

Regional System Plan (RSP) 2007 Public Meeting

September 6, 2007

The Colonnade Hotel
Boston, Massachusetts

Agenda

- Introductions and Opening Remarks
- Regional System Plan 2007 Summary
- Planning Process Update
- Stakeholder Presentations
- Responses to Submitted Questions
- Discussion
- Closing Remarks

RSP07 Summary

Michael I. Henderson
Director, Regional Planning and Coordination

RSP07 Highlights

- **RSP07 represents a snapshot of ongoing planning activities**
 - Provides updates of key planning issues
 - Most system resource and transmission needs identified in RSP06 still exist, and are being addressed through markets and improvements to the system
- **Need for resources**
 - Additional system capacity is needed by 2010
 - Connecticut remains the preferred location for placement of new resources
 - As a result of market signals, many new resources, both supply-side and demand-side, are responding to identified system needs
 - Quick-start resources, including demand-response, provide benefits to transmission-constrained load pockets

RSP07 Highlights, cont.

- **Fuel diversity and availability**
 - Heavy dependence on natural gas-fired generation remains a reliability and cost issue
 - Regional actions are addressing the reliability issues
- **Environmental Compliance**
 - Regulations mandate requirements for renewable and demand-side resources
 - Meeting regional requirements will be challenging
- **Scenario Analysis**
 - Tool for stakeholders and policymakers, not a plan
 - Evaluates impact of resource alternatives for the future – 2020 and beyond
 - Provides relative market costs and economics of new investment
 - Quantifies environmental impacts
 - Shows impact of Energy Efficiency and Demand Response

RSP07 Highlights, cont.

- **Transmission reinforcements**
 - System needs have been identified
 - Required throughout New England
 - Have been successfully implemented or are well along in the planning stages
- **Interregional planning and regional initiatives**
 - Planning activities have been well coordinated
 - The planning process will continue to evolve
- ***The open stakeholder planning process works***

Energy and Peak-Load Forecasts

- **RSP07 forecasts are slightly lower than RSP06**
 - Systemwide energy and the winter peak load are growing approximately 1.2% per year
 - Systemwide summer peak load is growing about 1.7% per year, as compared to 1.9% in RSP06
- **Forecasting equation includes**
 - Price of electricity
 - Economic forecast
 - Treatment of energy efficiency and conservation
 - Existing programs and customer measures embedded in historical data
 - New conservation and load management included as resources in the Forward Capacity Market and not as adjustments to the load forecast
 - Continued decline in the annual load factor
- **Improvements in methodology**
 - Many recommendations from Benchmark Forecasts have been implemented or are underway

Resource Adequacy

- **As reported in RSP05 and RSP06, additional capacity is needed to satisfy resource adequacy criteria**
 - 60 MW systemwide needed by 2010 - growing to 3,540 MW by 2016
 - Requirements are lower than RSP06
 - RSP07 load forecast is lower
 - The amount of installed resources is higher
- **Forward Capacity Market (FCM) is designed to meet capacity needs through price signals that**
 - Attract new investment
 - Retain existing resources
 - Pay for performance
 - Identify preferred location and timing of needed resources
 - Recognize demand-side and intermittent resources on a comparable basis as traditional supply-side resources

Resource Adequacy, cont.

- **Resources are under development**
 - About 90 projects are in the Generator Interconnection Queue totaling approximately 10,500 MW
 - Hundreds of demand-side resources representing approximately 2,450 MW have expressed interest in the first Forward Capacity Auction
- **The preferred location for resources is in Southern New England, especially Southern and Western sections of Connecticut**

