RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE
For Quadrant: Retail Electric Quadrant (REQ)

Requesters:	**DSM-EE Subcommittee**
Request No.:	**2009 Retail Annual Plan Item No. 6.e**
Request Title:	**M&V for Demand Response Programs**

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:

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

Per Recommendation:

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

3. RECOMMENDATION

SUMMARY:

The DSM-EE Subcommittee submits this Recommendation for 2009 Retail Annual Plan Item No. 6.e to support retail development of Model Business Practices for Measurement & Verification (M&V) for Demand Response programs.

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RECOMMENDED STANDARDS:

MEASUREMENT & VERIFICATION (M&V) OF DEMAND RESPONSE PROGRAMS

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Executive Summary

This section provides a common framework of the Model Business Practices for Measurement and Verification (M&V) of Demand Response programs in retail energy markets.   The purpose of these Model Business Practices is to provide:

- Transparency: accessible and understandable M&V requirements for Demand Response programs

- Accountability: criteria that will enable the Program Administrator to accurately measure performance of Demand Response Resources; and

- Consistency: a process or protocol that will allow Program Administrators, Applicable Regulatory Authorities, or program participants to agree on the required steps to take to verify demand reductions resulting from Demand Response programs in retail energy markets.

- Comprehensive: strives to cover all forms of Demand Response

The purpose of this Standard is to ensure that regulatory commissions and participants in retail electric markets in which dispatchable Demand Response products are administered have access to uniform information that will enable them to report consistent values for Measurement and Verification of the programs.

These Model Business Practices were designed in concert with Wholesale Electric Quadrant Standards covering Demand Response programs operating in wholesale electric markets. ~~In the event of a conflict between these business practices and business practices developed by the Wholesale Electric Quadrant for products that are bid into wholesale markets, the Wholesale Electric Quadrant Standard should have precedence.~~   Additionally, all Entities supplying Demand Response Services should comply with applicable North American Electric Reliability Corporation(NERC) reliability standards.

> **Comment [BMP1]:** While Retail Demand Response might be subject to a set of rules that are similar to wholesale, this is not to say that wholesale demand response standards should govern retail demand response standards

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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 energy service to end-use Customers. The focus of these Model Business Practices is performing M&V for Demand Response programs, and is not intended to address demand response program design. These Model Business Practices are intended to be consistent with the Wholesale Electric Standards, but also acknowledge differences in product and program types between the two markets.

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.

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Business Processes and Practices

MEASUREMENT & VERIFICATION (M&V) OF DEMAND RESPONSE PROGRAMS

REQ.13   Overview

These M&V Model Business Practices establish criteria for the use of equipment, technology, and procedures to quantify the Demand Reduction Value delivered. Model Business Practices developed may include commonalities among product types. The following outline of Model Business Practices is applicable to the Demand Response product categories.

General	Advance Notification
	Deployment Time
	Reduction Deadline
	Release/Recall
	Normal Operations
	Demand Resource Availability Measurement
	Aggregation
	Transparency of Requirements
Telemetry	Telemetry Requirement
	Telemetry Accuracy
	Telemetry Interval
	Other Telemetry Measurements
	Communication Protocol
	Governor Control Equivalent
	On-Site Generation Telemetry Requirement
After-The-Fact Metering	After-the-Fact Metering Requirement
	Meter Accuracy
	Details of Meter/Equipment Standards
	Meter Data Reporting Deadline
	Meter Data Reporting Interval
	Clock / Time Accuracy
	Validating, Editing & Estimating (VEE) Method
	On-Site Generation Meter Requirement
Performance Evaluation	Rules for Performance Evaluation

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Performance Evaluation Methodology

For each Demand Response service, a performance evaluation methodology is used to determine the Demand Reduction Value provided by a Demand Resource. The Model Business Practices include descriptions of acceptable Baselines and alternative performance measurements that are appropriate for each type of Demand Response service. The table below provides an outline of the applicable criteria for performance evaluation methodologies.

