Demand Resource Participation in New England's Forward Capacity Market

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Washington, DC

ISO new england

Today's Objective

- How to define demand resources?
- What demand resource measures (i.e., programs, tariffs, or activities) have been implemented? Are any under consideration?
- What criteria are used for determining what measures to implement?
- What methods are used to determine if these measures are successful in providing the intended response?
- What methods are used to determine the value these measures produce for customers?

New England's Forward Capacity Market

- The Forward Capacity Market (FCM) procures capacity to meet New England's forecasted demand and reserve requirements three years into the future.
  - FCM Rules were filed with the FERC on **Feb. 15, 2007.**
- Generation and Demand Resources are selected through a competitive ***Forward Capacity Auction (FCA)*** process.
  - An auction is used to select resources needed to meet the Installed Capacity Requirement and to establish the market-clearing price.
  - To participate in the FCA, resources must pre-qualify.
  - The selected resources are paid the market-clearing price ($/kW-month), subject to performance incentives and penalties.
  - To encourage investment, new resources can receive a long-term (up to 5 year) commitment.

Demand Resources Defined

- Demand Resources are installed measures (i.e., products, equipment, systems, services, practices and/or strategies) ***that result in additional and verifiable reductions in end-use demand on the electricity network in the New England Control Area.***
  - Such measures include Energy Efficiency, Load Management, and Distributed Generation.

Define Demand Resource Types

- The proposed rules for the FCM defines Demand Resource Types *by the way in which they reduce load*, not by technology.
  - Different technologies – i.e., Energy Efficiency, Load Management, and Distributed Generation – reduce load in different ways.
- Demand Resource Types include:
  - On-Peak Demand Resources
  - Seasonal Peak Demand Resources
  - Critical Peak Demand Resources
  - Real-Time Demand Response Resources
  - Real-Time Emergency Generation Resources

On-Peak Demand Resources

- On-Peak Demand Resources measure their load reduction during the following hours:
  - **Summer On-Peak Hours:** 1 p.m. to 5 p.m. Non-Holiday Week Days in June, July and August
  - **Winter On-Peak Hours:** 5 p.m. to 7 p.m. Non-Holiday Week Days in December and January
- Designed for non-dispatchable measures that are *not weather sensitive* and reduce load across pre-defined hours (e.g., lighting, motors, etc.).

Seasonal Peak Demand Resources

- Seasonal Peak Demand Resources must reduce load during Non-Holiday Week Days when the ***Real-Time System Hourly Load*** is equal to or greater than **90%** of the most recent "50/50" System Peak Load Forecast for the applicable Summer or Winter Season.
- Designed for non-dispatchable, weather-sensitive measures such as energy efficient HVAC measures.

Critical Peak Demand Resources

- Critical Peak Demand Resources must reduce load across Forecasted Peak Hours and Shortage Hours.
  - **Forecast Peak Hours** are hours when the ISO's ***Hourly Day-Ahead Forecasted Load*** (for non-holiday weekdays days) is equal to or greater than **95%** of the most recent 50/50 System Peak Load Forecast for the applicable summer or winter season.
  - **Shortage Hours** are hours when the ISO implements OP-4 Actions in response to a capacity deficiency. *OP-4 Actions are called in real-time.*
- Designed for measures that can be dispatched by the project owner based on system conditions.

Real-Time Demand Response Resources

- The ISO will send Dispatch Instructions to Real-Time Demand Response Resources:
  - They must curtail electrical usage within 30 minutes of receiving a Dispatch Instruction; and
  - Continue curtailing usage until receiving a Dispatch Instruction to restore electrical usage.
- Designed for dispatchable measures with no binding air quality permitting restrictions on their use *during Critical Peak Hours*.

Real-Time Emergency Generation Resources

- The ISO will send Dispatch Instructions to Real-Time Emergency Generation Resources:
  - They must curtail electrical usage within 30 minutes of receiving a Dispatch Instruction; and
  - Continue curtailing usage until receiving a Dispatch Instruction to restore electrical usage.
- ***Designed for dispatchable Emergency Generators only.***
  - Distributed Generation whose Federal, State and/or Local air quality permit(s) limit the operation of these generators to OP-4, Action 12 – the action in which voltage reductions of five percent (5%) of normal operating voltage that require more than 10 minutes to implement.
- The amount of Emergency Generators used to meet the Installed Capacity Requirement is limited to **600 MW.**

Measurement & Verification (M&V) Plan

- All Demand Resource projects must have a M&V Plan that describes the methods, assumptions and measurements that will be used to determine monthly Demand Reduction Values.
- M&V Plans Address:
  1. Project Description
  2. M&V Methodologies
  3. Statistical Methods
  4. Measurement of Demand Resource Project Savings
  5. Data Collection, Validation and Management
  6. Reporting, Independence, Supplemental Information, Project Organization
  7. Special Requirements for Real-Time Demand Response and Real-Time Emergency Generation

Questions and Discussion