Electricity Scenario Analysis and Transmission Planning Workshop

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Regional System Planning in New England

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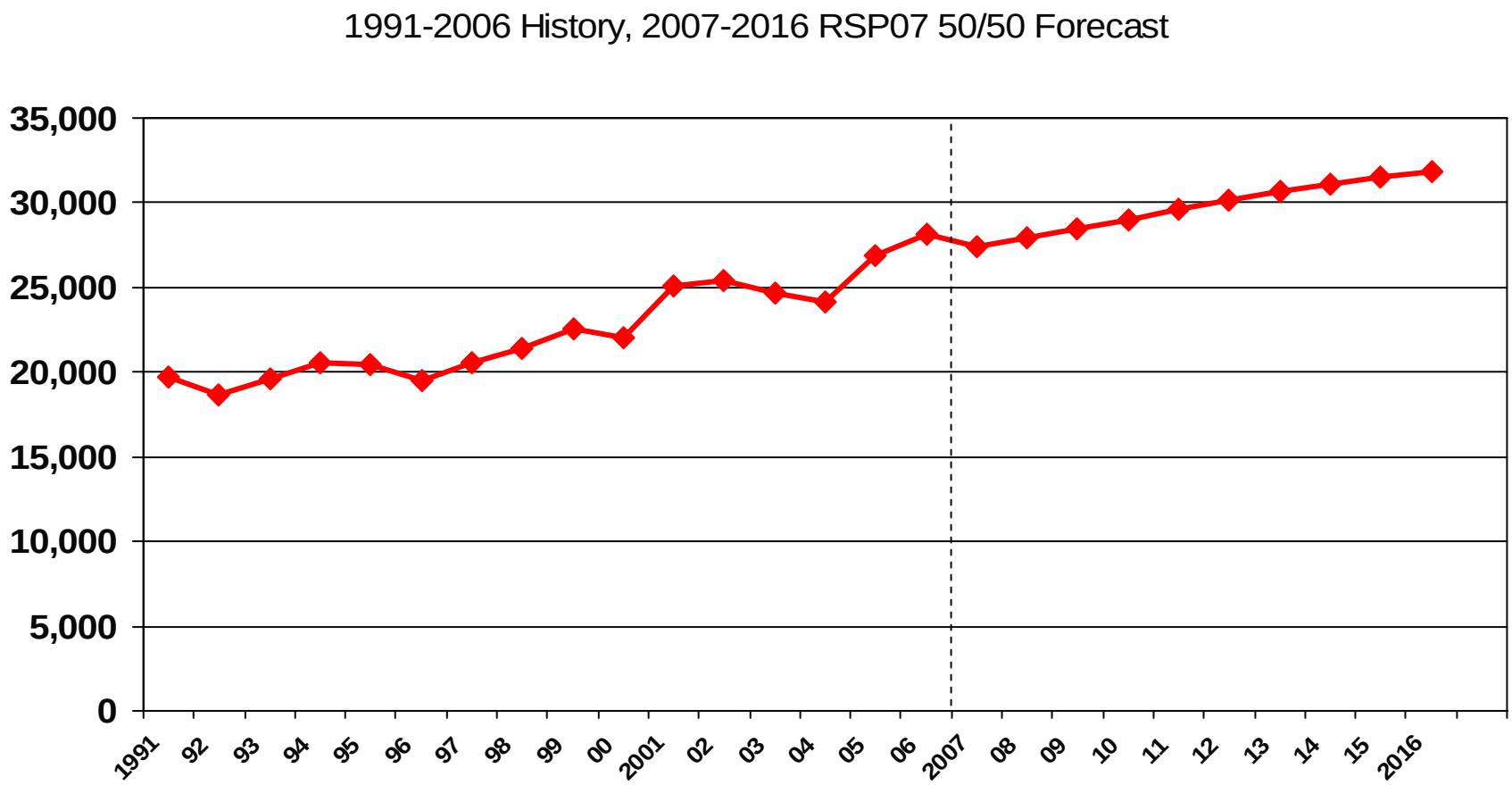
Highlights

- **Key Drivers for Transmission Expansion in New England**
  - Peak demand growth
  - Mandatory NERC Reliability Standards
  - Limited bulk transmission investment for 30 years prior to 2000
  - Market efficiency within the region

