



# Demand Response Measurement & Verification Standards Development Project

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# Goals

- Respond to recommendations from the FERC, the NAESB, and the industry
- Standardize vocabulary, concepts and some processes to enhance cross-regional market entry for Demand Response providers
- Lead NAESB initiative on wholesale market Demand Response measurement & verification standards

# Scope

Our work focuses on:

- Demand Response
- Wholesale Programs/Services
- ISO/RTO Administered

# IRC Members



# Demand Response Measurement and Verification (M&V)

- Equipment, technology, and procedures used to quantify net energy and demand.
- M&V includes elements such as telemetry and metering data collection and analyses, baseline calculations, statistical sample design.

# ISO/RTO DR Programs and Services

## Product Categories:

**Regulation (7)**

**Reserves (16)**

**(Spinning Reserves & Non-Spinning Reserves)**

**Energy (19)**

**Capacity (8)**

# ISO/RTO DR Matrix (example)

Region	ISO/RTO Program or Service Name	Product	Load Deployment Time	Aggregation Allowed	Real-Time On-Site Generation Measurement	Accuracy	Reporting Interval	Other Measurements	Comm Protocol	On-Site Generation Meter Required	Meter Accuracy	Clock / Time Accuracy	Details of Meter/ Equipment Standards	Meter Data Reporting Deadline	Granularity	Validating, Editing & Estimating (VEE) Method	Rules For Statistical Sampling	Baseline Type
AESO	SUP	Reserve																
CAISO	PLP	Energy																
ERCOT	EILS	Capacity																
IESO	DL	Reserve																
ISO-NE	RTDRP	Capacity																
NBSO	IL	Capacity																
NYISO	DSASP	Reserve																
PJM	ELR	Energy																

