

2011 Regional System Plan (RSP11) Public Meeting

Public Meeting
September 8, 2011

Stephen J. Rourke
Vice President, System Planning

RSP11 Public Meeting Agenda

- 9:30 a.m. Welcome from ISO Board of Directors
- 9:45 a.m. Keynote Speaker: Cheryl A. LaFleur
Commissioner, Federal Energy Regulatory Commission
- 10:30 a.m. Break
- 10:45 a.m. John Kassakian, Former ISO New England Board Member
- 11:00 a.m. ISO Report on 2011 Regional System Plan
- 11:45 a.m. Lunch

RSP11 Public Meeting Agenda, *cont.*

12:45 p.m. Panel #1: Integrating Wind Resources in New England

- Abigail Krich, President, Boreas Renewables
Consultant, Renewable Energy New England (RENEW)
- Lisa Linowes, Executive Director, Industrial Wind Action Group
- David Littell, Commissioner, Maine Public Utilities Commission
- Dave Maggio, Supervisor, Real-Time Market Integration, Electric Reliability Council of Texas, Inc. (ERCOT)
- Brian McCabe, Vice President, U.S. Business Development, National Grid
- *Moderator - Paul Levy, ISO New England Board Member*

2:00 p.m. Break

RSP11 Public Meeting Agenda, *cont.*

2:15 p.m. Panel #2: **Environmental Policies and the Impact on the Region's Generation Fleet**

- Lee Davis, Senior Vice President and Northeast Region President, NRG Energy
- John Kassel, President, Conservation Law Foundation
- John Moskal, Senior Advisor–Energy Policy, U.S. Environmental Protection Agency, Region 1 New England
- Phil Ribbeck, President, Repsol Energy North America
- *Moderator - John Kassakian, Former ISO New England Board Member*

3:30 p.m. Wrap Up

2011 Regional System Plan (RSP11) Process and Summary

Michael I. Henderson
Director, Regional Planning and Coordination

ISO-NE System Planning Process

- Objectives
 - Provides opportunities for market solutions
 - e.g., generation, demand-side measures, and elective or merchant transmission
 - Provides a regulated transmission plan as a backstop for identified reliability needs
 - Modified based on market solutions
 - Must meet reliability criteria
- Regional System Plan
 - Summarizes system planning activities
 - Presents system needs over a 10-year horizon
 - Provides status of transmission projects in the plan throughout the year, consistent with national, regional, and ISO New England requirements