Continued Growth in Peak Demand

Approx. 500 MW per year over the next decade



Developing Power System Infrastructure and Resources

- Transmission
  - Needed to maintain reliability in the region as demand grows
  - Improves access to additional or diverse power supplies

- Capacity resources
  - Different types of generation needed to meet different operational needs (e.g., baseload, fast-start, dual-fuel)
  - Demand-side resources (e.g. energy efficiency, demand response, conservation) moving from programs to markets

Overall Transmission Development Process

- Identify needs
- Derive possible solutions
- Define project
- Achieve ISO Reliability and Cost approvals
- Begin state siting
- Stakeholder input throughout

System Planning: Authority

- FERC granted ISO responsibility for regional system planning for the six-state region in 2000
- Part of a federally-approved tariff
  - ISO is reviewing its planning process with New England stakeholders following the latest FERC order to promote open access to the transmission system
- Mandatory reliability standards reinforce importance of planning for the region

System Planning: Guided by Reliability Standards

- North American Electric Reliability Corporation
  - Reliability Standards for the Bulk Power Systems of North America
- Northeast Power Coordinating Council
  - Basic Criteria for the Design and Operation of Interconnected Power Systems
- ISO-NE
  - Reliability Standards for the New England Area Bulk Power Supply System

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

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Standards are used to ensure that the regional transmission system can reliably deliver power to consumers under a wide range of future system conditions.

System Planning

- Regional System Plan (RSP)
  - RSP07 is the 7th annual regional system plan
  - RSP07 looks at system needs for 2007–2016
  - Regular updates on status of transmission projects in the plan
- Objectives:
  - Provides opportunities for market solutions
    - E.g. generation, demand-side measures, and merchant transmission
  - Provides a transmission plan as a backstop for reliability
    - Can be modified based on market solutions that develop
  - RSP does not constitute an integrated resource plan

System Planning: Process

- Open Planning Process
  - Stakeholders provide input through monthly meetings of the Planning Advisory Committee (PAC)
    - ISO posts draft report and holds special PAC meeting to hear comments
  - Representatives of ISO Board meet with States and other stakeholders to discuss RSP
    - ISO posts revised draft report in advance of annual public meeting in Boston (September 6, 2007)

Types of Transmission Upgrades

- Generation Interconnection
- Elective Transmission
- Merchant Transmission
- Local Benefit Upgrades

Generally funded by the entity proposing the project

- Regional Benefit Upgrades
  - Reliability and Market Efficiency Upgrades
    - Localized Costs excluded from regional cost support

