TVA states that NAESB's Phase II M&V Standards efforts should concentrate on the measurement and verification of demand response.

31. Both Duke and FirstEnergy request guidance as to the content of the Phase II M&V Standards and what information is needed to facilitate and promote demand response in markets.

### b. Commission Determination

32. While NAESB's Phase I M&V Standards represent a good first step, additional substantive standards would appear beneficial in creating transparent and consistent measurement and verification of demand response products and services in wholesale

[20] Industrial Coalitions members include: Coalition of Midwest Transmission Customers; NEPOOL Industrial Customer Coalition; and PJM Industrial Customer Coalition.

electric markets. The measurement and verification standards needed to accomplish this goal should be a focus of NAESB's Phase II M&V Standards development efforts.

33. While the development of the Phase II M&V Standards should be an industry-driven consensus-seeking process, we agree with commenters that more detailed measurement and verification standards will reduce costs for customers and market participants, particularly those participating in multiple markets. As discussed earlier, demand response providers that participate in more than one RTO or ISO should not have to incur the costs of developing different business processes to adapt to the differing RTO/ISO requirements, increasing the cost and complexity of their business.

34. In response to Duke's and FirstEnergy's requests for additional guidance as to the content of the Phase II M&V Standards, we agree with NAESB's plan to start the process by reviewing the elements of the performance evaluation methods detailed in the ISO/RTO Council's demand response program matrix. While we do not expect NAESB to develop a single performance evaluation method, we reiterate that greater standardization of the performance evaluation methods will improve the accuracy of measuring and verifying demand response performance and may reduce costs. ELCON expresses concern that the views of RTOs and ISOs will be given greater consideration than those of other participants in the NAESB process. As discussed earlier, the NAESB process requires consensus agreement from all seven segments of the industry and no segment, therefore, can dominate the development of a standard. We expect the

participants in the NAESB process actively to consider and be open to proposals and concerns from any source and to try to reconcile differences so that the standards promote accurate measurement and verification of the performance of demand resources.

### 3. Suggested Improvements to Standards

35. In the Phase I M&V NOPR, the Commission stated that these standards represent a starting place to develop a more comprehensive set of standards, with the development of more detailed technical standards for the measurement and verification of demand response resources, to take place in the Phase II M&V Standards development process.

36. A few of the commenters have raised some specific concerns that they would like addressed in the Phase II M&V Standards development process. For example, ELCON complains that the NAESB process gives too much weight to the views of ISOs and RTOs and argues that the standards place specific requirements on demand response providers while not spelling out the complementary obligations of system operators. ELCON would like this corrected in the Phase II M&V Standards process.[21] Water Project stresses that the Phase II M&V Standards should be designed to accurately verify the performance of demand response resources according to the specific service they are providing. Curtailment Specialists suggests the DSM subcommittee concentrate its

[21] ELCON Comments at 3.

efforts on developing the five baseline types; Baseline Type-I and Type-II, Meter Before / Meter After, Maximum Base Load and Metering Generator Output.

#### a. Commission Determination

37. As discussed above, the NAESB process provides for a reasonable balance of interests so that no one sector, RTOs or any other sector, can dominate the process. We agree that the process needs to consider the issues and views of the participants. We expect the NAESB process to develop Phase II M&V standards which incorporate the interests of all stakeholders in the process of developing consensus standards. In response to Curtailment Specialists, we expect Phase II will address issues related to baseline development, but we do not believe that Phase II should be limited to baseline development issues alone.

### 4. Deadline for Phase II M&V Standards Development

38. In the Phase I M&V NOPR, the Commission invited comment on whether the Commission should establish a deadline to complete the Phase II M&V Standards. The comments we received were split on this issue.

#### a. Comments

39. ELCON strongly supports a deadline for the development of the Phase II M&V Standards.[22] EPSA and TVA support a deadline that should take into consideration efforts underway at the North American Electric Reliability Corporation (NERC) and the

[22] ELCON Comments at 3.

National Institute for Standards and Technology (NIST) for both demand response and Smart Grid activities. Similarly, FirstEnergy recommends that the Commission coordinate its efforts with those of NERC, NIST and the Electric Power Research Institute. EPSA also supports prompt action and notes that NERC is in the process of developing demand response measurement standards through its Demand Response Availability Data System (DADS). EPSA expresses concern that a long delay in the Phase II M&V Standards development process may hinder NERC's demand response registration processes. Likewise, Comverge and EnerNOC also both support an aggressive deadline for the timely completion of the Phase II M&V Standards development process.

