

Demand Resource Participation in New England's Forward Capacity Market

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*Henry Yoshimura
ISO New England*

Discussion Topics

- What is the Forward Capacity Market (FCM) and how does it work?
- What is a Demand Resource?
- Why should Demand Resources be allowed to compete in the FCM?
- What must a Demand Resource do to be considered a capacity resource?
- How do you measure and verify Demand Resource performance?

Forward Capacity Market Background

- The Forward Capacity Market (FCM) will be used to procure capacity to meet New England's forecasted demand and reserve requirements three years into the future.
 - The design of the FCM resulted from a Settlement Agreement signed on March 6, 2006.
 - The Settlement Agreement was approved by the FERC on June 16, 2006.
 - Detailed FCM Rules were filed with the FERC on **February 15, 2007.**
- *Generation and Demand Resources* may participate in the FCM.

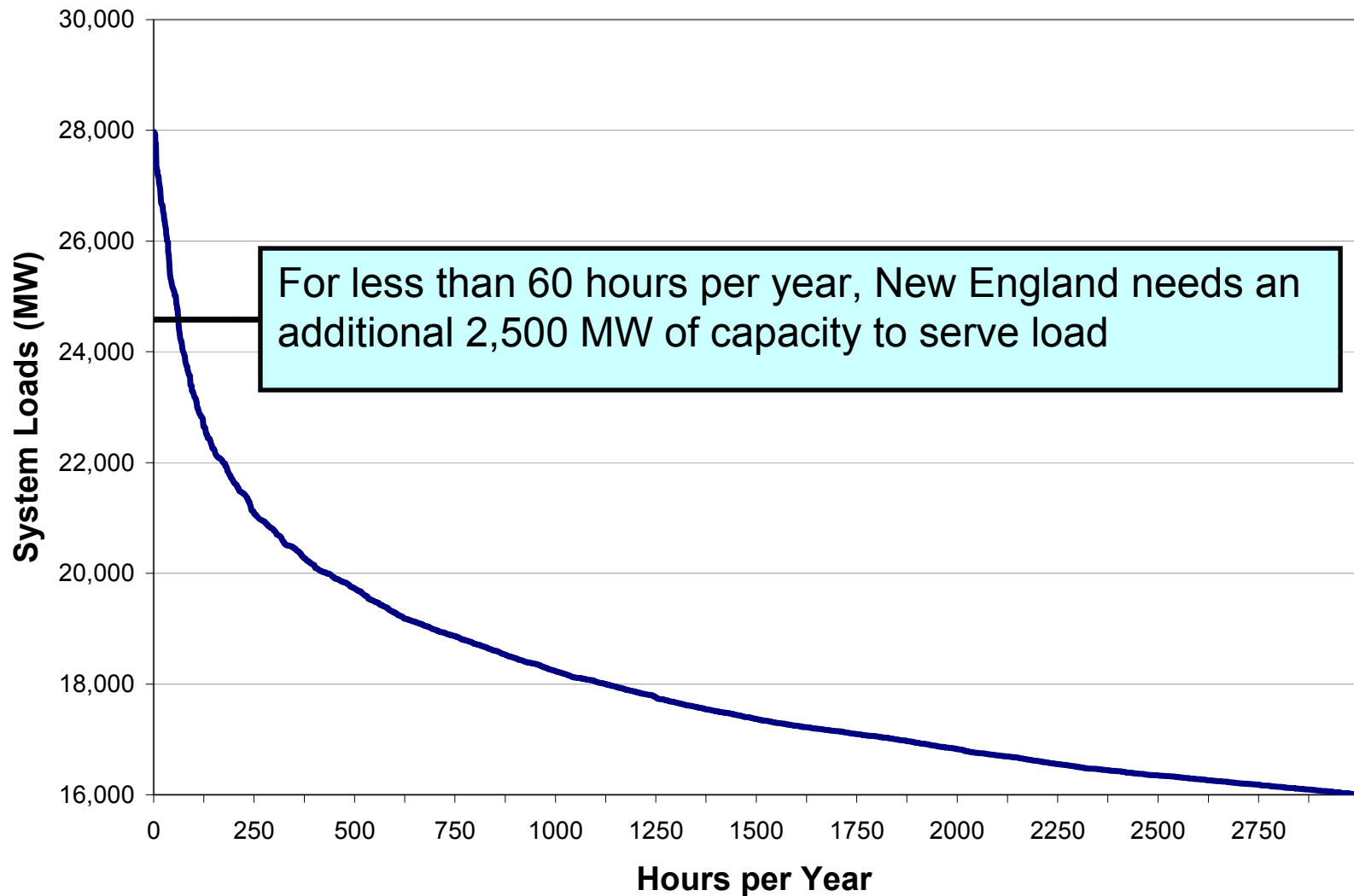
Which Resources Should I Procure and How Much Should I Pay?

- The FCM uses a competitive *Forward Capacity Auction (FCA)* process.
 - Establish Installed Capacity Requirement.
 - Pre-qualify participating capacity resource projects.
 - Conduct price-based auction to determine which resources to implement.
 - Implement/construct new resources.
 - Measure/verify resource performance during Commitment/Delivery Period.
- All resources that clear the auction are paid the market-clearing price (\$/kW-month), subject to performance incentives and penalties.
- To encourage investment, new resources can receive a long-term commitment (up to 5 years).

Demand Resources in the FCM

- An extensive stakeholder process was used to develop the rules for Demand Resource participation in the FCM.
 - Demand Resources Group: April through October 2006.
 - NEPOOL Participants: October 2006 through February 2007.
- 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.
- Stakeholders recognized that the Installed Capacity Requirement can be met by increasing supply or reducing demand.

Why Should Demand Resources Participate in the FCM? New England Load Duration Curve (2006)



Demand Resource Performance

- Demand Resources need to perform in such a way so as to reduce the need for generation capacity.
- Different technologies – i.e., Energy Efficiency, Load Management, and Distributed Generation – reduce load in different ways.
 - Passive versus active (i.e., dispatchable)
 - Weather sensitivity
 - Demand reduction versus energy output
- Demand Resource Types:
 - 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) Needed to Determine Load Reduced During Performance Hours

- A project's M&V Plan 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