Funded by the region

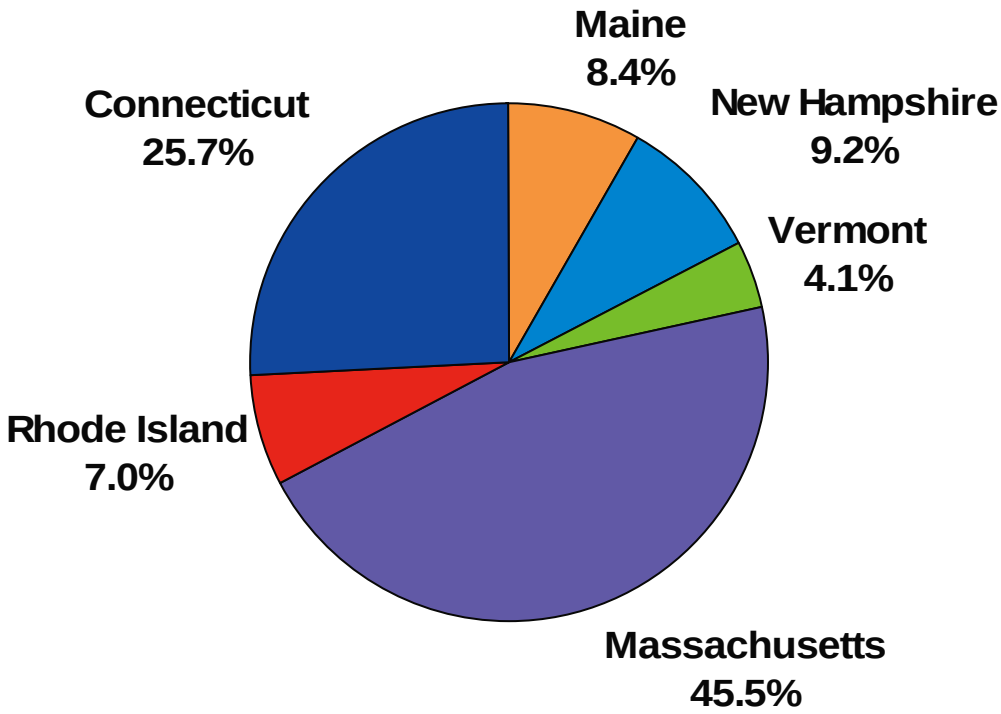
ISO-NE Review of Proposed Projects

- ISO-NE Reliability Review
  - Review and approval of all additions to the bulk power system (generation and transmission) pursuant to FERC-approved Tariff
    - Advisory input from NEPOOL Reliability Committee
    - Participation of state representatives
  - Precursor to cost review for transmission projects
- ISO-NE Cost Allocation Review
  - Review all costs of transmission proposed to be included in the regional rate pursuant to FERC-approved Tariff
    - Advisory input from NEPOOL Reliability Committee
    - Open stakeholder meetings to review large projects
    - Participation of state representatives

Process for Transmission Cost Sharing

- Applies to projects that benefit the region
  - ISO conducts independent cost review, with stakeholders input
    - **Are costs reasonable**, in accordance with good utility practice, and justified for regional costs support?
    - Projects (or elements of projects) not providing a regional benefit are deemed "**localized**" and are not paid for by the region
- FERC-approved process developed with stakeholders
  - Developed through an extensive stakeholder process in 2002/03
  - Approved by FERC in December 2003