Status of First Forward Capacity Auction

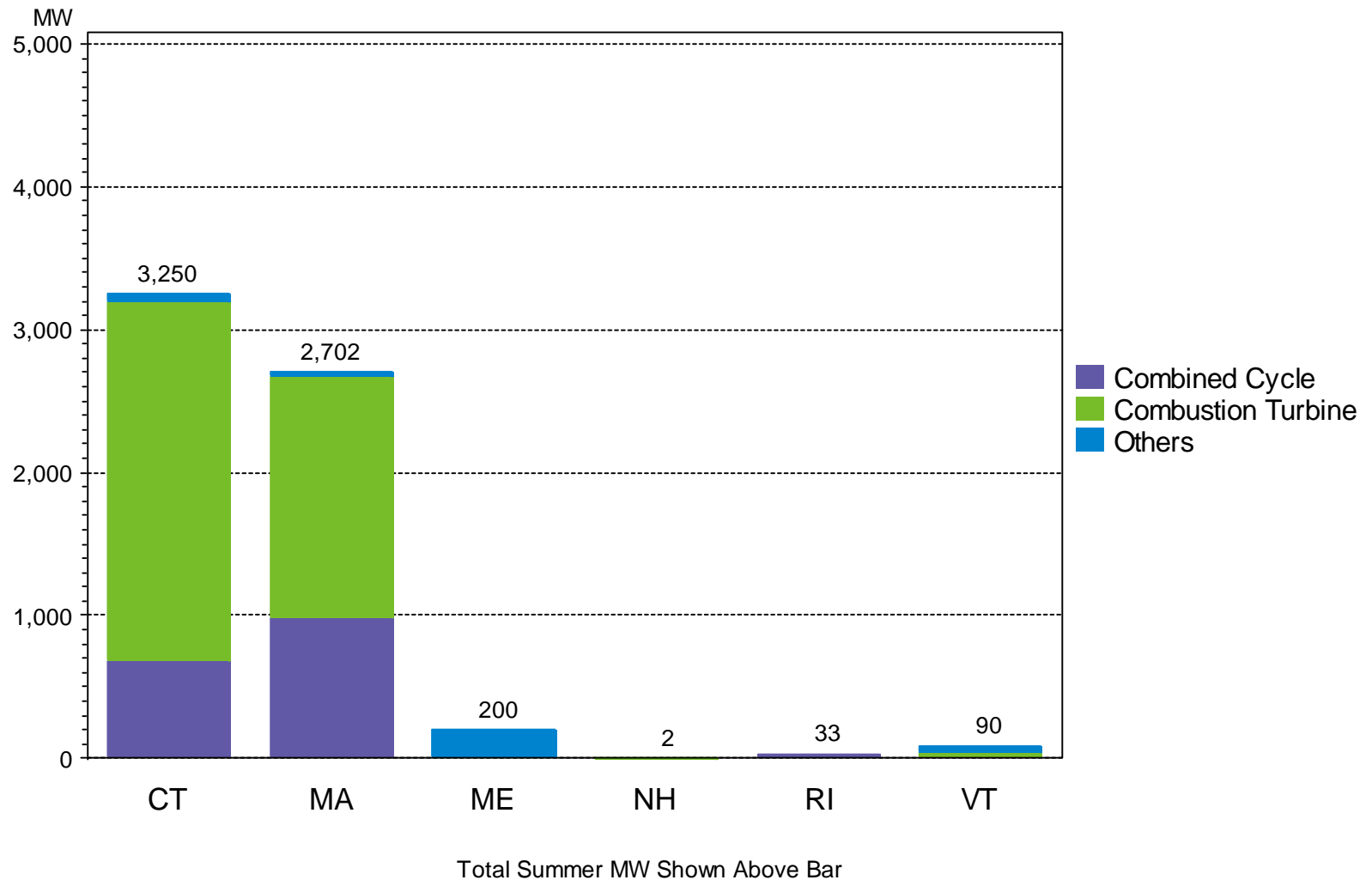
- **Rules**
 - Market Rules approved by the Federal Energy Regulatory Commission (FERC) in April and June
- **Amount of resources to be procured**
 - Installed Capacity Requirement to be voted at Participants Committee on September 7, 2007
- **Qualification process**
 - Qualification of New Resources is underway
- **First auction**
 - Expect to run first Forward Capacity Auction (FCA-1) in February 2008

Highlights of Supply Resource Qualification for FCA-1

- **More than 200 generation and import applications received by the Show-of-Interest deadline**
 - More than 15,000 MW of Supply Resources
- **70 projects remain active**
 - More than 10,000 MW of Supply Resources
 - Approximately 3,600 MW of imports
 - 92% of the remaining 6,500 MW are in the generator interconnection queue
 - Majority of resources are located in CT and MA, consistent with previous RSP identified needs