Baseline Information	Baseline Window
	Calculation Type
	Sampling Precision and Accuracy
	Exclusion Rules
	Baseline Adjustments
	Adjustment Window
Event Information	Use of Real-Time Telemetry
	Use of After-The-Fact Metering
	Performance Window
	Measurement Type
Special Processing	Highly-Variable Load Logic
	On-Site Generation Requirements

These Model Business Practices do not specify detailed characteristics of performance evaluation methodologies, but rather provide a framework that may be used to develop performance evaluation methodologies for specific Demand Response services. This approach is believed to be most appropriate at this time as development of performance evaluation methodologies and baseline calculations continues to mature. The following methodology types are applicable to retail Demand Response Services:

- Maximum Base Load
- Meter Before / Meter After
- Baseline
- Metering Generator Output

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REQ.13.1 Principles

REQ.13.1.1   The processes for M&V of Demand Response programs should be efficient to minimize the time and effort needed to accomplish these operational details.

REQ.13.1.2   The processes for M&V of Demand Response programs should be consistent with the requirements set forth by the Applicable Regulatory Authority.

REQ.13.1.3   The processes for M&V of Demand Response programs should minimize the occurrence of unauthorized activity in the marketplace.

REQ.13.1.4   A contract or agreement between participants may establish different processes, timeframes, or operational requirements. Any conflict between these recommended processes and an applicable contract is resolved according to the provisions of the contract.

REQ.13.1.5   These processes do not address contractual obligations between participants and their Customers, but because they are intended to be business practices, entities may incorporate them into contractual arrangements

REQ.13.1.6   All Customer specific data must remain confidential unless the parties otherwise agree.

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REQ.13.2 Definitions

REQ.13.2.A Business Definitions

REQ.0.2.xx **Adjustment Window:** The period of time prior to a Demand Response Event used for calculating a Baseline Adjustment.

REQ.0.2.xx **Advance Notification(s):** One or more communications to Demand Resources of an impending Demand Response Event in advance of the actual event.

REQ.0.2.xx **After-the-Fact Metering:** Interval meter data separate from Telemetry that is used to measure Demand Response. May not apply to Demand Resources under Baseline using statisitical sampling.

RXQ.0.2.1 **Applicable Regulatory Authority:** The state regulatory agency or other local governing body that provides oversight, policy guidance, and direction to any parties involved in the process of providing energy to retail access Customers through regulation and orders.

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REQ.0.2.xx   **Baseline:** A method of estimating the electricity that would have been consumed by a Customer or Demand Resource in the absence of a Demand Response Event. It may be calculated using interval metering and/or statistical sampling techniques. Depending on the type of Demand Response product or service, Baseline calculations may be performed in real-time or after-the-fact, and are subject to the definitions described
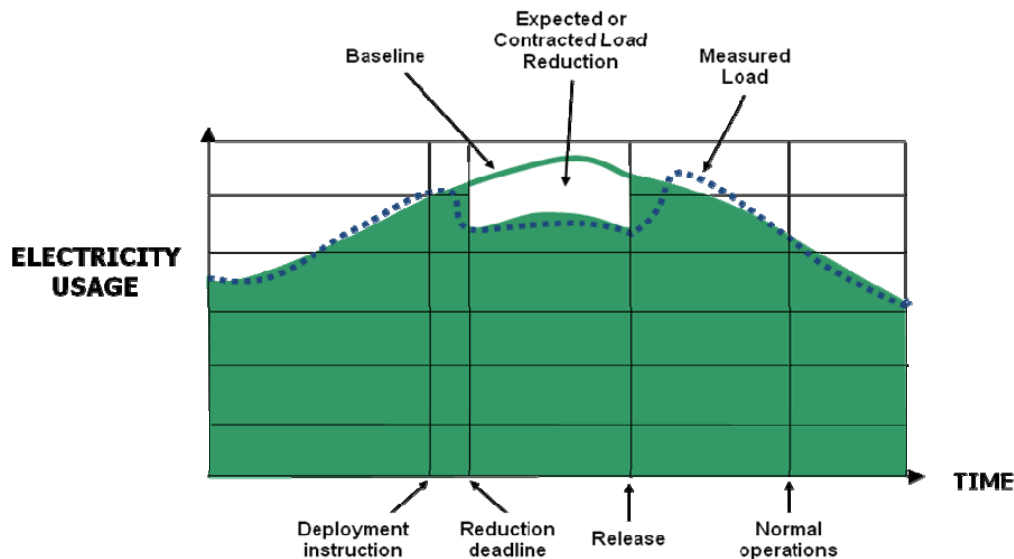
under REQ. 13.3.4, Performance Evaluation. The figure below illustrates the concept of Baseline relative to a Demand Response Event.