Region Supports Cost of Transmission Investment based on Percent of Consumption

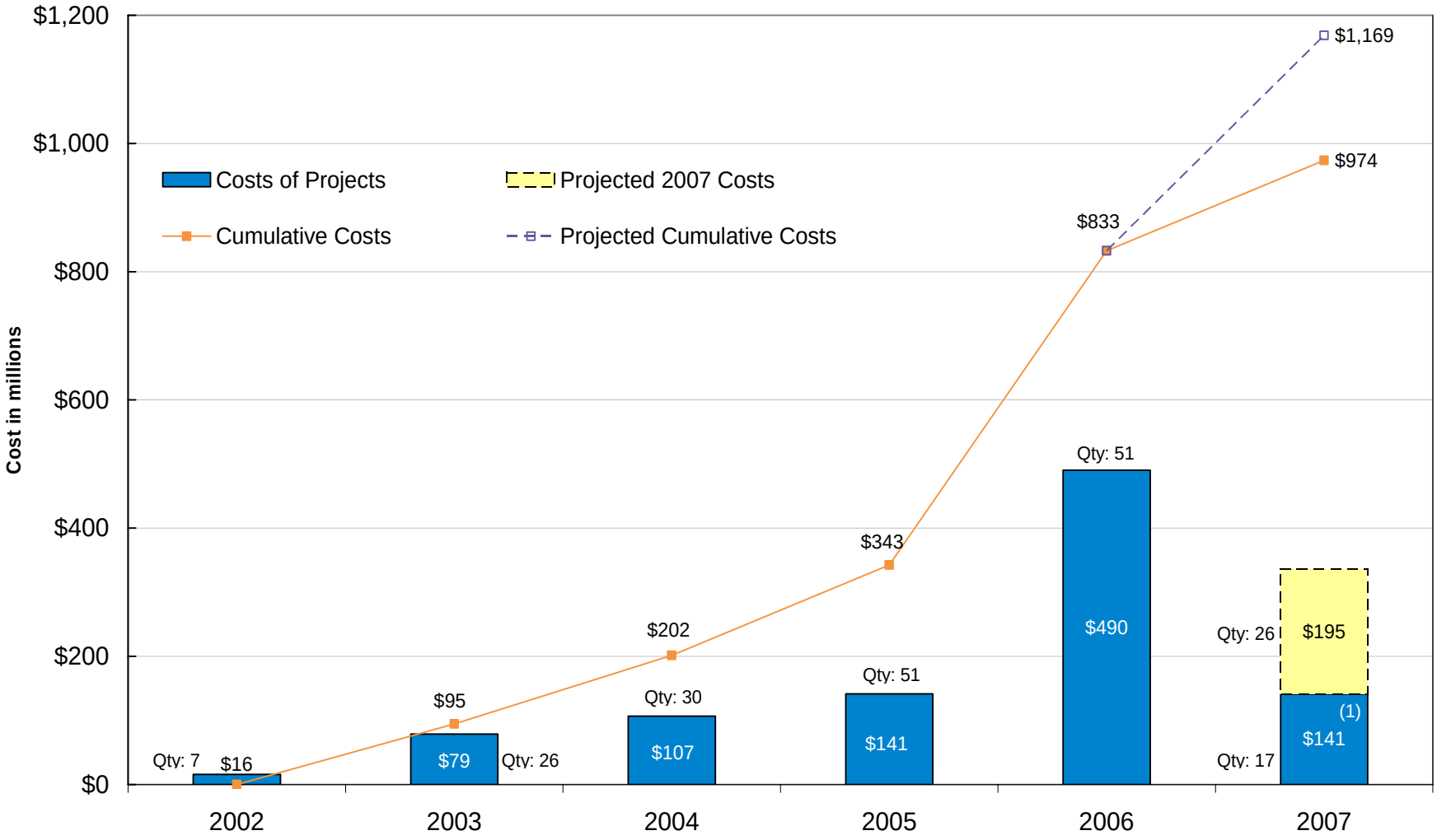


Based on network load for 2006/07 power year

Investment in New England Transmission

- Major investment in transmission
  - More than 200 projects representing an investment of about $1.2 billion is in-service (2002 through 2007)
  - $3 to $6 billion active transmission projects
  - Three major new 345-kV projects constructed and put into service in three states
    - An additional three 345-kV projects are under construction in three states
  - Active participation of New England States and other stakeholders in an open planning process has been instrumental in this success
- New studies are underway for all areas of New England

Investment In New England Transmission (cont.)