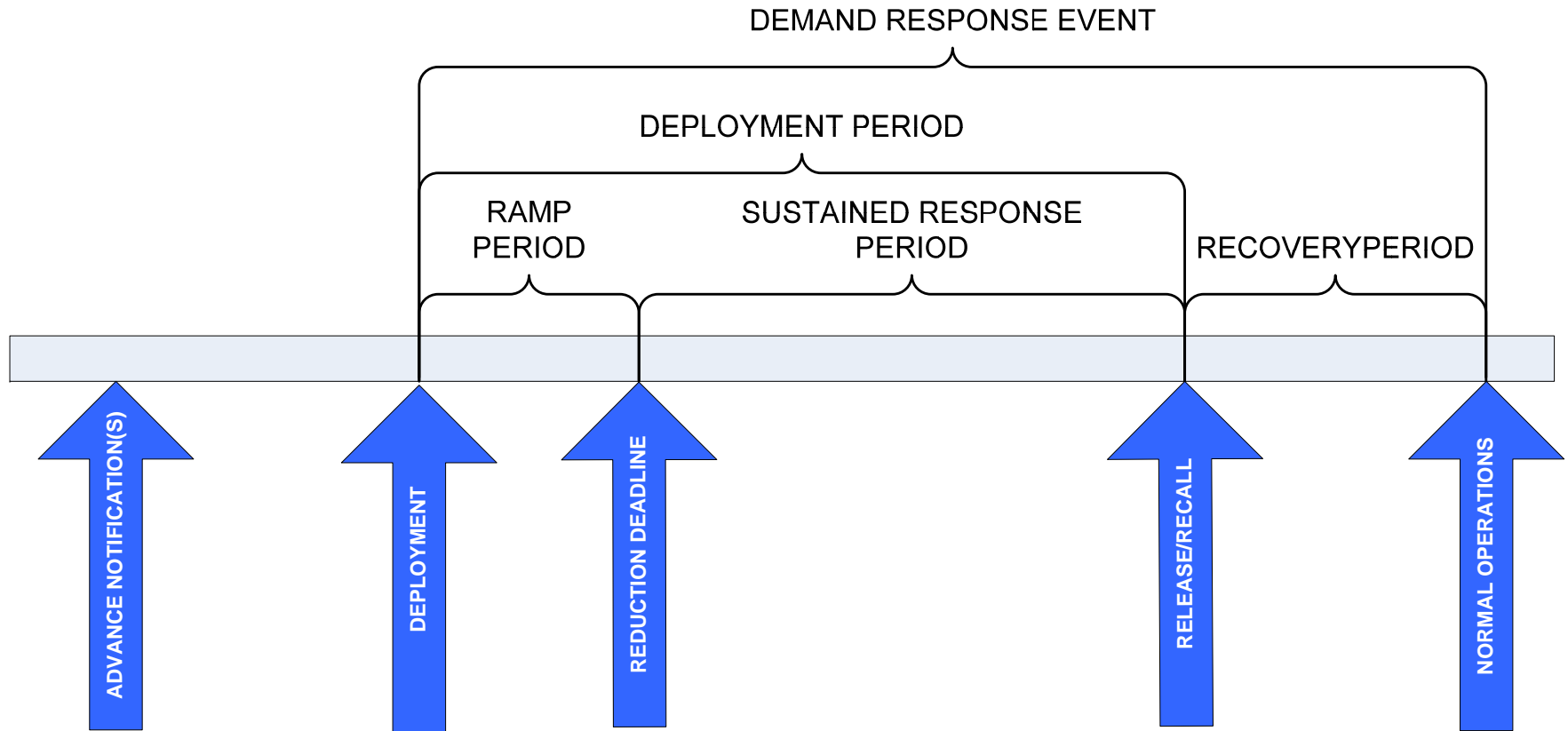
# Standards Development

- **Published by Product Type (4)**
- **Major Standards Categories**
  - **Qualification, Testing & Auditing**
  - **Telemetry**
  - **After-The-Fact Measurement**
  - **Customer Baselines**

# Qualification Testing and Audit

- **Aggregation Eligibility**
  - Indication of if composite / aggregate assets are allowed.
- **Reduction Deadline:**
  - Time at which the requested or contracted level of response is completely "off the system" (in minutes)

# Timing Terminology



# Telemetry

- **Measurements**
  - Measurement of the real-time demand
  - Separate telemetry of on-site generation, if present
  - Measurement of net energy injection to the grid
  - Secondary measurements (e.g. quality flags, breaker status)
- **Accuracy**
  - Composite of metering and communications
- **Reporting Interval**
  - The time between signals (typically seconds or minutes)
- **Communication Protocol**
  - The IT protocol used to collect the data, such as ICCP

# After-The-Fact Measurements

- **Meter Accuracy**
  - Accuracy of the energy measurement
  - Accuracy of the time measurement, if applicable
- **Data Reporting**
  - How often the data is sent to the ISO/RTO
  - Level of detail required
- **Data Validation, Estimation & Editing (VEE)**
- **Statistical Sampling Requirements**