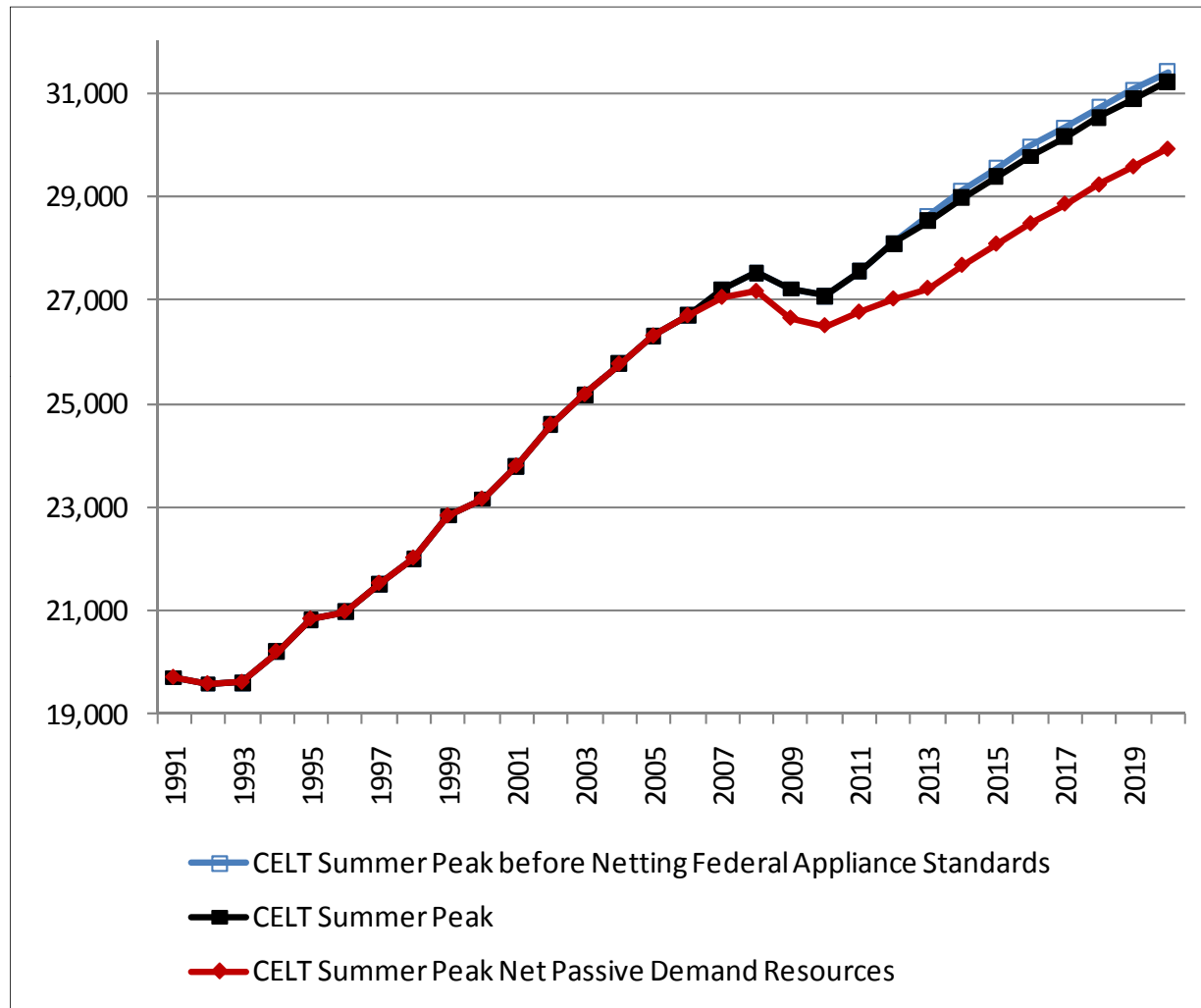
RSP11 Meets the Tariff Requirements

- The ISO carries out regional planning with the Planning Advisory Committee (PAC) as part of an open, transparent stakeholder process
- RSP11 reflects results and findings of ongoing ISO regional planning process for 2011
- New England meets all required planning procedures and criteria
 - North American Electric Reliability Corporation (NERC)
 - Northeast Power Coordinating Council (NPCC)
 - ISO and Participating Transmission Owners

Forecast of Annual and Peak Use of Electric Energy in New England

- System needs are driven in part by the load forecast, which reflects several key factors
 - Slow economic recovery
 - Historical energy efficiency
 - Federal energy-efficiency standards for appliances and commercial equipment that reduce forecasted energy use by 1.6%
 - Forward Capacity Market (FCM) passive demand resources that reduce the energy forecast 4.7%
- Forecast of peak loads is similar to RSP10 forecast
- ISO is working with stakeholders to develop an energy efficiency forecast to be used in RSP12 – state goals total 13.6% of total projected electric energy use by 2020

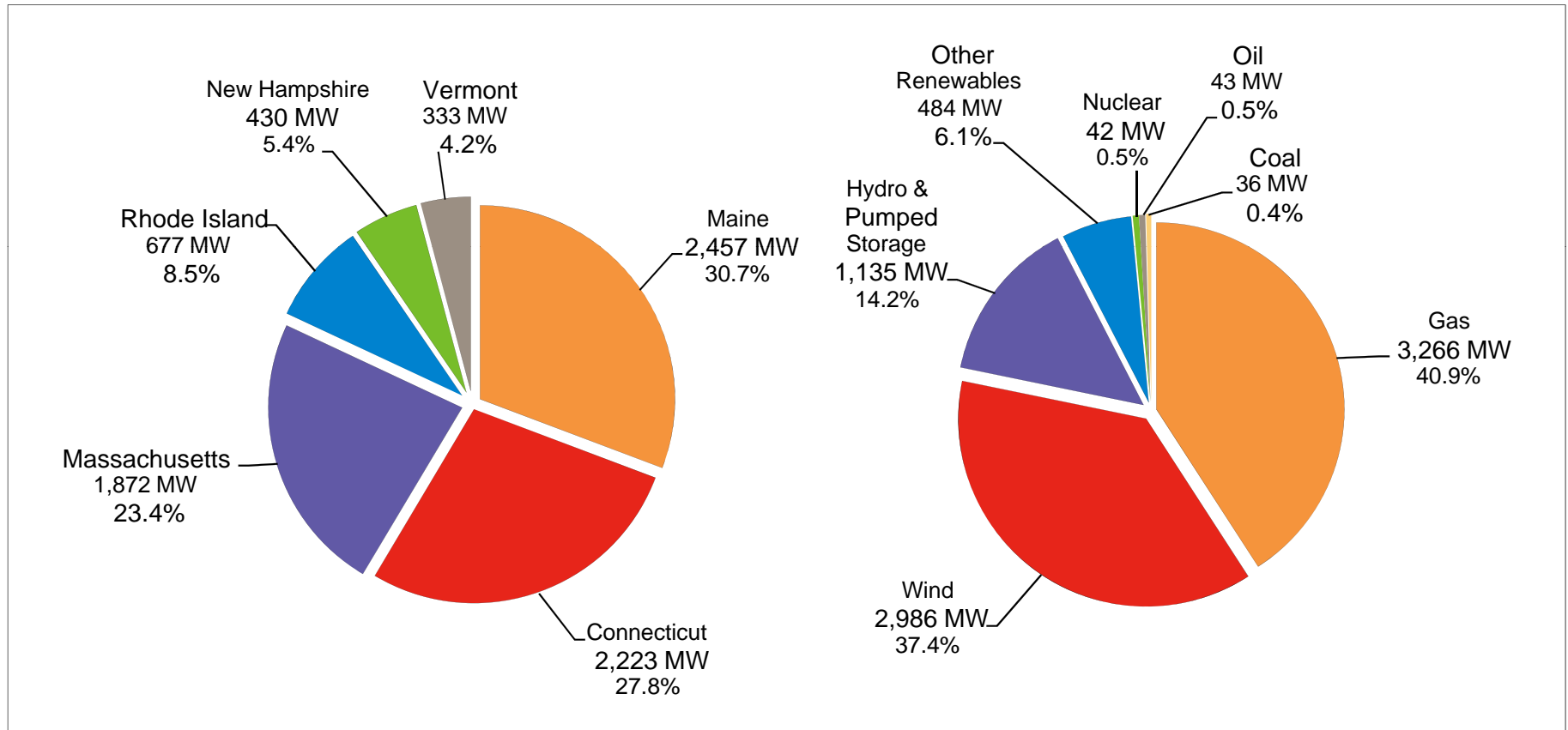
Annual Summer Peak Load With and Without Passive Demand Resources