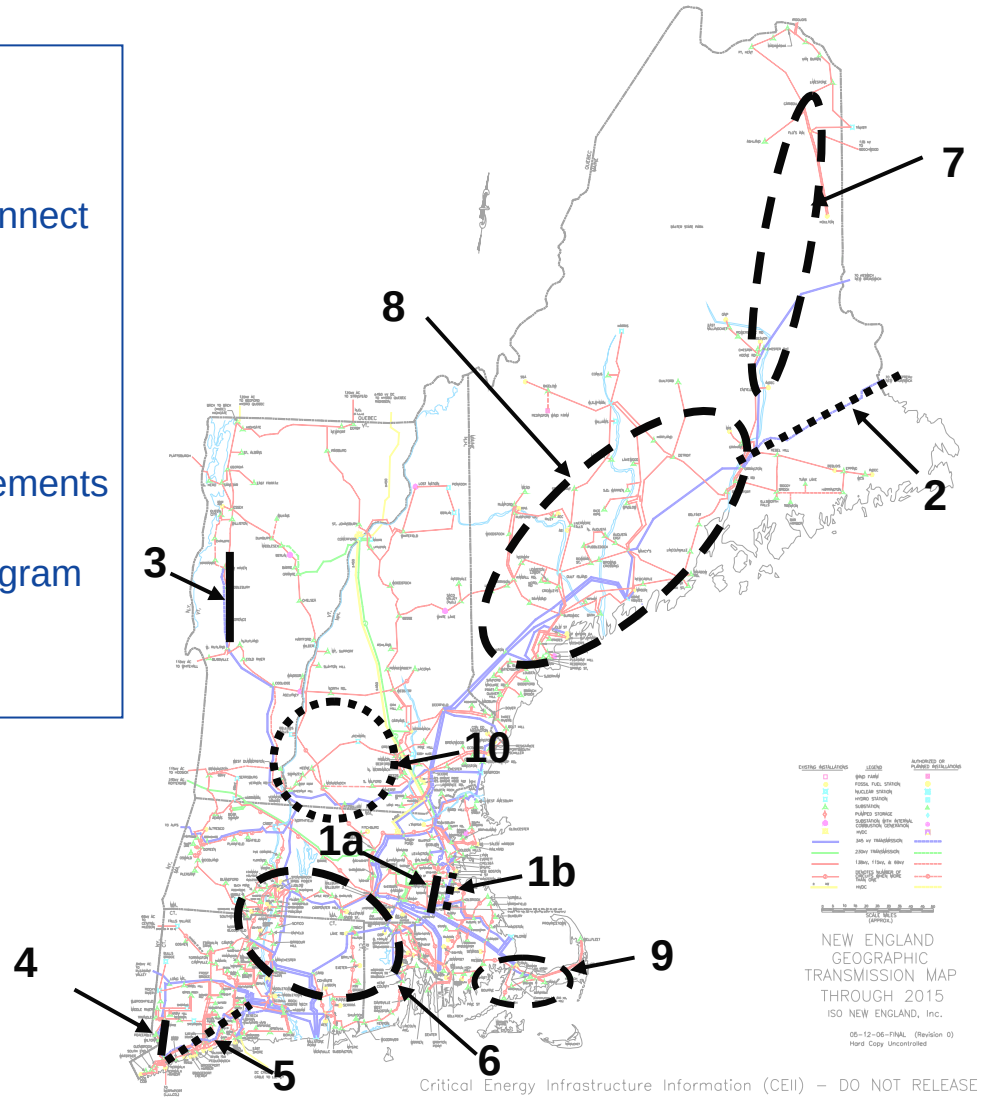
(1) Costs as of July 5, 2007

Major Transmission Projects and Studies

1. NSTAR 345 kV Project
   a. Phase I
   b. Phase II
2. Northeast Reliability Interconnect
3. Northwest Vermont
4. SWCT Phase I
5. SWCT Phase II