40. By contrast, ISO/RTO Council, FirstEnergy, EEI, SDG&E, NRECA and the Indiana Commission all oppose a deadline. They all argue that setting a deadline would be premature and contend that the NAESB process should be allowed to run its course. Many of these commenters, however, agree that, absent a deadline, it would be appropriate for NAESB to provide the Commission with regular status reports on the progress made in the development of the Phase II M&V Standards.[23]

[23] See comments by FirstEnergy, EEI, Indiana Commission and ISO/RTO Council.

### b. Commission Determination

41. We request that NAESB seek to conclude its Phase II M&V Standards development within one year from the effective date of this order. In light of the importance of measuring and verifying demand response products, as well as the utility of these standards to the NIST and NERC initiatives, the Phase II M&V Standards should be developed as soon as possible. Prompt action in developing the Phase II M&V Standards is essential, in light of the importance of these standards in ensuring that the performance of demand response resources can be accurately quantified. A year for development of such standards is reasonable. Due to the importance of these standards, if NAESB is unable to fully develop standards within the one-year period, we request that it file a report with the Commission indicating the progress it has made, including the standards it has considered and the issues on which it has been unable to reach consensus. The Commission can then build upon the information developed during the NAESB process to propose standards or establish procedures for the development of such standards.

## D. Incorporation by Reference

42. A number of organizations (Industrial Coalitions, NRECA, and the Indiana Commission) filed comments objecting to the incorporation by reference of the NAESB standards, maintaining they should not have to pay to obtain copies of the copyrighted

standards. We addressed this issue at length in Order No. 676-E[24] in November of 2009, concluding that the NAESB process is the most efficient and cost-effective method of developing these standards, incorporation by reference is the appropriate method for the Commission to adopt the regulations, and the Commission must respect NAESB's copyright.[25] As we pointed out in that order, obtaining these standards is not cost prohibitive. NAESB, in fact, makes the standards available for free for three consecutive business days for those who want to view the standards in order to make comments with the Commission.[26] Even for those non-members seeking to purchase a copy, the standards are available for $900, which is not prohibitive, given the costs of otherwise participating in a notice and comment rulemaking proceeding, including the hiring of legal counsel.

## III. Implementation Dates and Procedures

43. The Commission is requiring, consistent with our regulation at 18 CFR 35.28(c)(vi), each ISO and RTO to revise its OATT to include the NAESB Phase I M&V Standards we are incorporating by reference herein. For standards that do not require implementing tariff provisions, the Commission will allow the ISO or RTO to incorporate the WEQ standard by reference in its OATT. Compliance with the standards

[24] Order No. 676-E, FERC Stats. & Regs. ¶ 31,299 at P 115-121.

[25] Id.

[26] http://www.naesb.org/misc/NAESB_Nonmember_Evaluation_LockLizard.pdf.

incorporated in this Final Rule will be required beginning on the same date that the rule becomes effective (i.e., thirty days after publication in the Federal Register), even if this precedes the filing of a revised OATT reflecting these new requirements.

44. However, as we proposed in the Phase I M&V NOPR, to lighten the burden associated with an immediate, stand-alone filing of a revised tariff reflecting the standards incorporated by reference in this Final Rule, we are giving ISOs and RTOs the option of including these changes as part of an unrelated tariff filing, even though compliance with the revised standards is required beginning on the effective date of this Final Rule.[27]

45. If adoption of these standards does not require any changes or revisions to existing OATT provisions, ISOs and RTOs may comply with this rule by adding a provision to their OATTs that incorporates the standards adopted in this rule by reference, including the standard number used to identify the standard. To incorporate this standard into their OATTs, ISOs and RTOs must use the following language in their OATTs: Measurement and Verification of Wholesale Electricity Demand Response (WEQ-015, 2008 Annual Plan Item 5(a), March 16, 2009).

[27] See Order No. 676, P 100 (2006). If the ISO or RTO makes no unrelated tariff filing by December 31, 2010, it must make a separate tariff filing incorporating these standards by that date.