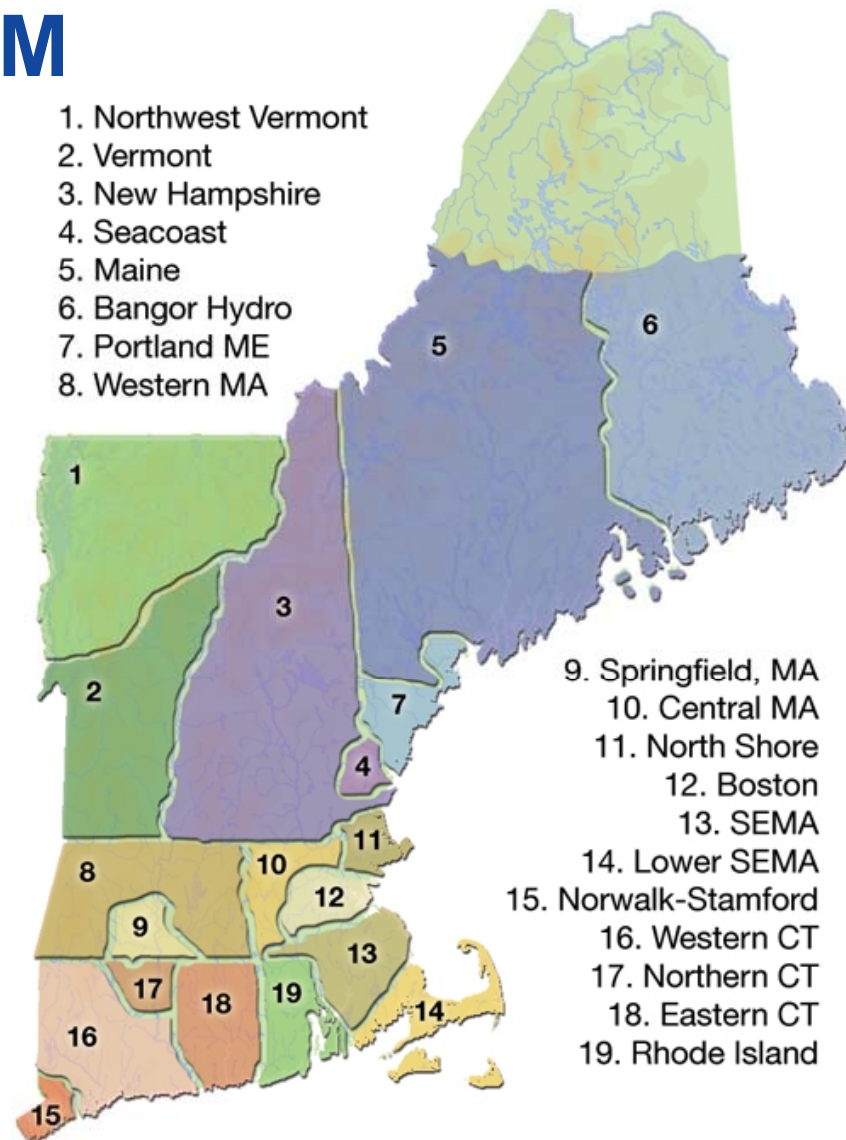
Resource Needs Met with Supply and Demand Options

- Sufficient quantities and types of supply and demand resources are developing in response to market signals and other factors
 - FCM resources are sufficient through 2014/2015 and resource adequacy requirements should be met through 2020, assuming no retirements
 - Any retirements would require additional resources
 - Fast-start resources, in-merit generation, and transmission system improvements are satisfying the operating-reserve requirements of major load pockets