6a. NEEWS
6b. Greater Rhode Island
6c. Springfield 115 kv Reinforcements

7. Maine Power Connection
8. Maine Power Reliability Program
9. Southeast Massachusetts
10. Monadnock Area



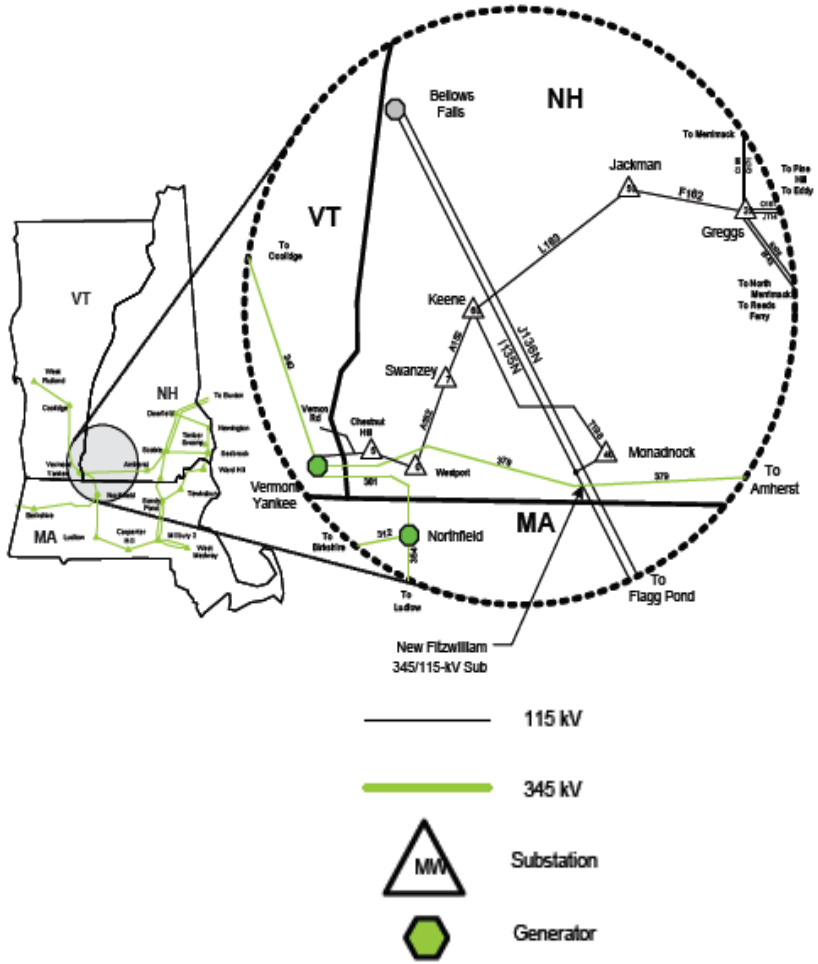
In service

Under construction

Under study

Key New Hampshire Transmission Project

- Monadnock Area Reliability Project
  - Strengthen transmission system in southwestern NH
    - As well as southeastern VT, and north central MA
  - ISO reliability review complete
  - $55 million investment in New Hampshire
    - Rebuild 115-kV lines along existing routes
    - New 115-kV/345-kV substation at Fitzwilliam
    - Upgrade other equipment
  - Expected in service by 2009



Process for Generation

- **Markets for supply resources**
  - Competitive wholesale electricity markets to achieve adequate power supply resources to ensure a reliable power system
    - Pay-for-performance provisions for all resources
  - Proposals for 12,000 MW of new resources in response to the new capacity market
    - Resources to compete in February 2008 auction to supply system needs beginning in June 2010

- **Connecting to the Grid**
  - Generation proposals subject to ISO reliability review
    - Projects must not create adverse reliability impacts on the system
  - Proposals studied in the order received
    - Interconnection study “queue” updated regularly on ISO Web site

Forward Capacity Market Process

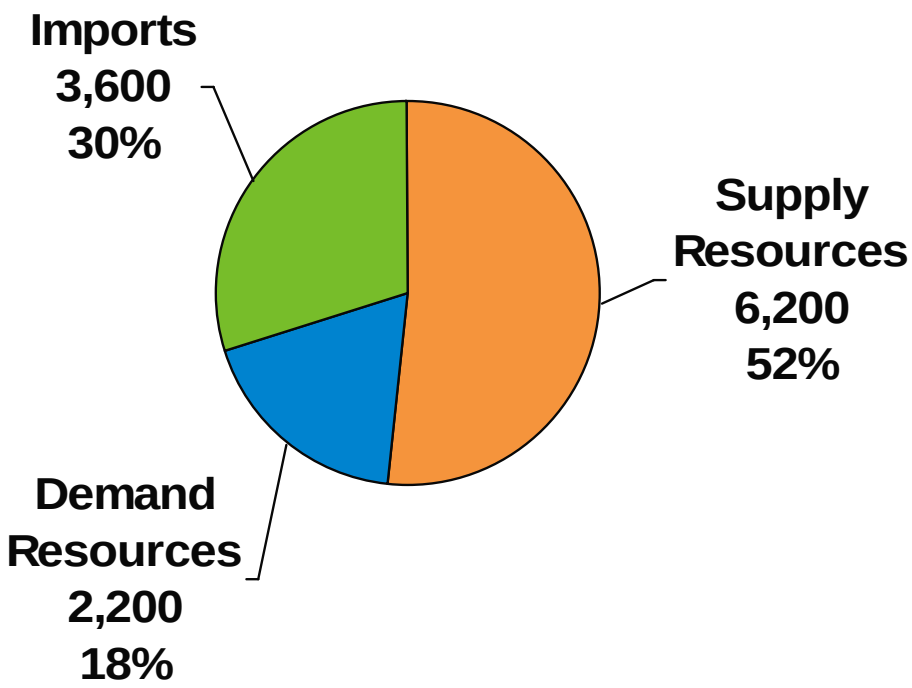
- Procure enough capacity to meet New England's forecasted Installed Capacity Requirements three years in the future

- Select a portfolio of Supply and Demand Resources through a competitive ***Forward Capacity Auction*** process
  - Proposed resources must be pre-qualified to participate in the auction
    - New resources must provide detailed project plans with milestones to complete projects by the commitment period
    - ISO to notify resources of qualification determination in October
  - Proposed resources must participate and clear in the auction to be paid for capacity

- Provides a long-term (up to 5 year) commitment to New Supply and Demand Resources to encourage investment