Figure. Illustration of Baseline Concept.

REQ.0.2.xx   **Baseline Adjustment:** An adjustment that modifies the Baseline to reflect actual conditions immediately prior to or during a Demand Response Event to provide a better estimate of the energy the Demand Resource would have consumed but for the Demand Response Event. The adjustments may include but are not limited to weather conditions, near real time event facility Load, current Demand Resource operational information, or other parameters based on the Program Administrator's requirements.

REQ.0.2.xx   **Baseline Window:** The window of time preceding and optionally following, a Demand Response Event over which the electricity consumption data is collected for the purpose of establishing a Baseline.

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REQ.0.2.xx   **Capacity Service:** A type of Demand Response service in which Demand Resources are obligated over a defined period of time to be available to provide Demand Response upon deployment by the Program Administrator.

REQ.0.2.xx   **Critical Peak Pricing**: Rates which typically charge a much higher price during a few hours per day on critical peak days. The number of critical peak days is usually capped for a calendar year and is linked to conditions such as system reliability concerns or very high supply prices.

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

REQ.0.2.xx   **Demand:** The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time; and the rate at which energy is being used by the customer.

REQ.0.2.xx   **Demand Reduction Value:** Quantity of reduced electrical Demand consumption by a Demand Resource, expressed in MW or MWh, respectively.

REQ.0.2.xx   **Demand Resource:** A Load or aggregation of Loads capable of measurably and verifiably providing Demand Response.

REQ.0.2.xx   **Demand Resource Availability Measurement:** The amount of Load available to be dispatched for a given Demand Response Event.

REQ.0.2.xx   **Demand Response:** Changes in electric use by demand-side resources from their normal consumption patterns in response to changes in the price of electricity, or to incentives designed to induce lower electricity use at times of potential peak load, high cost periods, or when system reliability is jeopardized.

For purposes of these Model Business Practices, this definition does not include energy efficiency or permanent Load reduction.

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REQ.0.2.xx **Demand Response Event:** The time periods, deadlines and transitions during which Demand Resources perform. The Program Administrator should specify the duration and applicability of a Demand Response Event. All deadlines, time periods and transitions may not be applicable to all Demand Response products or services.

The figure below represents the terms for timing events and time durations applicable to the characteristics of a dispatchable Demand Response Event. The definitions of the ten elements in the figure are the basis for describing the Timing of a Demand Response Event.
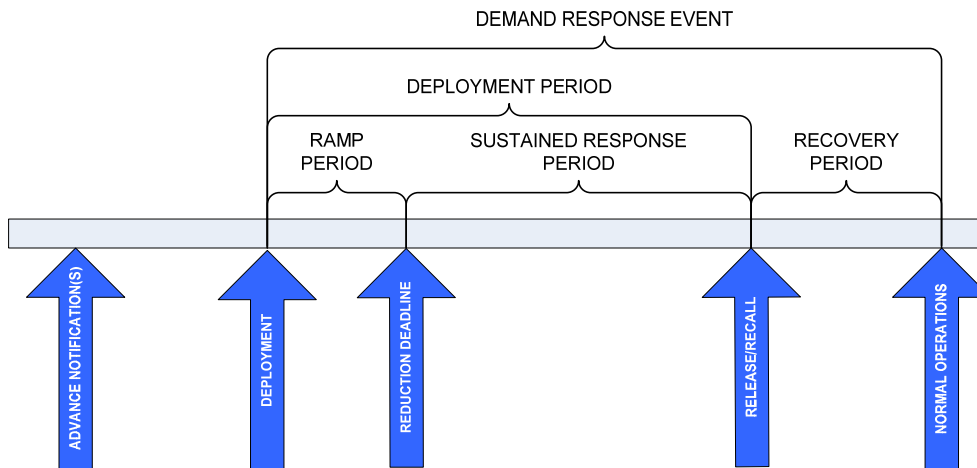
Figure. Timing of a Demand Response Event

REQ.0.2.xx **Demand Response Provider:** The Entity that is responsible for delivering Demand reductions from Demand Resources.