Resources in the ISO Generation Interconnection Queue as of April 1, 2011



Demand Resource Dispatch Zones Under FCM



Needed Transmission Being Developed

- Maine Power Reliability Program (MPRP)
 - Increases the ability of moving power into Maine from New Hampshire
 - Improves service to load pockets
 - Provides basic infrastructure to improve transfer capability through Maine
- New England East-West Solution (NEEWS) has progressed
 - Rhode Island Reliability Project and the Greater Springfield Reliability Project are under construction and are expected to be in service by 2014
 - Interstate Reliability Project is needed and final plans are being refined; is expected to be in service by 2015
 - The need for the Central Connecticut Reliability Project is under study

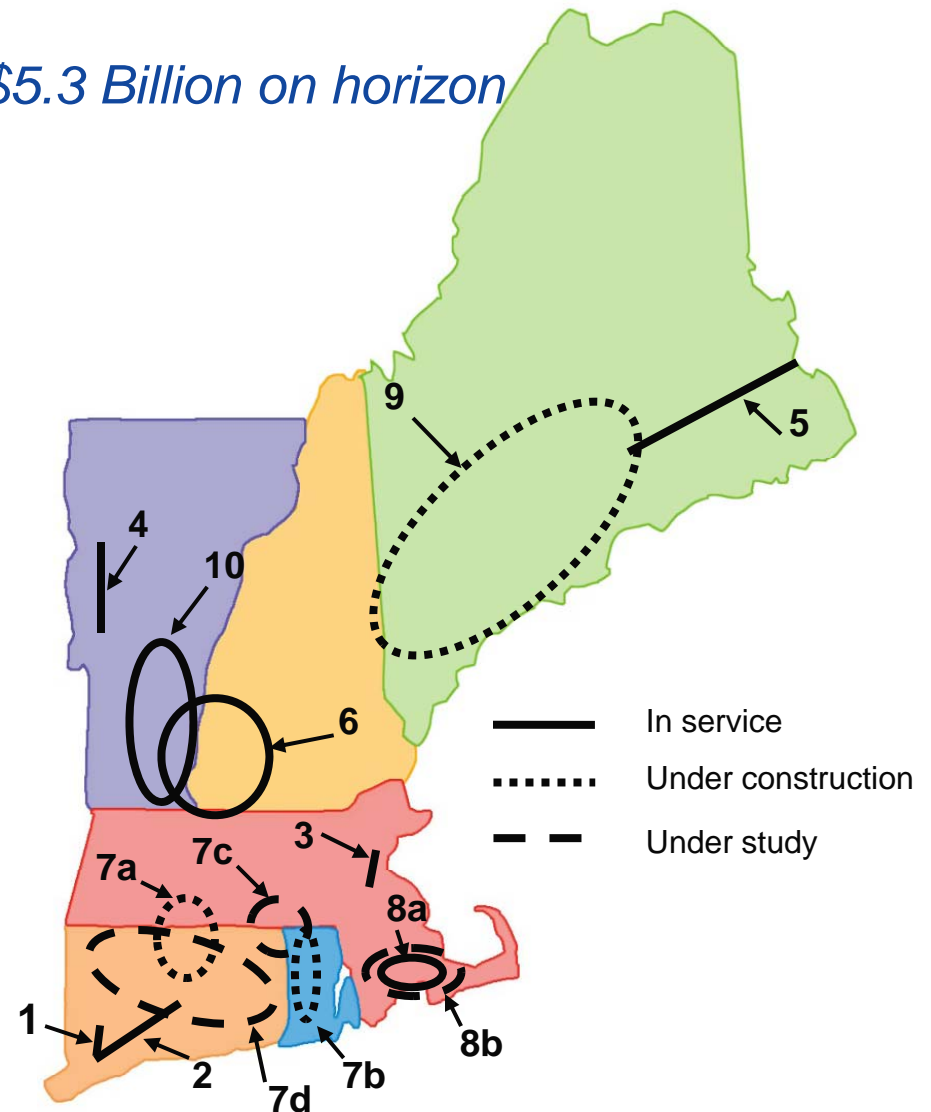
Needed Transmission Being Developed, *cont.*

- Transmission improvements serving load pockets have improved reliability and reduced dependencies on generating units throughout the system
- Other transmission improvements required for reliability are being planned and implemented, as summarized in the RSP Project List
- Planning has been coordinated interregionally through joint studies with neighboring regions and across the Eastern Interconnection

Transmission Projects to Maintain Reliability are Progressing

\$4.6 Billion invested since 2002, \$5.3 Billion on horizon

1. Southwest CT Phase I
2. Southwest CT Phase II
3. NSTAR 345 kV Project, Phases I & II
4. Northwest Vermont
5. Northeast Reliability Interconnect
6. Monadnock Area
7. New England East-West Solution
 - a. Greater Springfield
 - b. Rhode Island
 - c. Interstate
 - d. Greater Hartford/Central CT
8. Southeast Massachusetts
 - a. Short-term upgrades
 - b. Long-term Lower SEMA Project
9. Maine Power Reliability Program
10. Vermont Southern Loop