Summary of New Generation

MW by Location and Unit Type

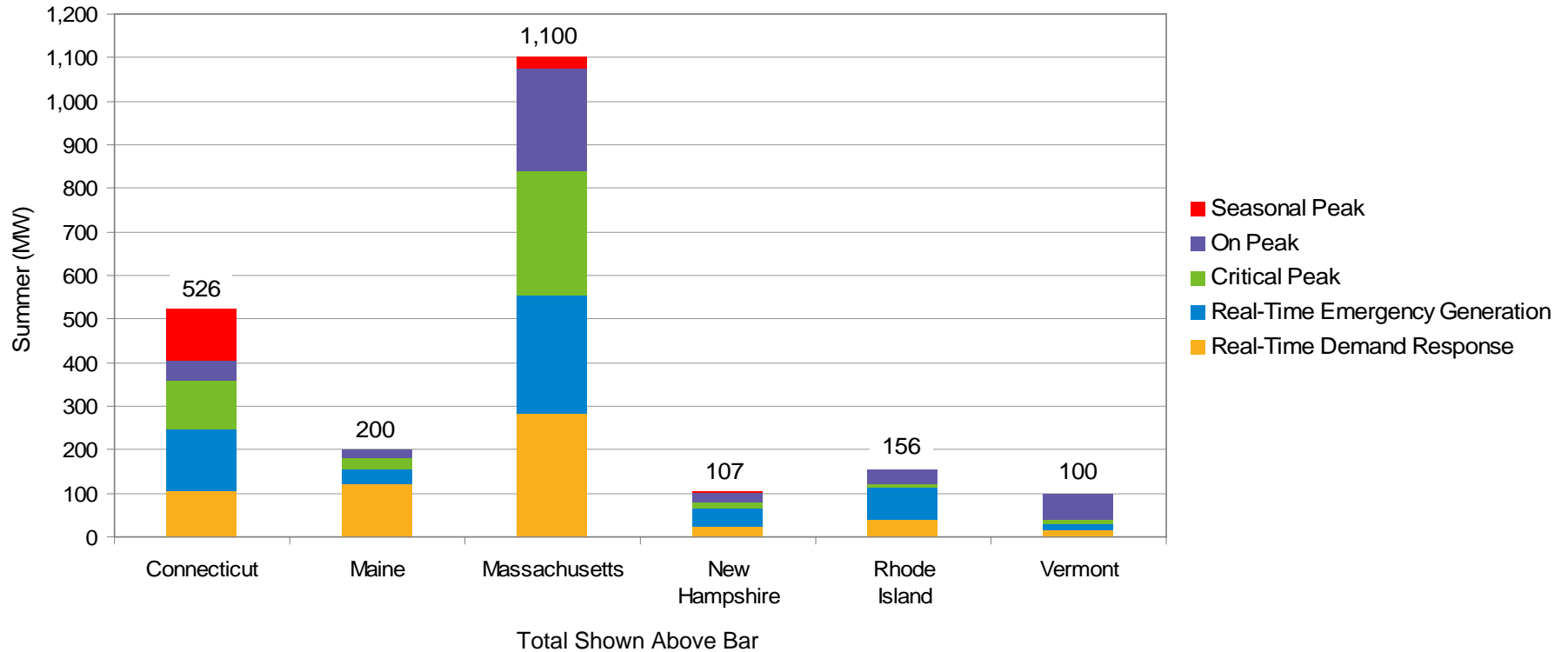


Highlights of Demand Resource Qualification for FCA-1

- More than 260 Demand Resource applications received by the Show-of-Interest deadline
 - Total of 2,449 MW of Demand Resources
- More than 190 projects remain active
 - Total of 2,186 MW of Demand Resources

Summary of New Demand Resource

MW by Location and Type



Other Qualification Highlights

- April 30, 2007: 19 De-list Applications (677 MW) received
 - Report posted to:
http://www.iso-ne.com/markets/hstdata/mkt_offer_bid/fcm_bids/delistbidreport_05032007.pdf
 - 2 Permanent (350 MW)
 - 1 Administrative Export (100 MW)
 - 16 Static (227 MW)
- July 2, 2007: 69 Composite Offers (896 MW) received
 - Report filed with FERC on August 2, 2007
 - Filing available at:
http://www.iso-ne.com/regulatory/ferc/filings/2007/aug/er07-546-000_8-2-07_composite_offer_report.pdf