46. If an ISO or RTO requests waiver of a standard, it will not be required to comply with the standard until the Commission acts on its waiver request. Therefore, if an ISO or RTO has obtained a waiver or has a pending request for a waiver, its proposed revision to its OATT should not include the standard number associated with the standard for which it has obtained or seeks a waiver. Instead, the ISO or RTO's OATT should specify those standards for which the ISO or RTO has obtained a waiver or has pending a request for waiver. Once a waiver request is denied, the ISO or RTO will be required to include in its OATT the standard(s) for which waiver was denied.

## IV. Notice of Use of Voluntary Consensus Standards

47. In section 12(d) of NTT&AA, Congress affirmatively requires federal agencies to use technical standards developed by voluntary consensus standards organizations, like NAESB, as the means to carry out policy objectives or activities determined by the agencies unless use of such standards would be inconsistent with applicable law or otherwise impractical.[28] NAESB approved the standards under its consensus procedures. Office of Management and Budget Circular A-119 (§ 11) (February 10, 1998) provides that federal agencies should publish a request for comment in a NOPR when the agency is seeking to issue or revise a regulation proposing to adopt a voluntary consensus

[28] See n.12 supra.

standard or a government-unique standard. The Commission published a request for comment in the Phase I M&V NOPR.

## V. Information Collection Statement

48. The Office of Management and Budget's (OMB) regulations in 5 CFR 1320.11 require that it approve certain reporting and recordkeeping requirements (collections of information) imposed by an agency. Upon approval of collections of information, OMB is expected to assign new expiration dates to FERC-516 (OMB Control Number 1902-0096) and FERC-717 (OMB Control Number 1902-0173). The OMB Control Numbers will not be displayed in the NAESB standards; an explanation will be included in the clearance package submitted to OMB. The Commission will not enforce the requirements of this rule until OMB approval is obtained.

49. This Final Rule upgrades the Commission's current business practice and communication standards to include NAESB's Phase I M&V Standards. The implementation of these standards is necessary to increase the efficiency of demand response in wholesale electric energy markets. In addition, requiring such information ensures a common means of communication and ensures common business practices that provide participants engaged in transactions with demand response programs with timely information and consistent business procedures across multiple markets. The implementation of these data requirements will help the Commission carry out its responsibilities under the Federal Power Act.

50. The Commission sought comments on its estimate provided in the NOPR of the burden associated with adoption of the NOPR proposals. In response to the NOPR, no comments were filed that addressed the reporting burden imposed by these requirements. Therefore the Commission will use these same estimates in this Final Rule.

| Data Collection | No. of Respondents | No. of Responses Per Respondent | Hours Per Response | Total No. of Hours |
|---|---|---|---|---|
| FERC-516[29] | 6 | 1 | 6 | 36 |
| FERC-717[30] | 6 | 1 | 12 | 72 |
| Totals | | | | 108 |

Total Annual Hours for Collection

(Reporting and Recordkeeping, if appropriate) = 108 hours

Information Collection Costs: The Commission seeks comments on the costs to comply with these requirements. The Commission projects the average annualized cost for all respondents as follows:[31]

[29] "FERC-516" is the Commission's identifier that corresponds to OMB control no. 1902-0096 which identifies the information collection associated with Electric Rate Schedules and Tariff Filings.

[30] "FERC-717" is the Commission's identifier that corresponds to OMB control no. 1902-0173 which identifies the information collection associated with Standards for Business Practices and Communication Protocols for Public Utilities.

[31] The total annualized costs for the information collection is $39,960. This number is reached by multiplying the total hours to prepare responses (108) by an hourly

(continued…)

| | FERC-516 | FERC-717 |
|---|---|---|
| Annualized Capital/Startup Costs | $13,320 | $26,640 |
| Annualized Costs (Operations & Maintenance) | N/A | |
| Total Annualized Costs | $13,320 | $26,640[32] |

51. OMB regulations[33] require OMB to approve certain information collection requirements imposed by agency rule. The Commission is submitting this Final Rule to OMB. These information collections are mandatory requirements.

Title: Standards for Business Practices and Communication Protocols for Public Utilities (formerly Open Access Same Time Information System) (FERC-717); Electric Rate Schedule Filings (FERC-516).

Action: Information collection.

OMB Control No.: 1902-0096 (FERC-516); 1902-0173 (FERC-717).

Respondents: Business or other for profit (Public Utilities - Not applicable to small businesses).

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wage estimate of $370 (a composite estimate that includes legal, technical and support staff rates, $250+$95+$25=$370), 108 hours x $370/hour= $39,960.