Market Resource Alternatives

- ISO has conducted a pilot study of market resource alternatives for meeting the VT/NH area needs
- Both local generation additions and demand response resources were considered as market resource alternatives options
- Preliminary results determined critical load levels that conceptually would allow these market resource alternatives to remove thermal overloads
- More study and PAC review is needed to determine if market resource alternatives could meet reliability standards

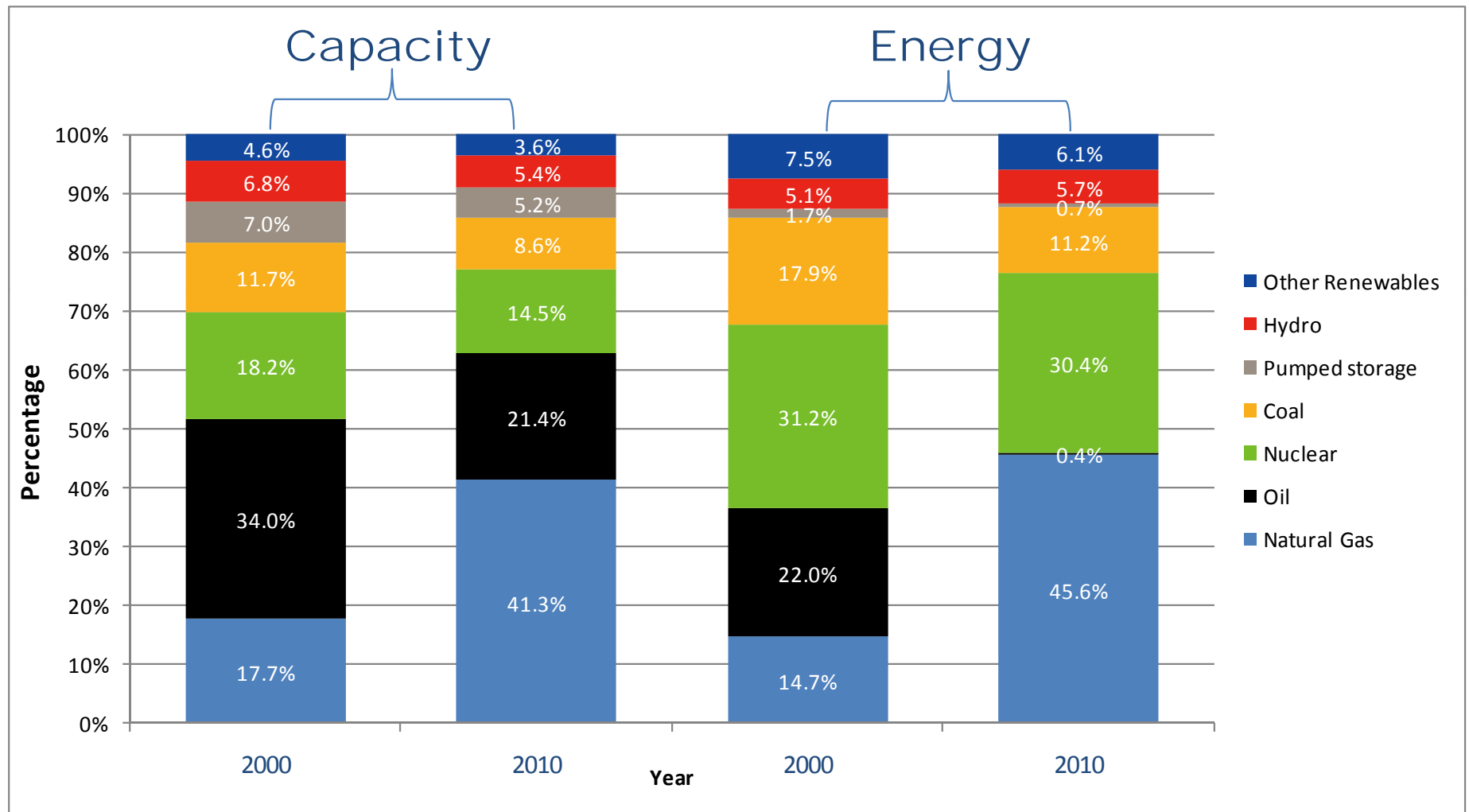
Fuel and Environmental Issues Affecting Resource Retirement and Development

- Fuel diversity concerns are being addressed through natural gas infrastructure improvements and operating procedures
 - New natural gas sources include Liquefied Natural Gas terminals, pipelines, and Marcellus shale
 - Improved communications have reduced operational risks
- Future risks to fuel supply must be addressed
- More stringent environmental regulations for air emissions, cooling water intake requirements, and handling of coal combustion byproducts will continue to affect generators in New England
 - The region's total emissions and average and marginal emission rates have declined, in part due to the region's heavy use of natural gas
 - The new environmental regulations could lead to higher fossil fuel plant operating costs and the need for capital improvements