REQ.0.2.xx **Deployment:** The time at which a Demand Resource begins reducing Demand on the system in response to an instruction.

REQ.0.2.xx **Deployment Period:** The time in a Demand Response Event beginning with the Deployment and ending with the Release/Recall.

REQ.0.2.xx **Direct Load Control:** A Demand Response activity by which the program sponsor remotely shuts down or cycles a Customer's electrical equipment (e.g. air conditioner, water heater). Direct Load Control programs are primarily offered to residential or small commercial Customers.

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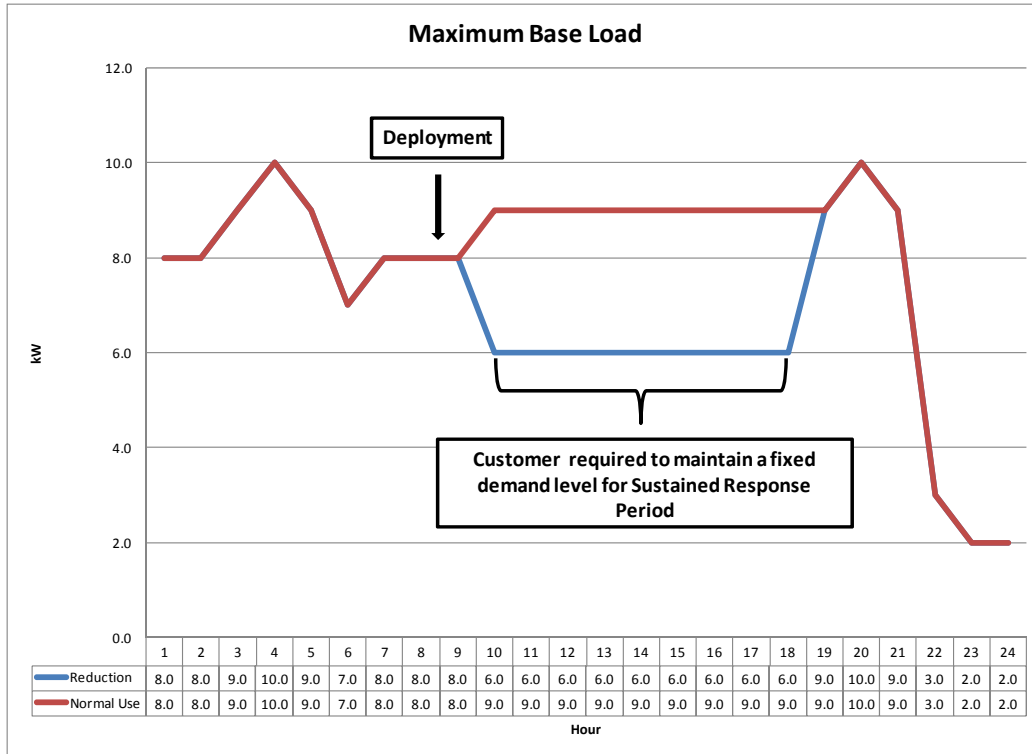|	
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REQ.0.2.xx **Dispatchable Programs:** Programs that allow a Program Administrator to declare a Demand Response Event that has a specific start time and end time.

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.

REQ.0.2.xx **Energy Service:** A type of Demand Response service in which Demand Resources are compensated solely based on their performance during a Demand Response Event.

RXQ.0.2.47 **Entity:** A person or organization with sufficient legal standing to enter into a contract or arrangement with another such person or organization (as such legal standing may be determined by those parties) for the purpose of conducting and/or coordinating energy transactions.

REQ.0.2.xx **Firm Service Level:** Demand level that a Customer must not exceed during a Demand Response Event.

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

REQ.0.2.xx **Guaranteed Load Drop:** Reduction of a specified amount of Load.