[32] We note that 36 hours at $370/hour= $13,320 and 72 hours at $370/hour=$26,640. Together, $13,320+$26,640=$39,960 as shown in note 32, supra.

[33] 5 CFR 1320.11.

Frequency of Responses: One-time implementation (business procedures, capital/start-up).

52. Necessity of Information: The Commission's regulations adopted in this rule upgrade the Commission's current business practices and communication standards by standardizing the definitions used by ISOs and RTOs to identify their various demand response products and to measure and verify the results obtained by these products. Moreover, the implementation of these data requirements will help ensure consistency among the ISOs/RTOs with respect to the measurement and verification of demand response performance in their wholesale electricity markets.

53. Interested persons may obtain information on the reporting requirements by contacting: Federal Energy Regulatory Commission, Attn: Ellen Brown, Office of the Executive Director, 888 First Street, NE, Washington, DC 20426 Tel: (202) 502-8663, fax: (202) 273-0873, email: DataClearance@ferc.gov or by contacting: Office of Management and Budget, Office of Information and Regulatory Affairs, Washington, DC 20503 [Attention: Desk Officer for the Federal Energy Regulatory Commission, email: oira_submission@omb.eop.gov; Tel: (202) 395-4638, fax: (202) 395-7285]. Comments to OMB should include the appropriate OMB Control Number(s) and collection number(s) (OMB Control No. 1902-0096 for FERC-516, and/or OMB Control No. 1902-0173 for FERC-717) as a point of reference.

## VI. Environmental Analysis

54. The Commission is required to prepare an Environmental Assessment or an Environmental Impact Statement for any action that may have a significant adverse effect on the human environment.[34] The Commission has categorically excluded certain actions from these requirements as not having a significant effect on the human environment.[35] The actions adopted here fall within categorical exclusions in the Commission's regulations for rules that are clarifying, corrective, or procedural, for information gathering analysis, and dissemination, and for sales, exchange, and transportation of natural gas and electric power that requires no construction of facilities. Therefore, an environmental assessment is unnecessary and has not been prepared in this Final Rule.

## VII. Regulatory Flexibility Act

55. The Regulatory Flexibility Act of 1980 (RFA)[36] generally requires a description and analysis of final rules that will have significant economic impact on a substantial number of small entities. In drafting a rule an agency is required to: (1) assess the effect that its regulation will have on small entities; (2) analyze effective alternatives that may

[34] Order No. 486, Regulations Implementing the National Environmental Policy Act, 52 FR 47897 (Dec. 17, 1987), FERC Stats. & Regs. Preambles 1986-1990 ¶ 30,783 (1987).

[35] 18 CFR 380.4.

[36] 5 U.S.C. 601-612.

minimize a regulation's impact; and (3) make the analysis available for public comment.[37]

56. The regulations we are adopting in this Final Rule impose filing requirements only on ISOs and RTOs, none of which is a small business. Moreover, these requirements are designed to benefit all customers, including small businesses. As noted above, adoption of consensus standards helps ensure the reasonableness of the standards by requiring that the standards draw support from a broad spectrum of industry participants representing all segments of the industry. Because of that representation and the fact that industry conducts business under these standards, the Commission's regulations should reflect those standards that have the widest possible support.

57. Accordingly, pursuant to section 605(b) of the RFA, the Commission hereby certifies that the regulations adopted herein will not have a significant adverse impact on a substantial number of small entities.

## VIII. Document Availability

58. In addition to publishing the full text of this document in the Federal Register, the Commission provides all interested persons an opportunity to view and/or print the contents of this document via the Internet through FERC's Home Page (http://www.ferc.gov) and in FERC's Public Reference Room during normal business

[37] 5 U.S.C. 601-604.

hours (8:30 a.m. to 5:00 p.m. Eastern time) at 888 First Street, NE, Room 2A, Washington, DC 20426.

59. From FERC's Home Page on the Internet, this information is available on eLibrary. The full text of this document is available on eLibrary in PDF and Microsoft Word format for viewing, printing, and/or downloading. To access this document in eLibrary, type the docket number excluding the last three digits of this document in the docket number field.

60. User assistance is available for eLibrary and the FERC's website during normal business hours from FERC Online Support at 202-502-6652 (toll free at 1-866-208-3676) or email at ferconlinesupport@ferc.gov, or the Public Reference Room at (202) 502-8371, TTY (202)502-8659. email the Public Reference Room at public.referenceroom@ferc.gov.

