

# Demand Resource Participation in New England's Forward Capacity Market

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# 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.

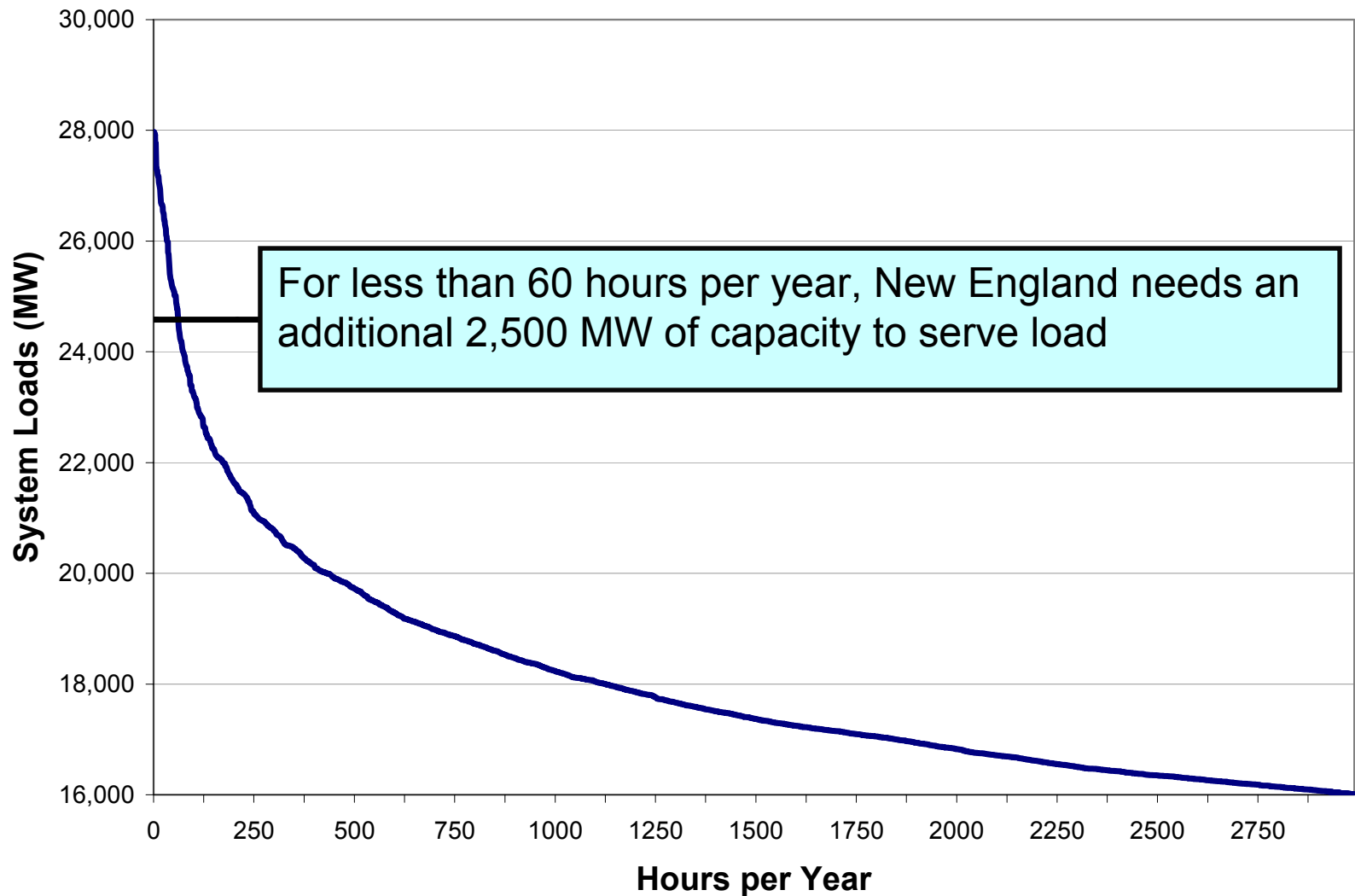
# Which Resources Should I Procure and How Much Should I Pay?

- 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