FCM Qualification Package Applications

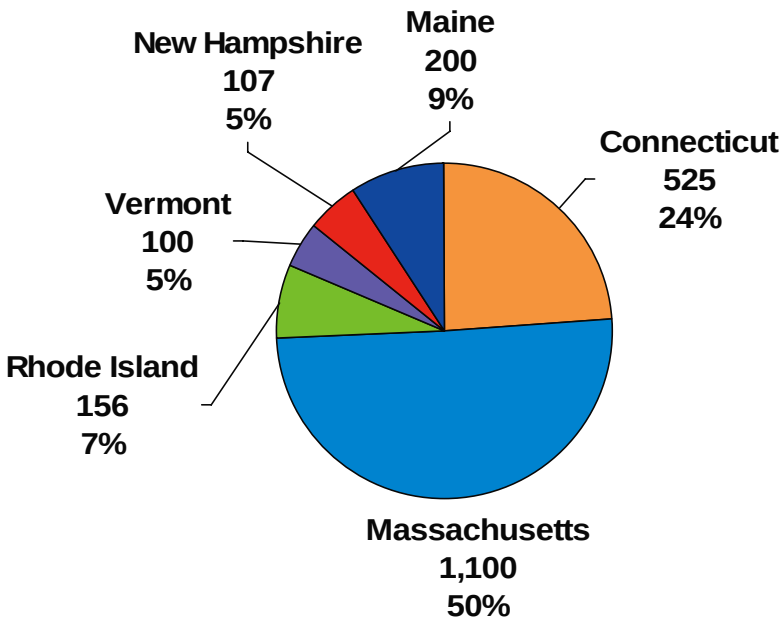
Proposed Resources by Type (MW and %)



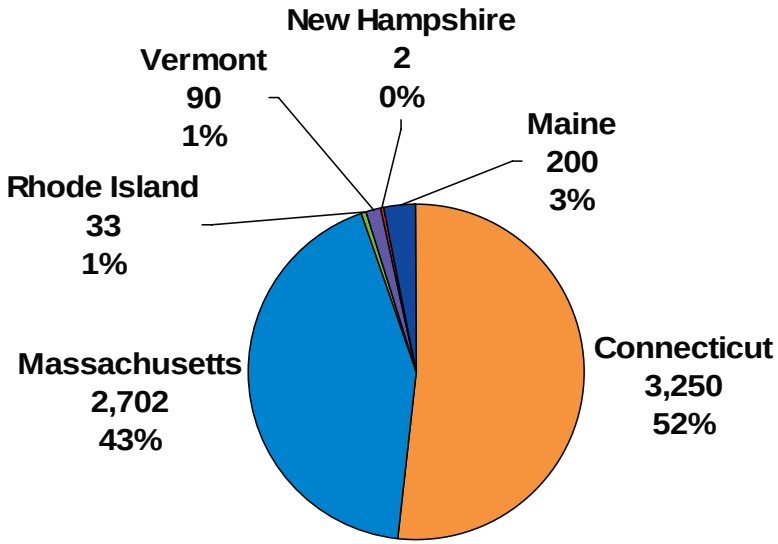
FCM Qualification Package Applications

Proposed Resources by State (MW and %)

Demand Resources



Supply Resources



New Hampshire Projects in the Queue

Project Name*	Fuel Type	Summer Capacity (MW)	Winter Capacity (MW)	County
Hydro Project	Water	169	170	Grafton
Combined Cycle	Natural Gas	563	616	Rockingham
Wind Project	Wind	100	100	Coos
Wind Project	Wind	146	146	Coos
Biomass Project	Wood	56	68	Coos
Biomass Project	Wood	45	45	Hillsboro
Biomass Project	Wood	41	41	Coos
Biomass Project	Wood	41	41	Coos
Biomass Project	Wood	17	17	Grafton
Wind Project**	Wind	24	24	Sullivan
Wind Project**	Wind	34	34	Coos
Landfill Gas**	LFG	6	6	Coos

* Project developers are not revealed until an interconnection agreement is reached.

** Project proposes to connect to the distribution system.

Conclusions

- Peak demand growth makes us look at ways to use electricity (and the power system) more efficiently
- Developers and resource owners will face increasing restrictions on environmental emissions
- New capacity market leads to new resources, including integration of demand resources
- Regional System Planning process (including the existing transmission cost allocation methodology) is successful at getting transmission built across New England