Upcoming FCA-1 Milestones

- **October 3, 2007**
 - ISO issues Qualification letters to New Resources and de-lists of Existing Resources
- **October 2007**
 - File Installed Capacity Requirement for 2010-2011 Capacity Commitment Period
- **November 1, 2007**
 - File details of Qualified Resources with the Commission, including de-list bids and New Resources
- **December 2007**
 - First external Mock Auction
- **January 2008**
 - Second external Mock Auction (likely)
- **February 2008**
 - Run first FCA

Next Auction...FCA-2

- **Show of Interest window**
 - September 15 – November 15, 2007
 - All Project Sponsors participating in qualification for FCA-1 must submit a new Show of Interest application if they plan to participate in FCA-2
- **New Resource Forum to be held in early October**
- **Auction to be held in December 2008**

Local Area Operating Reserves

- **Key factors that impact requirements:**
 - Transmission improvements reduce requirements
 - Growth in demand increases requirements
- **Quick-start and Demand Response**
 - Flexibility, reduced uplift, rapid installation
 - Recommended RSP07 amounts are consistent with the Forward Reserve Market
- **Demand-response reserve pilot program**
 - Determines ability of small demand resources to respond to reserve activation events
 - Evaluates more affordable two-way communication alternatives to existing technology

Fuel Diversity and Availability

- **New England will continue to rely on natural gas-fired generation**
- **Close coordination between electric and gas industries is required and is in place**
- **Markets promote unit availability at time of need**
 - Dual-fuel and firm-fuel purchases
 - 2,350 MW of “gas only” resources have converted to dual fuel since 2004
- **Renewable Portfolio Standards (RPS) and demand-side resources assist in diversifying the region’s fuel supply**
- **Newly proposed Liquefied Natural Gas (LNG) terminals and expansion of the regional natural gas delivery system improve the natural gas supply to New England**

Environmental Issues

- **Federal, regional, and state air regulations**
 - Require lower emissions of SO₂, NO_x, and CO₂
 - Existing power plants face tighter requirements for thermal discharges
- **Regional Greenhouse Gas Initiative (RGGI)**
 - Units burning natural gas have low CO₂ emissions
 - Higher prices for natural gas relative to oil result in increased emissions
 - Meeting the RGGI allocation of the CO₂ cap for New England will be challenging
 - Additional “clean” resources will help satisfy the RGGI goals
- **Energy Efficiency**
 - Reduces emissions
 - Helps meet resource needs
 - Improves fuel diversity
 - Defers need for transmission

Environmental Issues, cont.

- **Renewable and Energy Efficiency Requirements**
 - State mandates require renewable and energy efficiency resources to provide 18.7% of systemwide energy use by 2016
 - If all renewable projects in the ISO Interconnection Study Queue were built, it would meet only 81% of the need for the growth of new renewables
 - Shortfall in renewable resources can be met by load serving entities through:
 - New projects
 - Small “behind the meter” projects
 - Purchasing Renewable Energy Credits (RECs) from neighboring systems with delivery of energy
 - Making Alternative Compliance Payments to support renewable resource development

Scenario Analysis Results

- **Energy prices and air emissions**
 - Vary with different technology alternatives
 - Influenced by the relative costs of natural gas and oil as they affect generation dispatch
- **Fuel diversity**
 - New England will have continued heavy dependence on natural-gas fired generation
- **Carbon Emissions**
 - Several strategies will be needed to meet the region's challenging goals for reducing CO₂
- **Demand side resources**
 - Adding significant demand-side resources provides capacity and electric energy benefits to the system and results in reduced emissions

Transmission Needs

- **Transmission is required throughout New England**
 - Projects are coordinated on a region-wide and interregional basis
 - The assessment of transmission needs provides information for developing alternative resources
- **General Issues**
 - Growing demand
 - Inadequate transfer capability
 - Serve load pockets
 - Reduce operational complexity of the system
 - Match resources with load
- **Reliability issues are being addressed**
 - Major 345 kV projects are progressing
 - Required improvements identified in many areas in both Northern and Southern New England
 - Projects mitigate the need for Reliability Agreements and Out-of-Merit generation
 - Studies are progressing

Major Transmission Projects and Studies

This graphic has been redacted for security reasons.
Please contact ISO New England Customer Service at
(413) 540-4220 to request access to this information.