REQ.0.2.xx **Highly-Variable Load:** A Load with a fluctuating or unpredictable electricity consumption pattern.

REQ.0.2.xx **Load:** An end-use device or customer that receives power from the electric system.

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REQ.0.2.xx **Maximum Base Load:** A performance evaluation methodology based solely on a Demand Resource's ability to reduce to a Firm Service Level, regardless of its electricity consumption or Demand at Deployment.

Maximum Base Load

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Reduction	8.0	8.0	9.0	10.0	9.0	7.0	8.0	8.0	8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	9.0	10.0	9.0	3.0	2.0	2.0
Normal Use	8.0	8.0	9.0	10.0	9.0	7.0	8.0	8.0	8.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	10.0	9.0	3.0	2.0	2.0

Deployment

Customer required to maintain a fixed demand level for Sustained Response Period

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REQ.0.2.xx **Meter Before / Meter After:** A performance evaluation methodology where electricity Demand over a prescribed period of time prior to Deployment is compared to similar readings during the Sustained Response Period.
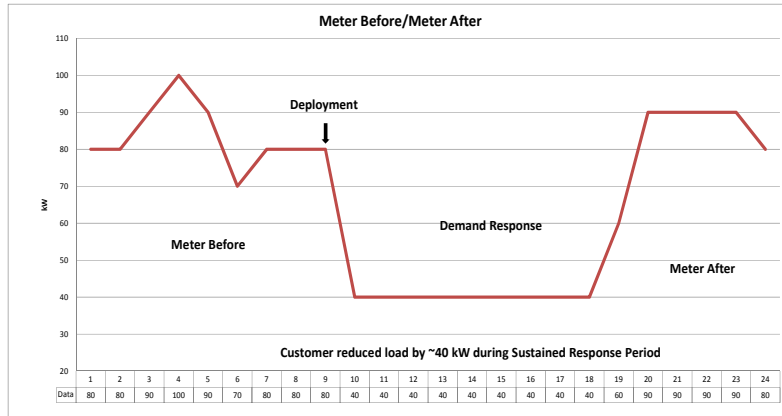
REQ.0.2.xx **Meter Data Recording Interval:** The time between electricity meter consumption recordings.

REQ.0.2.xx **Meter Data Reporting Deadline:** The maximum allowed time from the end of a Demand Response Event (Normal Operations) to the time when meter data is required to be submitted for performance evaluation and settlement. The Meter Data Reporting Deadline may be either relative (a number of hours/days after Normal Operations) or fixed (a fixed calendar time, such as end-of-month).

REQ.0.2.xx **Metering Generator Output:** A performance evaluation methodology in which the Demand Reduction Value is based on the output of the generation asset, used when a generation asset is located behind the Demand Resource's revenue meter. . This should also include the building/facility meter number so that metering output from the generator is seen as a load drop on the building/facility meter. This will ensure generating units, which normally operate, are not compensated for demand reductions during normal operations.

REQ.0.2.xx **Non-Dispatchable Programs:** Programs in which Demand Resources curtail according to tariff structure, not in response to instructions from a Program Administrator.

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REQ.0.2.xx **Non-Spinning Reserve:** Operating reserves that can be started, synchronized and loaded within a specified time period.

REQ.0.2.xx **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.

REQ.0.2.xx **Operability Factor:** A net-to-gross percentage applied to the Demand Resource Availability Measurement, developed using a defined and documented testing protocol to verify both signal reception and device operation of the units in a retail Demand Response program, specific to a time period.

REQ.0.2.xx **Performance Window:** The period of time in a Demand Response Event analyzed by the Program Administrator to measure and verify the Demand Reduction Value for a Demand Resource.

REQ.0.2.xx **Program Administrator:** An investor-owned, governmental or cooperative utility, or Aggregator of Retail Customers (ARC) with the responsibility for developing and operating Demand Response programs.

REQ.0.2.xx **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.

REQ.0.2.xx **Ramp Rate:** The rate, expressed in megawatts per minute, that a generator changes its output or a Demand Resource changes its Load.

REQ.0.2.xx **Real Time Pricing:** A retail rate in which the price for electricity fluctuates reflecting changes in the wholesale price of electricity.