# Performance: Customer Baseline

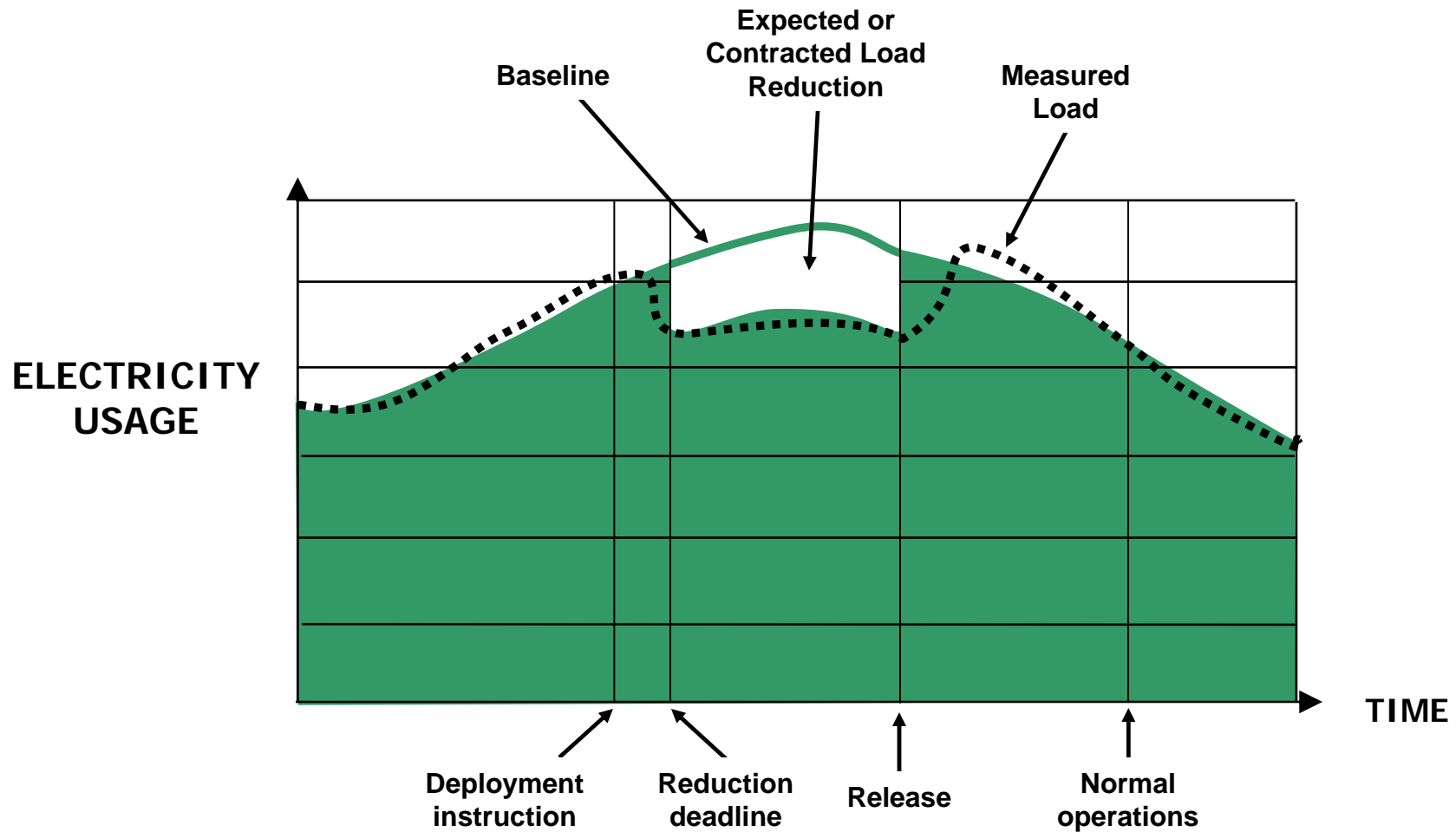
- **Characteristics of Baseline**

- Comprehensible
- Accurate
- Flexible
- Reproducible

- **Baseline Types**

- Firm Service Level Drop
- Metering before and after instruction
- Statistical Modeling
- Comparable Day
- On-site Generation Data (behind the meter)

# Baseline Concept



# IRC Demand Response Coordination

- **Two face to face meetings (Austin TX and Holyoke MA)**
- **Numerous conference calls**
- **Ad-hoc organization of Demand Response personnel**

# Accomplishments for IRC

- **Jan 07:** NAESB DSM-EE Project initiated
- **Mar 07:** Multiple ISO/RTOs engage with NAESB project
- **Sept 07:** Subgroup convenes; IRC commits personnel and funding; Scope statement for wholesale programs/services developed
- **Nov 07:** Draft Matrix of ISO/RTO programs completed
- **Jan 08:** Status report provided to NAESB
- **Mar 08:** Outline of draft standard provided to NAESB DSM/EE working group

# Upcoming Milestones

- **Q2 08:** ISO NE host to NAESB DSM/EE Meeting
- **Q3 08:** ERCOT host to NAESB DSM/EE Meeting
- **Q3 08:** Draft Standards to be delivered to NAESB

## On-Going

- Participation in NAESB standards development process
- IRC Program/Service comparison matrix
  - Includes information beyond data related to M&V Standards

# Contact Information

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