## IX. Effective Date and Congressional Notification

61. These regulations are effective [insert date 30 days from publication in **FEDERAL REGISTER**]. The Commission has determined (with the concurrence of the Administrator of the Office of Information and Regulatory Affairs of OMB) that this rule is not a "major rule" as defined in section 351 of the Small Business Regulatory Enforcement Fairness Act of 1996.

List of subjects in 18 CFR Part 38

Conflict of interests, Electric power plants, Electric utilities, Incorporation by reference, Reporting and recordkeeping requirements.

By the Commission.

( S E A L )

Nathaniel J. Davis, Sr.,
Deputy Secretary.

In consideration of the foregoing, the Commission amends part 38, Chapter I, Title 18, Code of Federal Regulations, as follows.

## PART 38 – BUSINESS PRACTICE STANDARDS AND COMMUNICATION PROTOCOLS FOR PUBLIC UTILITIES

1. The authority citation for part 38 continues to read as follows:

Authority: 16 U.S.C. 791-825r, 2601-2645; 31 U.S.C. 9701; 42 U.S.C. 7101-7352.

2. In § 38.2, paragraphs (a)(10), (a)(11), and (b) are revised and paragraph (a)(12) is added to read as follows:

**§ 38.2 Incorporation by Reference of North American Energy Standards Board Wholesale Electric Quadrant standards.**

(a) * * * * *

(10) Public Key Infrastructure (PKI) (WEQ-012, Version 002.1, March 11, 2009, with minor corrections applied on May 29, 2009 and September 8, 2009);

(11) Open Access Same-Time Information Systems (OASIS) Implementation Guide, Version 1.5 (WEQ-013, Version 002.1, March 11, 2009, with minor corrections applied on May 29, 2009 and September 8, 2009); and

(12) Measurement and Verification of Wholesale Electricity Demand Response (WEQ-015, 2008 Annual Plan Item 5(a), March 16, 2009).

(b) This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of these standards may be obtained from the North American Energy Standards Board,

801 Travis Street, Suite 1675, Houston, TX 77002, Tel: (713) 356-0060. NAESB's website is at *http://www.naesb.org/*. Copies may be inspected at the Federal Energy Regulatory Commission, Public Reference and Files Maintenance Branch, 888 First Street, NE, Washington, DC 20426, Tel: (202) 502-8371, *www.ferc.gov*, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html

* * * * *

**Note: The following Appendix will not appear in the Code of Federal Regulations.**

## Appendix A

**List of Commenters**[38]

California Department of Water Resources State Water Project (Water Project)

California Public Utilities Commission (California Commission) (with notice of intervention)

Comverge, Inc. (Comverge)

Duke Energy Corporation (Duke)

Edison Electric Institute (EEI)

FirstEnergy Service Company (FirstEnergy)

Electric Power Supply Association (EPSA)

Electricity Consumers Resource Council (ELCON)

Energy Curtailment Specialists, Inc. (Curtailment Specialists) (also filed motion to intervene)

EnerNOC, Inc. (EnerNOC) (also filed motion to intervene)

Indiana Utility Regulatory Commission (Indiana Commission) (with notice of intervention)

Industrial Coalitions[39]

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[38] The abbreviations used to identify these commenters in this Final Rule are shown parenthetically.

[39] Filed on behalf of Coalition of Midwest Transmission Customers, NEPOOL Industrial Customer Coalition, and PJM Industrial Customer Coalition.

**List of Commenters**

ISO/RTO Council[40]

National Association of Regulatory Utility Commissioners (NARUC)

National Rural Electric Cooperative Association (NRECA)

Public Interest Organizations (Public Interest Orgs)[41]

San Diego Gas & Electric Company (SDG&E)

Tennessee Valley Authority (TVA) (with motion to intervene)

Westar Energy, Inc. (Westar) (with motion to intervene)

[40] ISO/RTO Council includes the Independent System Operators operating as the Alberta Electric System Operator, the California Independent System Operator, Electric Reliability Council of Texas, the Independent Electricity System Operator of Ontario, Inc., ISO New England, Inc., Midwest Independent Transmission System Operator, Inc., New York Independent System Operator, Inc., PJM Interconnection, L.L.C., Southwest Power Pool, Inc., and New Brunswick System Operator.