Northern New England Projects and Studies

- **Issues**

- Growing load across the region
- Complexity of operation
- Dependence on certain generating units
- Ability to deliver power from and to Maine
- High losses
- Reliability of service to populated and industrial areas
- Maine Power Reliability Program is comprehensive
- Maine Power Connection is a feasibility study

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Northern New England, cont.

- **Required Improvements**
 - Provide benefits to multiple states
 - Most improvements are driven by load growth
 - Ancillary benefits of higher system transfers
 - Monadnock Area: coordinated plan for three transmission companies in three states
 - Y-138 improvements affect reliability in New Hampshire and Maine
 - Mitigate interregional consequences resulting from contingencies

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Interdependent Reliability Concerns

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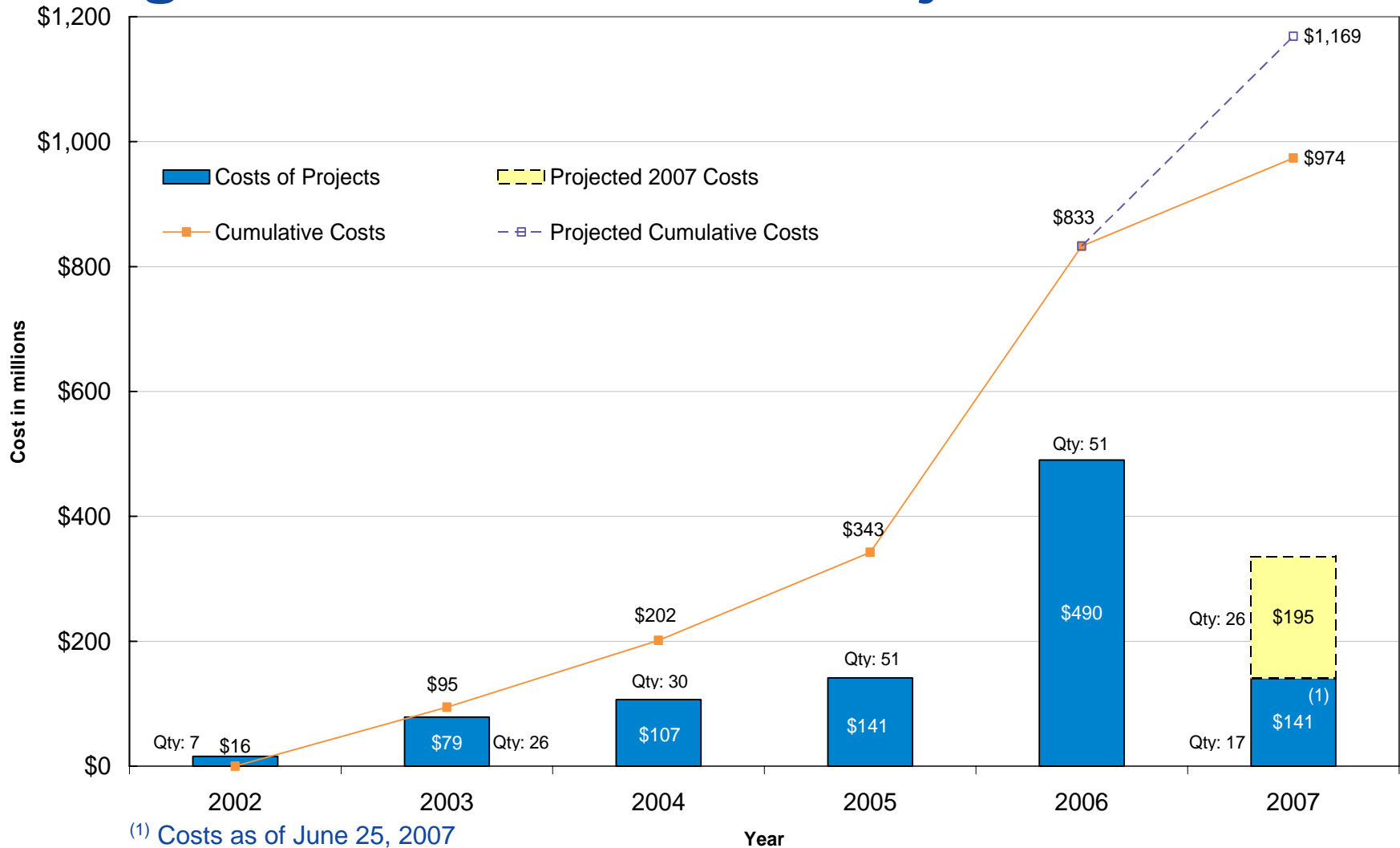
Transmission-constrained Areas (Load Pockets)

- **Dependence on embedded generators**
 - Provide voltage support
 - Avoid transmission overloads
- **Reliability issues**
 - Forced outages
 - Maintenance outages
 - Outages to enable repowering and environmental compliance
- **Economic issue**
 - Out-of-market reliability payments

Transmission-constrained Areas, cont.