REQ.0.2.xx **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.

REQ.0.2.xx **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.

REQ.0.2.xx **Regulation Service:** A type of Demand Response service in which a Demand Resource increases and decreases Load in response to real-time signals from the Program Administrator. Demand Resources providing Regulation Service are subject to dispatch continuously during a commitment period. Provision of Regulation Service does not correlate to Demand Response Event timelines.

REQ.0.2.xx **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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REQ.0.2.xx   **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.

REQ.0.2.xx   **Spinning Reserve:** Operating reserves from resources that are synchronized to the grid and can respond to instructions from the Program Administrator.

REQ.0.2.xx   **Telemetry:** Real-time continuous communication between a Demand Resource or Demand Response Provider and the Program Administrator.

REQ.0.2.xx   **Telemetry Interval:** The time unit between communications between a Demand Resource or Demand Response Provider and a Program Administrator.

REQ.0.2.xx   **Time-of-Use Rates:** Rates where usage unit prices vary by more than one time period within a 24-hour day to reflect the average cost of generating and delivering power during those time periods. Daily pricing blocks may include, but are not limited to, an on-peak, partial-peak, and an off-peak price for non-holiday weekdays, with the on-peak price as the highest price, and the off-peak price as the lowest price.

REQ.0.2.xx   **Validation, Editing and Estimation:** The process of confirming the accuracy of raw meter data and, if necessary, replacing corrupt or missing data. VEE guidelines are published in the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering.

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REQ.13.3   Model Business Practices

REQ.13.3.1   General Characteristics of a Demand Response Event

REQ.13.3.1.1   All actions taken in a Demand Response Event should be in accordance with the Governing Documents.

REQ.13.3.1.2   Advance Notification: The Program Administrator should specify any requirements for the Advance Notification.

REQ.13.3.1.3   The Program Administrator should initiate Deployment of the Demand Resource(s) depending on the specific circumstance(s) of the Demand Response Event.

REQ.13.3.1.4   The Reduction Deadline will depend on the specific circumstance(s) of the Demand Response Event and should be specified by the Program Administrator.

REQ.13.3.1.5   Any requirement(s) for a Ramp Period or a specified Ramp Rate will depend on the specific circumstance(s) of the Demand Response Event and should be specified by the Program Administrator.

REQ.13.3.1.6   The Release / Recall will depend on the specific circumstance(s) of the Demand Response Event and should be specified by the Program Administrator.

REQ.13.3.1.7   Any requirement for a return to Normal Operations will depend on the specific circumstance(s) of the Demand Response Event and the Recovery Period should be specified by the Program Administrator.

REQ.13.3.2   Measurement of Load

REQ.13.3.2.1   Demand Response performance may be measured via Telemetry or After-the-Fact metering or both.

REQ.13.3.2.2   After-the-Fact Measurement is required and may be either by metering each individual site or by statistical sampling.

REQ.13.3.2.3   Meter accuracy should meet or exceed industry standards or as specified by the Applicable Regulatory Authority.

REQ.13.3.2.4   Meters and other equipment should meet or exceed industry standards equivalent to ANSI C12 or as specified by the Applicable Regulatory Authority.

REQ.13.3.2.5   The Meter Data Reporting Deadline should be specified in the Governing Documents.

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REQ.13.3.2.6   The Meter Data Reporting Interval should be specified in the Governing Documents.

REQ.13.3.2.7   The meter clock / time accuracy should meet or exceed industry standards equivalent to ANSI C12 or as specified by the Applicable Regulatory Authority.

REQ.13.3.2.8   The method of Validating, Editing and Estimation should conform to an accepted methodology (such as the guidelines published in the current edition of the Edison Electric Institute's Uniform Business Practices for Unbundled Electricity Metering), and should be specified in the Governing Documents.