[41] Jointly filed on behalf of Project for Sustainable FERC Energy Policy, Natural Resources Defense Council, the Pace Energy and Climate Center and Conservation Law Foundation.

**NORTH AMERICAN ENERGY STANDARDS BOARD**
1301 Fannin, Suite 2350 • Houston, Texas 77002 • **Phone:** (713) 356-0060 • **Fax:** (713) 356-0067
**email:** naesb@naesb.org • **Web Site Address:** www.naesb.org

April 8, 2010
Filed Electronically

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street N.E., Room 1A
Washington, D.C. 20585

RE: "Draft National Action Plan on Demand Response" (Docket No. AD09-10-000)

Dear Ms. Bose:

The North American Energy Standards Board ("NAESB") herewith submits these comments in response to "Draft National Action Plan on Demand Response" issued by the Federal Energy Regulatory Commission ("FERC" or "Commission") on March 11, 2010 The comments are supportive of the discussion draft and describe the NAESB standards development related to demand response programs.

The report is being filed electronically in Microsoft® Word® 2003 and in Adobe Acrobat® Portable Document Format (.pdf). The report is 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 NAESB work products.

Respectfully submitted,
*Rae McQuade*

Ms. Rae McQuade
President & COO, North American Energy Standards Board

**NORTH AMERICAN ENERGY STANDARDS BOARD**
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**email:** naesb@naesb.org • **Web Site Address:** www.naesb.org

April 8, 2010

cc: 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

Mr. Thomas R. Sheets, 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, Senior Legal Advisor, Office of Energy Policy and Innovation, Federal Energy Regulatory Commission
Dr. David Kathan, Economist, Office of Energy Policy and Innovation, Federal Energy Regulatory Commission

Mr. Ralph Cleveland, Chairman and CEO, North American Energy Standards Board
Mr. William P. Boswell, General Counsel, North American Energy Standards Board

Mr. David Cook, General Counsel, North American Electric Reliability Corporation
Mr. Andrew Rodriquez, North American Electric Reliability Corporation

**UNITED STATES OF AMERICA**

**FEDERAL ENERGY REGULATORY COMMISSION**

| | | |
|---|---|---|
| **National Action Plan on Demand Response** | **)** **)** **)** | **Docket No. AD09-10-000** |

# COMMENTS OF THE NORTH AMERICAN ENERGY STANDARDS BOARD

The North American Energy Standards Board ("NAESB") is pleased to provide these comments in response to the Federal Energy Regulatory Commission's ("FERC" or the "Commission") Notice Announcing Release of Draft National Action Plan on Demand Response.[1]

NAESB appreciates the acknowledgement of its work given in the report:

- "In addition, the North American Energy Standards Board (NAESB) and NERC have already undertaken standard and protocol efforts for the smart grid."
- "Efforts to standardize measurement and verification are already underway. NAESB is currently leading an effort that has produced a document describing model business practices for the measurement and verification of demand response. NAESB is also working with NERC to ensure that NERC's demand response data collection effort conforms to a consistent measurement and verification standard."

As you have noted, NAESB is active in both the smart grid efforts managed by the National Institute of Standards and Technology ("NIST"), and in the development of business practices standards as described in our 2009 and 2010 annual plans for both retail electric[2] and

[1] The notice and the draft national action plan are *available at* http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12290434, and http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12290602

[2] The 2009 and 2010 Retail Electric Annual Plans are *available at* http://www.naesb.org/pdf4/draft_retail_2009_annual_plan.doc;

wholesale electric[3] markets. NAESB and the North American Electric Reliability Corporation ("NERC") work closely together to ensure that the work products and terminology used are consistent. Where needed, the standards follow the joint development process supported by both NERC and NAESB[4]. Below is a synopsis of the work done to date for both smart grid related efforts and demand response related efforts.