- **Areas relying on out-of-merit operation or Reliability Agreements with existing generation for local reliability support**
 - Western Maine
 - Boston
 - North Shore
 - Southeast Massachusetts
 - Western Massachusetts
 - Springfield area
 - Middletown
 - Norwalk-Stamford
 - Southwestern Connecticut
- **Transmission improvements have been identified or studies are underway to address these system needs**

New Investment for In-Service New England Transmission Projects¹



Benefits of Transmission Investment

- **Meet Reliability Criteria**
 - NERC, NPCC and ISO New England
- **Improve Regional Market Efficiency**
 - Reduce congestion costs
 - Reduce out-of-merit generator operation
 - Eliminate Reliability Agreements
 - Reduce transmission losses
- **Increase inter-regional transfers**
 - Allow additional imports of renewable resources
 - Increase mutual assistance in emergency conditions

Progress of Major Transmission Projects

- **Northeast Reliability Interconnect Project**
 - In service (I/S) 2007
- **Northwest Vermont Reliability Project**
 - I/S 2008
- **Boston 345-kV Transmission Reliability Project**
 - Phase I – I/S 2007
 - Phase II – I/S 2008
- **Southwest Connecticut Reliability Project**
 - Phase I – I/S December 2006
 - Phase II – I/S 2009
- **Other facilities placed I/S throughout New England**
- **Total cost of projects in the plan: \$3 - \$6 Billion**
- **Studies are continuing to identify needed improvements and to improve the quality of cost estimates**

Interregional Planning/Regional Initiatives

- **Electric Reliability Organization**
- **Interregional coordination provides many benefits**
 - Northeast Power Coordinating Council
 - ISO/RTO Council
 - Inter-Area Planning Stakeholder Advisory Committee
 - Northeast Coordinated System Plan
 - Loss of source and other studies
- **Department of Energy (DOE)**
 - Support DOE information requests
 - Monitor National Interest Electric Transmission Corridor process
- **Increased imports from Eastern Canada**
- **Order 890 and the planning process**
- **Coordination among the New England States**

Conclusions

- **Resources**
 - Systemwide resources are needed by 2010
 - Fast-start and demand response resources are beneficial in major load pockets
- **Fuel Supply**
 - New England will have continued dependence on natural-gas fired generation
 - Energy prices and air emissions will be strongly influenced by the relative costs of natural gas and oil
 - Progress is being made to address the fuel supply issue
 - Dual fuel and/or firm supply of natural gas
 - Additional supplies of natural gas for New England
- **Market signals are in place to procure needed resources**

Conclusions, cont.

- **Clean and renewable resources are needed to meet environmental regulations and renewable portfolio standards**
 - Wind, Solar, Hydro, Biomass, Nuclear
- **Energy Efficiency, Conservation, and Demand Response**
 - Help meet capacity needs
 - Improve fuel diversity situation
 - Lower emissions
- **Transmission is required throughout New England**
 - Build improvements in the Project Listing and continue studies
 - Provide improved cost estimates of projects
- **Development of resources can defer the need for transmission upgrades**
- **Pursuit of additional interregional planning efforts required**
- **Open stakeholder planning process is important**

Planning Process Update

Federal Energy Regulatory Commission (FERC) Order 890

Highlights

- **FERC has issued a series of orders over the past decade to foster greater competition in wholesale power markets**
 - In 1996, landmark Orders 888 and 889 provided for “open access” to the transmission system and separation of utilities’ transmission and merchant functions
 - In 1999, Order 2000 led to the development of Regional Transmission Organizations (RTOs)
- **Order 890 builds on this framework**
 - ISO is working with stakeholders to show that New England’s approach is consistent with FERC principles
 - Only certain aspects of Order 890 impact New England
 - Enhancements to current process will capture new requirements