Development and Integration of Resources

- Challenges exist for the continued operation of older coal, oil, and nuclear power plants
- ISO has initiated a study of the impacts of environmental regulations on regional generators
- Fuel prices can affect the dispatch order and revenues of generating units
- Strategic Planning issues
 - These plants could be replaced by new natural gas-fired generators, provided there is sufficient access to fuel
 - Renewable resources will likely grow, but these variable resources will require increased need for system flexibility and expansion of the transmission system

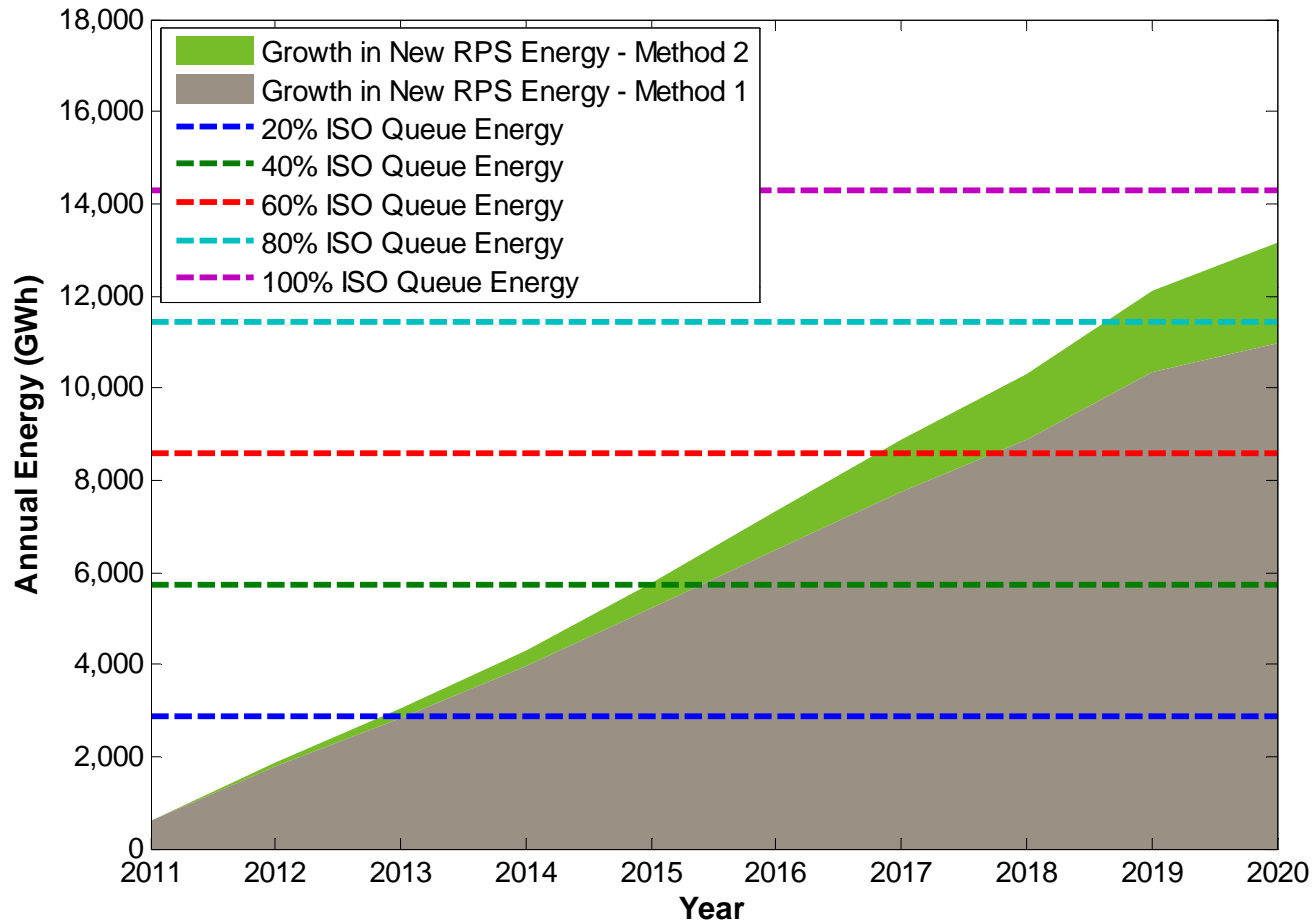
Capacity and Energy Production New England 2000 and 2010