**Status of the Smart Grid related NAESB efforts**

NAESB has been actively involved in the development of both wholesale and retail electric market business practice standards to support three NIST/Smart Grid Interoperability Panel priority action plans (PAP): PAP03 – common price communication model, PAP04 – common scheduling mechanism, and PAP09 – standard demand response signals. These assignments were made during NIST meetings in September 2009. As a result of these assignments, NAESB formed a NAESB Smart Grid Standards task force. The NAESB Smart Grid Standards task force has drafted and recently approved four recommendations for NAESB business practices containing smart grid-related use case and data requirement standards. Consistent with the NAESB business practices/standard setting process, the recommendations are now out for industry comment[5] and will be the subject of consideration by both the NAESB retail and wholesale electric quadrant executive committees. As part of phase two of the smart grid effort, the NAESB task force is refining, extending and providing additional granularity for the data requirements. The membership in the task force is open, and any interested party is welcome to join the development activities.[6] Phase 2 will be done expediently and in coordination with the other groups such as Organization for the Advancement of Structured Information Standards ("OASIS") and Zigbee Alliance, who have been tasked by NIST to provide the schemas and technical standards based on the NAESB-developed use case and data requirement standards.

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http://www.naesb.org/pdf4/retail_2010_annual_plan.doc.
[3] The 2009 and 2010 Wholesale Electric Annual Plans are *available at* http://www.naesb.org/pdf4/draft_weq_2009_annual_plan.doc, http://www.naesb.org/pdf4/weq_2010_annual_plan.doc
[4] The joint development process used by NERC and NAESB is described and *available at*: http://www.naesb.org/pdf3/nerc_naesb_joint_development_process.pdf
[5] The request for comments and the recommendations are *available at* http://www.naesb.org/pdf4/weq_030910_reqcom.doc, http://www.naesb.org/pdf4/req_030910_reqcom.doc. The comment period concludes on April 9, 2010.
[6] To join the NAESB Smart Grid Stanards task force, please contact Denise Rager (drager@naesb.org).

NAESB is also active in PAP10 - standard energy usage information, and the NAESB task force is developing a survey of current practices of energy usage communications between energy suppliers and consumers, including providers of intermediary services. Once the survey is drafted and distributed, NAESB will consolidate the use cases and requirements for existing and planned energy communications. The task force's role in PAP10 is different as compared to NAESB's role in PAPs 3, 4, and 9 in that the NAESB task force will be acting as a facilitator and gatherer of information, rather than as a standards developer. The NAESB task force is on schedule to have the survey developed and ready for distribution to NAESB membership and other groups on April 9, 2010. The NAESB task force will gather the results and plans to have reports responding to the tasks completed in the May-June 2010 time frame.

**Status of the Demand Response related NAESB efforts**

NAESB continues to pursue the development of both wholesale and retail electric market standards to support demand response programs. The standards development related to demand response is assigned to the NAESB Demand Side Management- Energy Efficiency (DSM-EE) subcommittee, a joint group of both wholesale and retail electric market interests. The NAESB subcommittee has completed its first phase of work, and NAESB filed standards with the Commission on April 17, 2009[7] The standards addressed the measurement and verification characteristics of demand response products and services to be used in the wholesale electricity market, and were intended to provide a common framework for transparency, accountability and consistency. The standards were composed of 31 business practice standards and 40 definitions that focused on four product and service categories—energy service, capacity service, reserve service and regulation service—and established criteria for the use of equipment, technology and procedures to quantify the demand reduction value delivered. Further, these definitions play an integral role in the NERC demand response data collection efforts, known as the Demand Response Availability Data System (DADS). The definitions offer a basis for the industry to provide consistent reporting of historical demand response performance data. The Commission issued a notice of proposed rulemaking on the NAESB standards on September 17, 2009.[8] The retail electric standards that were developed in coordination with the wholesale standards were

[7] The NAESB report to the FERC is *available at* http://www.naesb.org/pdf4/ferc041709_dsm_filing.pdf
[8] The Notice of Proposed Rulemaking is *available at* http://www.ferc.gov/whats-new/comm-meet/2009/091709/E-1.pdf

ratified by NAESB membership on November 16, 2009, subsequently published as part of the NAESB retail electric market standards Version 1.2[9] on December 31, 2009, and were provided to the National Association of Regulatory Utility Commissioners.

For a second phase of standards development, NAESB is now developing the more detailed technical standards for the measurement and verification of demand response products and services for the wholesale electric market. The wholesale electric standards development for the second phase is directed to glossary, performance evaluation methodology and the existing business practices. The retail electric market efforts are proceeding in tandem with wholesale efforts to support coordination. The retail electric standards development for the second phase is directed to glossary and to the comments received on August 28, 2009 that extend the existing business practices.[10] It is planned that the NAESB subcommittee will complete its work for the second phase in June 2010. The DSM-EE subcommittee and task force membership is open, and any interested party is welcome to join the development activities.[11]

Most recently, NAESB has also received a request R10002[12] that is under consideration by the two Executive Committees for assignment. The request addresses standards development for the creation of common interfaces and data structures necessary for enrolling demand response sites into a demand response program. In a related effort, the DSM-EE subcommittee is also developing standards for energy efficiency based from work of the National Action Plan for Energy Efficiency,[13] with an expected completion date by yearend 2010.