Aspects of Order Impacting New England

- Greater Consistency and Transparency of Available Transfer Capability (ATC) Calculations
 - Public utilities, working through North American Electric Reliability Corporation (NERC) and North American Energy Standards Board (NAESB) processes, must improve the consistency and transparency of ATC calculation methods
- Coordinated, Open and Transparent Transmission Planning on both Local and Regional Level
 - Requires a more open, transparent, and inclusive planning process [Note: ISO-NE already in compliance]
 - Requires each transmission provider to file a new attachment to its OATT containing its transmission planning process

Order 890 Key Principles for a Transmission Planning Process

1. **Coordination**
2. **Openness**
3. **Transparency**
4. **Information Exchange**
5. **Comparability**
6. **Dispute Resolution**
7. **Regional Coordination**
8. **Economic Planning Studies**
9. **Cost Allocation**

Major Deadlines

- **FERC adopted Order 890: February 2007**
 - Effective May 14, 2007
- **Engage in ATC related discussions at NERC/NAESB**
 - Comply on posting requirements by July 13, 2007
 - Comply on methodology (Attachment C to OATT) by October 11, 2007
- **Other NERC/NAESB action requiring compliance**
 - NERC to modify its ATC-related reliability standards within 270 days
 - Utilities and NAESB to develop business practices within 360 days
 - NERC/NAESB to file a workplan by June 13, 2007
 - ISO-NE to file any necessary amendments to the ISO-NE OATT within 60 days of process completion (beyond October 2007)

Major Deadlines, cont.

- **Performance Metrics**

- Quarterly reporting of Performance Metrics associated with studies done for Transmission Service Requests – beginning July 2007

- **Planning Process (Attachment K)**

- ISO posted planning process strawman: May 29, 2007
- Revised Attachment K to be posted by September 14, 2007
- Attachment K to be filed by December 7, 2007

- **OATT Filing**

- Non-Rates, Terms and Conditions to be filed by October 2007

Path to Compliance – A Coordinated Approach

- **Coordination Team**

- Transmission Owners (TOs), other 205 Rights Holders and New England Power Pool (NEPOOL) Counsel
- Interpret Order and identify requirements and ownership
- Agree on approach for compliance with a goal of a joint filing (ISO-NE, TOs, NEPOOL)

- **Transmission Committee (TC) Working Group**

- TC reps and New England State Regulators
- Initial tariff changes are complete and we are expecting NEPOOL vote at September 7 Participants Committee meeting
- Group will continue to work on finalization of Attachment K language, seeking NEPOOL vote in November

External Stakeholder Review

- **FERC requires an open meeting to comment on Planning Process Strawman**
 - ISO-NE held meeting May 16, 2007 with Planning Advisory Committee (PAC), Reliability Committee (RC), TC and New England State Regulators
- **FERC Technical Conferences**
 - ISO-NE presented New England planning process June 28, 2007
 - NEPOOL Members and State Regulators participated
 - FERC to hold second conference October 15-16 in Boston
- **NEPOOL Committee and State Regulator review and support – through November 2007**

Stakeholder Comments on Regional Planning Process

- **Transmission Costs**
 - Improve estimates to be able to evaluate alternatives
- **Demand Resources**
 - Develop a “Queue” for Demand-side Resources
- **Dispute Resolution**
 - Clarify Dispute Resolution in ISO-NE Tariff to define what is disputable regarding the Planning Process as well as who is allowed to dispute
- **Market Solutions**
 - Provide additional clarity regarding the eligibility criteria for market solutions to be included in Regional System Planning

Stakeholder Comments on Regional Planning Process, cont.

- **Market Efficiency/Economic Studies**
 - Reliability seems to be the main trigger for a needs assessment; requests for Reliability Agreements should trigger a Market Efficiency Assessment
 - Provide better opportunities for customers and stakeholders to request economic planning studies
 - Need to define a method for choosing and prioritizing economic studies requested by stakeholders and customers
 - Need to better explain the method for determining whether to use a transmission solution versus a market solution (demand response, generation, merchant transmission)
- **Interregional projects**
 - Planning process should be expanded to deal with the financing of interregional projects

Special Thanks To

The Planning Advisory Committee and all stakeholders involved in the development of the 2007 Regional System Plan