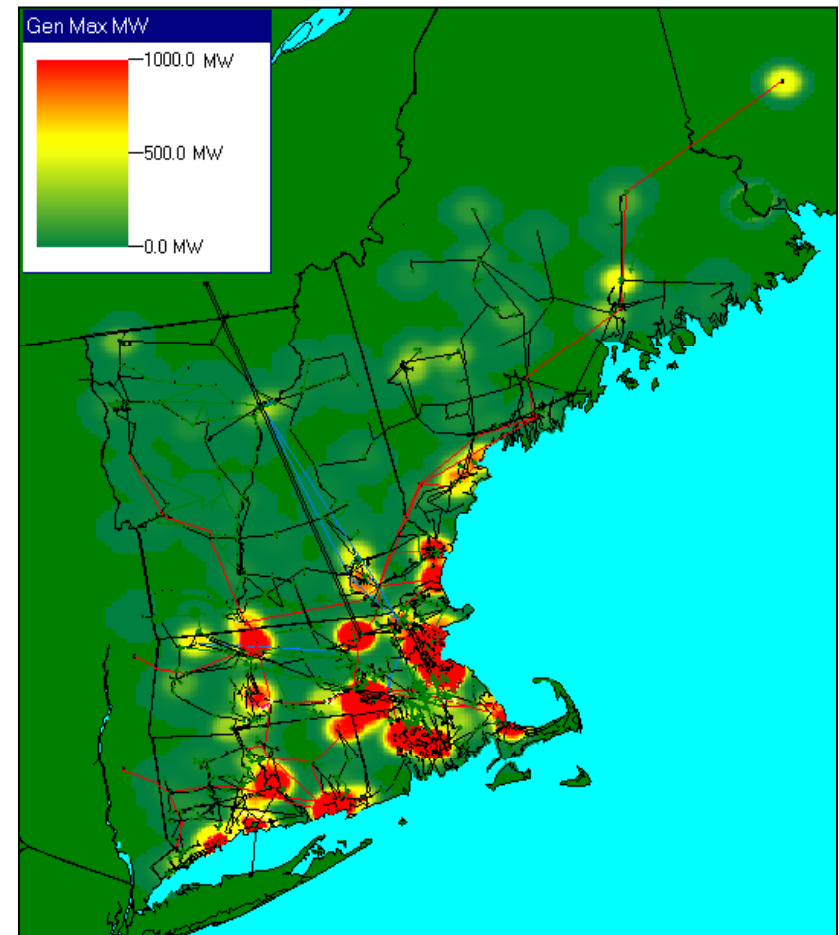
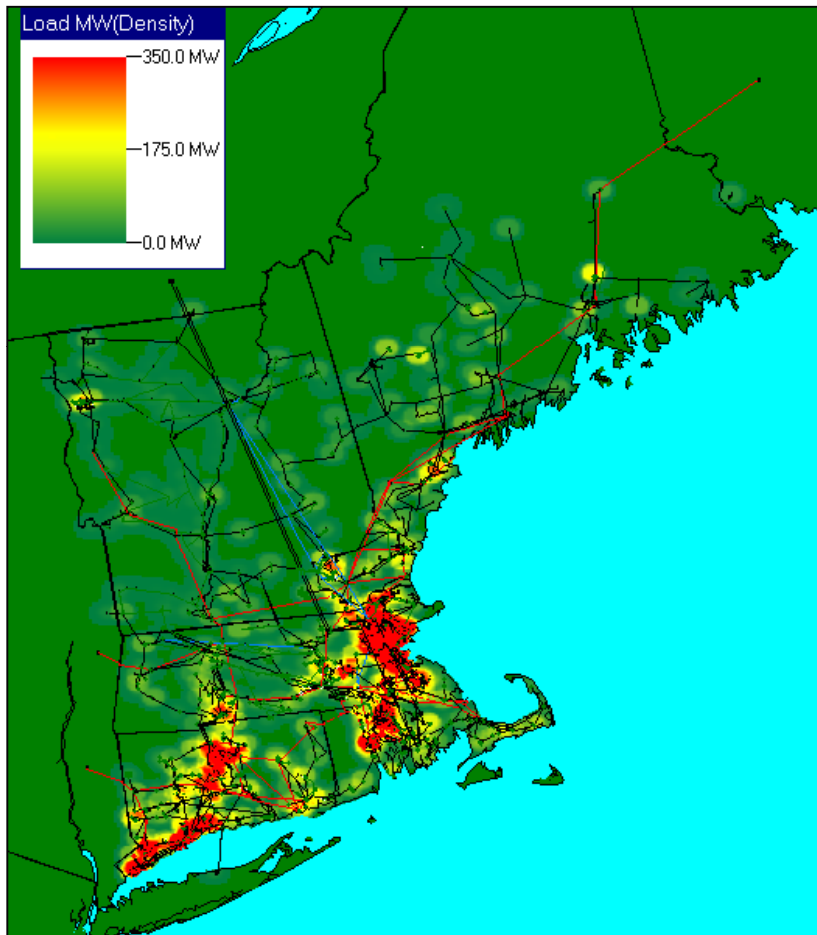
Renewable Development

- The region is well-positioned to meet Renewable Portfolio Standards (RPSs) and is working toward integrating wind, demand resources, and smart grid technologies
- Economic studies have provided information to regional stakeholders and policymakers
 - Little system congestion currently exists
 - The region has large potential to develop renewables and demand resources
 - Neighboring Canadian hydroelectric and wind resources are already helping to meet state RPSs and additional renewable development is under development in Quebec and the Atlantic Provinces
- Several merchant and elective transmission projects that would expand the region's access to renewable, low carbon energy already are in various stages of development