REQ.13.3.3   Statistical Sampling

REQ.13.3.3.1   The method of statistical sampling used should conform to an accepted methodology and should be specified in the Governing Documents. The following list provides examples of currently accepted methodologies:

- The Association of Edison Illuminating Companies (AEIC) Load Research Manual
    - Chapter 4 – Sample Design and Selection
    - Chapter 5 – Sample Implementation[1]
- The Federal Energy Management Program M&V Guidelines: Measurement and Verification for Federal Energy Projects – Appendix B[2];
- The California Energy Efficiency Evaluation Protocols[3];
- The California Evaluation Framework – Chapter 13[4]; or
- The Independent System Operator (ISO)-New England Manual for Measurement and Verification of Demand Reduction Value from Demand Resources, Section 7[5].

REQ.13.3.3.2   The general steps to be taken in statistical sampling are, but are not limited to:

- Design the sample to meet program objectives.
- Define the population

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[1] Association of Edison Illuminating Companies (AEIC), *Load Research Manual,*2nd ed., Birmingham, AL, 2001, www.aeic.org
[2] US Department of Energy. M&V Guidelines: Measurement and Verification for Federal Energy Management Projects Version 3.0. 2008. (http://www1.eere.energy.gov/femp/financing/superespcs_measguide.html).
[3] California Public Utilities Commission, California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals, 2006. (http://www.cpuc.ca.gov/PUC/)
[4] California Public Utilities Commission, The California Evaluation Framework, 2006. (http://www.cpuc.ca.gov/PUC/).
[5] ISO-New England, Manual for Measurement and Verification of Demand Resources, (M-MVDR), 2007. (http://www.iso-ne.com).

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- Specify the listing of units available to be sampled which is sometimes called the sampling frame
- Identify design (auxiliary) variables
- Choose the sampling technique
    - Choose stratification variable(s)
    - Select allocation procedure
    - Estimate means and variances of loads
    - Examine sample size requirements
    - Select sampling techniques and design
- Determine the sample size
- Identify those units to be in the sample
    - Identify the criteria for selecting those units to be substituted for sample units who decline
    - Select sample and alternates
    - Validate sample
- Contacting and enroll the Customers to be in the sample, and install the metering devices

REQ.13.3.3.3 The sample should ultimately achieve an accuracy of 90% confidence with 20% error, but be designed to achieve a minimum accuracy of 90% confidence with 10% error.

REQ.13.3.4   Performance Evaluation

Performance is evaluated through the use of one of the following methods unless otherwise specified by the Program Administrator:

- Maximum Base Load
- Meter Before / Meter After
- Baseline
- Metering Generator Output

REQ.13.3.4.1   Maximum Base Load Evaluation

REQ.13.3.4.1.1   Any requirement for real-time Telemetry data to be used to measure performance should be specified by the Program Administrator.

REQ.13.3.4.1.2   Any requirement for After-The-Fact metering should be specified by the Program Administrator.

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<tr><td rowspan="4">**NAESB**</td><td colspan="2">**RECOMMENDATION TO NAESB EXECUTIVE COMMITTEE**
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<tr><td>**Requesters:**</td><td>**DSM-EE Subcommittee**</td></tr>
<tr><td>**Request No.:**</td><td>**2009 Retail Annual Plan Item No. 6.e**</td></tr>
<tr><td>**Request Title:**</td><td>**M&V for Demand Response Programs**</td></tr>
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REQ.13.3.4.1.3   The Performance Window is the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Program Administrator.

REQ.13.3.4.1.4   During the Performance Window, the Demand Resource must maintain its electricity consumption at or below the Maximum Base Load. The criteria used to evaluate performance is one of the following unless otherwise specified by the Program Administrator:

- Peak Demand

- Average Demand

REQ.13.3.4.2   Meter Before / Meter After Evaluation

REQ.13.3.4.2.1   The Program Administrator should specify the Baseline Window.

REQ.13.3.4.2.2   During the Baseline Window, the Demand of the Demand Resource is evaluated using one of the following measurements as specified by the Program Administrator:

- Instantaneous Demand

- Maximum Demand

- Average Demand

REQ.13.3.4.2.3   Statistical sampling is not used for this performance evaluation type, unless otherwise specified by the Program Administrator.

REQ.13.3.4.2.4   The Program Administrator should specify any time periods to be excluded from Baseline Window.

REQ.13.3.4.2.5   The Program Administrator should specify any Baseline Adjustments.