**Conclusion**

With both the standards development in support of smart grid activities and the standards development for demand response activities, coordination among various groups is crucial. NAESB has a longstanding relationship with NERC that provides the basis for strong coordination and joint development of standards. Similarly, the NAESB activities that cross

[9] The retail electric market standards for Version 1.2 is *available at* http://www.naesb.org/req/req_final.asp
[10] A matrix of the summary of retail electric market comments on the retail DR standards *is available* at http://naesb.org/pdf4/dsmee_group2_021810a3.doc
[11] To join the NAESB DSM-EE Subcommittee or its task forces, please contact Denise Rager (drager@naesb.org).
[12] The request and the pending assignments is *available at* http://www.naesb.org/pdf4/tr040210agenda.doc
[13] The National Action Plan for Energy Efficiency Model Energy Efficiency Program Impact Evaluation Guide (November 2007) *is available at* http://www.naesb.org/pdf3/napee_evaluation_guide.pdf and the National Action Plan for Energy Efficiency Vision for 2025 (November 2008) is available at http://www.epa.gov/cleanenergy/documents/vision.pdf

both wholesale and retail electric markets are coordinated, and in many cases jointly developed. With the development underway for energy efficiency standards, NAESB is fortunate to have many groups participate, lend their expertise and identify foundational documents from which the standards will be developed.

Collaboration and coordination among standards and industry groups is at the forefront of smart grid development. NAESB is working with several groups to ensure that the work products of the various standards development organizations are consistent and supportive. Financial Information eXchange Protocol (FIX Protocol), CalConnect, Utility Communications Architecture International Users Group (UCAIug) and OASIS have been very active in the development of the NAESB smart grid business practice standards. FIX Protocol and UCAIug have contributed task force leadership and foundational work products to the NAESB efforts. Most notably, NAESB and OASIS are collaborating on a procedure that will ensure that we can build off each other's work products, thus providing a more comprehensive set of standards to support not only the smart grid standards development, but we are hopeful that our alliance will extend into other development efforts as well. To further our collaboration, both NAESB and OASIS are now members of each other's organizations.

We appreciate the opportunity to provide these comments, and to develop industry standards for the wholesale and retail market implementation of smart grid and demand response programs.

Respectfully submitted,

*Rae McQuade*

Rae McQuade
President, North American Energy Standard Board

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December 10, 2009

**TO:** NAESB Executive Committee
**FROM:** Rae McQuade
**RE:** Schedule of 2010 Meetings

Below is the schedule of 2010 meetings for the Board of Directors, Advisory Council and Executive Committee.

**2010 Calendar of Board and Advisory Council Meetings**

| Date | Meeting | Location |
|---|---|---|
| February 13 | Advisory Council Meeting | Washington D.C. – Renaissance Washington Hotel (in conjunction with NARUC Winter Meeting) |
| March 25 | Board of Directors | Houston – Marriott IAH |
| June 24 | Board of Directors | Houston – Marriott IAH |
| September 23 | Board of Directors, Meeting of the Members and Strategic Session | Houston – Marriott IAH |
| December 9 | Board of Directors | Houston – Marriott IAH |

**2010 Calendar of Executive Committee Meetings**

| Date | Meeting | Location |
|---|---|---|
| February 2-4 | Executive Committee (WEQ, Retail, WGQ) | Phoenix, AZ hosted by Salt River Project |
| May 4-6 | Executive Committee (WEQ, Retail, WGQ) | Harrisburg, PA hosted by the Pennsylvania PUC |
| August 17-19 | Executive Committee (WEQ, Retail, WGQ) | Colorado Springs, CO hosted El Paso Western Pipeline |
| October 26-28 | Executive Committee (WEQ, Retail, WGQ) | Glen Allen, VA hosted by Dominion |

The Retail Executive Committee meetings will be held by conference call and web cast unless otherwise determined by the retail leadership. The Wholesale Gas Executive committee meetings may be changed to only be held as a conference call/web cast dependent on the agenda items.