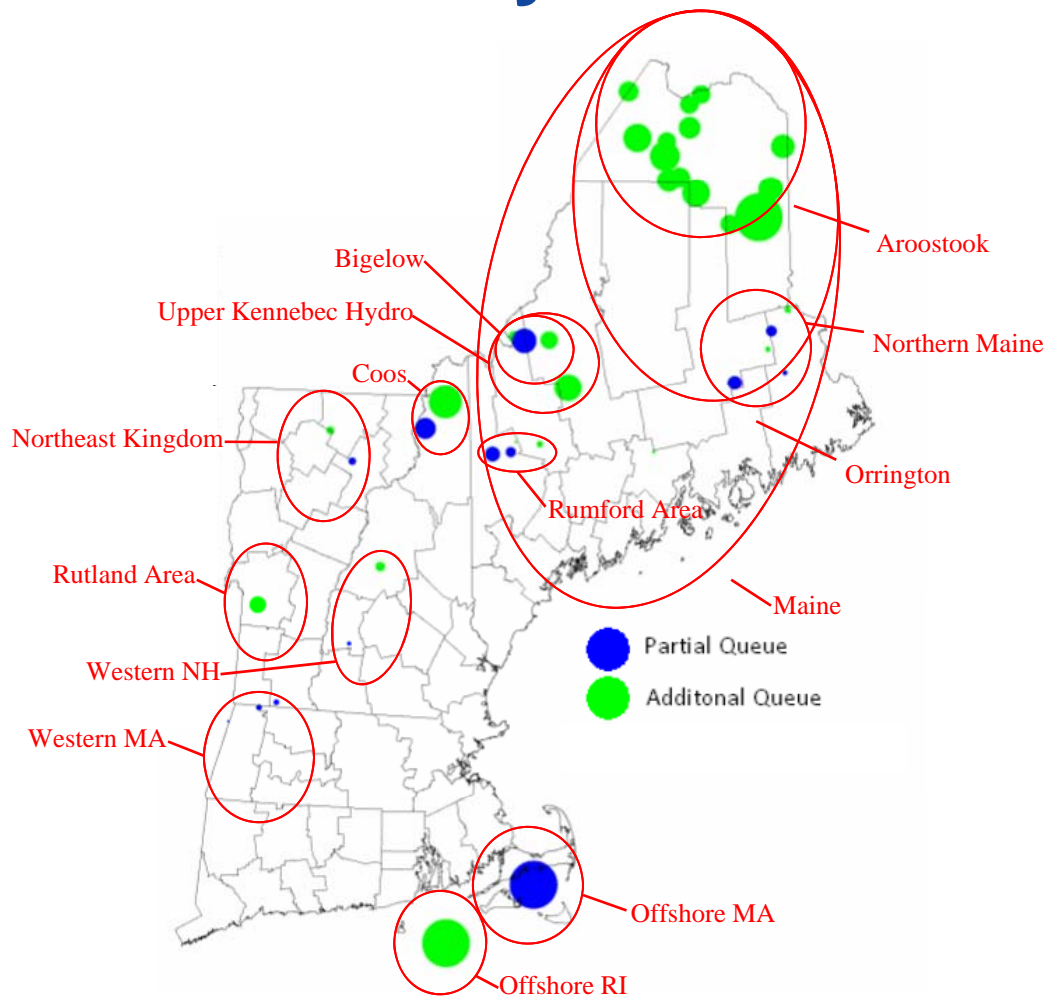
Meeting Renewable Portfolio Standards with ISO Queue Resources and Energy Efficiency



Load Concentrations & Generation Resources



Proposed Renewable Energy Clusters 2011 Economic Study



Planning Studies and Coordination

- ISO coordinates planning activities
 - Among the six New England states
 - With neighboring systems through a Planning Coordination Protocol and the NPCC
 - Across the interconnection through the Eastern Interconnection Planning Collaborative
 - Nationally through NERC
- FERC Order 1000
 - New England regional stakeholder meetings are underway to comply with new requirements such as:
 - Public policy planning and cost allocation provisions
 - Interregional planning and cost allocation refinements

Summary: Meeting Regional Challenges

- RSP summarizes challenges to maintaining a reliable and efficient operation of the power system
 - The need for improved resource performance and flexibility
 - The potential for retirement of generators
 - The integration of more variable resources and natural gas-fired generation
 - The alignment of wholesale market design and regional transmission planning
- ISO works with regional stakeholders to address emerging issues
 - State energy efficiency, renewable, and other efforts
 - Planning process and market design issues
 - The need for resource development and transmission improvements
 - Interregional coordination and compliance requirements
- ISO, NEPOOL, the New England states, and other regional stakeholders have engaged in a strategic planning process

Special Thanks To

The Planning Advisory Committee and all stakeholders involved in the development of the *2011 Regional System Plan*