REQ.13.3.4.2.6   No Adjustment Window is used for this model unless otherwise specified by the Program Administrator.

REQ.13.3.4.2.7   The Program Administrator should specify if real-time Telemetry data is to be used to measure performance.

REQ.13.3.4.2.8   After-The-Fact metering should be used to measure performance, unless otherwise specified by the Program Administrator.

REQ.13.3.4.2.9   The Performance Window is the Sustained Response Period (Reduction Deadline through Release/Recall) unless otherwise specified by the Program Administrator.

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REQ.13.3.4.2.10 During the Performance Window, the Demand Resource is evaluated using one of the following measurements unless otherwise specified by the Program Administrator:

- Instantaneous Demand

- Maximum Demand

- Average Demand

REQ.13.3.4.2.11 The Program Administrator should specify any performance evaluation requirements for Highly-Variable Loads.

REQ.13.3.4.2.12 The Program Administrator should specify any performance evaluation requirements for on-site generation.

REQ.13.3.4.3   Baseline Evaluation

REQ.13.3.4.3.1 The Program Administrator should specify the Baseline Window.

REQ.13.3.4.3.2 The Program Administrator should specify the method of developing the Baseline value using, but not limited to, the following calculation types:

- Maximum

- Average

- Regression

REQ.13.3.4.3.3 Statistical sampling is generally permitted for this Performance Evaluation type, unless otherwise specified by the Program Administrator.

REQ.13.3.4.3.4 The Program Administrator should specify any rules for excluding data from the Baseline Window. Exclusion rules may be based on, but are not limited to the following:

- Historical Demand Response Events
- Testing/Audit Periods
- Calendar data
- Outages
- Weather emergencies or force majeure events
- Usage threshold
- Known, discrete load additions or reductions that have occurred during the Baseline Window

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REQ.13.3.4.3.5   The Program Administrator should specify any rules for Baseline Adjustments. Adjustment rules may be based on, but are not limited to the following:

- Temperature
- Humidity
- Calendar data
- Sunrise/Sunset time
- Event day operating conditions

REQ.13.3.4.3.6   The Program Administrator should specify the Adjustment Window.

REQ.13.3.4.3.7   The Program Administrator should specify if real-time Telemetry data is to be used to measure performance.

REQ.13.3.4.3.8   After-The-Fact metering is used to measure performance, unless otherwise specified by the Program Administrator.

REQ.13.3.4.3.9   The Program Administrator should specify the Performance Window.

REQ.13.3.4.3.10   During the Performance Window, the Demand Resource is evaluated using one of the following measurements unless otherwise specified by the Program Administrator:

- Maximum
- Average
- Regression

REQ.13.3.4.3.11   The Program Administrator may specify performance evaluation requirements for Highly-Variable Loads.

REQ.13.3.4.3.12   The Program Administrator may specify performance evaluation requirements for on-site generation.

REQ.13.3.4.4   **Metering Generator Output**

REQ.13.3.4.4.1   The Program Administrator should specify Baseline calculations for Metering Generator Output.

REQ.13.3.4.4.2   The Program Administrator should specify if real-time Telemetry data is to be used to measure performance.

REQ.13.3.4.4.3   After-the-fact metering on the generator and ~~optionally on~~ the associated Load is used to measure performance. ~~unless otherwise specified by the Program Administrator.~~

> **Comment [BMP2]:** This ensures that both the generator output and the load drop, associated with the generator output, are both seen. Ensures that generator output is not normal generator operations during demand response events.

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> **Deleted:** After-The-Fact metering on the generator and optionally on the associated Load is used to measure performance unless otherwise specified by the Program Administrator.

REQ.13.3.4.4.4   The Program Administrator should specify the Performance Window.

REQ.13.3.4.4.5   During the Performance Window, the Demand Resource is evaluated using the total measured generation output , unless otherwise specified by the Program Administrator. and the associated facility/building load meter.

unless otherwise specified by the Program Administrator.

REQ.13.3.4.4.6   The Program Administrator should specify any special processing rules.

4. SUPPORTING DOCUMENTATION

a. **Description of Request:**

b. **Description of Recommendation:**

c. **Business Purpose:**

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