

# Regional System Planning in New England

**Connecticut Energy Advisory Board**  
**August 9, 2007**

Stephen J. Rourke  
Vice President, System Planning, ISO New England

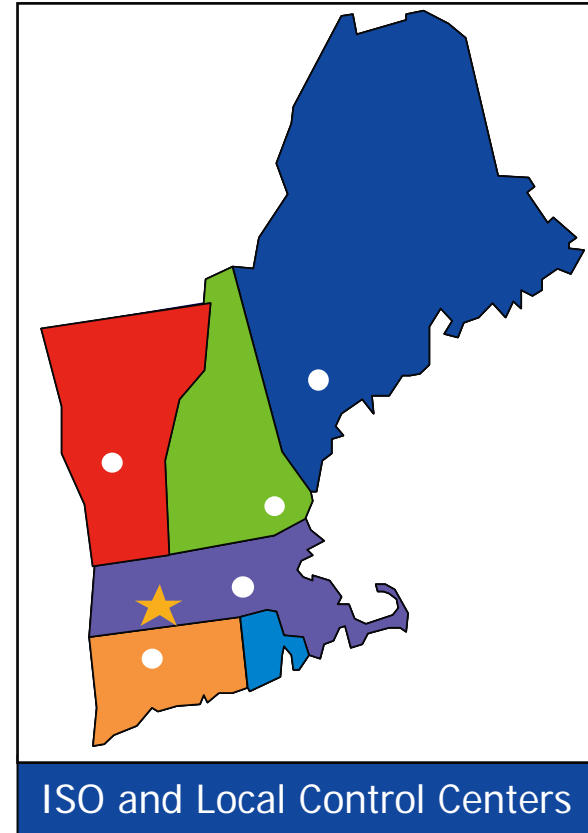
# About ISO New England

- Regional Transmission Organization for New England
  - Private, not-for-profit corporation created in 1997 to oversee the region's bulk electric power system
  - Independent of companies doing business in the market
  - Regulated by the Federal Energy Regulatory Commission (FERC)
  - Approximately 400 employees headquartered in Holyoke, MA

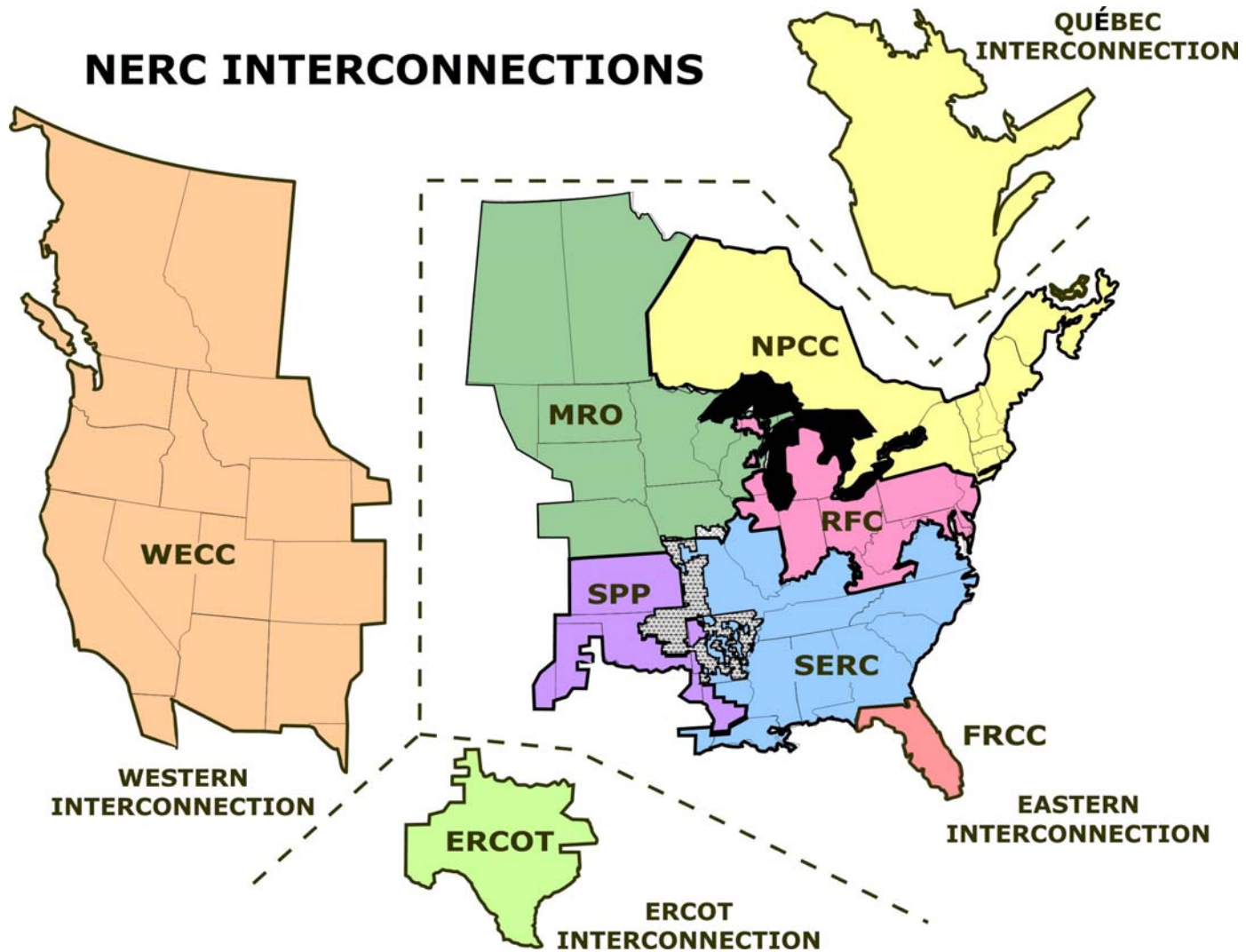


# New England's Electric Power Grid

- 6.5 million customer meters
  - Population: 14 million
- 350+ generators
- 8,000+ miles of high voltage transmission lines
- 12 interconnections to three neighboring systems:
  - New York, New Brunswick, Quebec
- 31,000 megawatts (MW) of installed generating capacity
- 300+ market participants
- Summer peaking system
  - Summer: 28,130 MW (8/06)
  - Winter: 22,818 MW (1/04)



# Part of the Eastern Interconnection



# ISO-NE: Major Responsibilities

## 1. Reliability

- Maintain minute-to-minute reliable operation of the region's bulk power generation and transmission system
- Centralized dispatch of generation, activation of demand response
- Coordinate operations with neighboring power systems

## 2. Markets

- Administer and monitor New England's wholesale electricity markets
  - Energy, Capacity and Reserves
- Internal and external market monitoring

## 3. Planning

- System needs assessment
- 10-year transmission plan to ensure a reliable and efficient bulk power system to meet current and future needs

# Key Issues in New England

- **Meeting peak demand for electricity**
  - Peak demand is growing faster than overall demand
    - Requires additional power system infrastructure
  - Increased energy efficiency and stronger wholesale/retail linkages could help reduce and/or shift demand
- **Meeting existing and new environmental requirements**
  - Air regulations (NO<sub>x</sub>, SO<sub>2</sub>)
  - Regional Greenhouse Gas Initiative (CO<sub>2</sub>)
  - Renewable Portfolio Standards
- **Developing additional resources**
  - Increasing level and diversity of supply
  - Integrating demand-side resources into the market
  - Balancing reliability with reasonably priced supply

# 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



**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
- Regional Benefit Upgrades
  - Reliability and Market Efficiency Upgrades
    - May involve Localized Costs

# 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

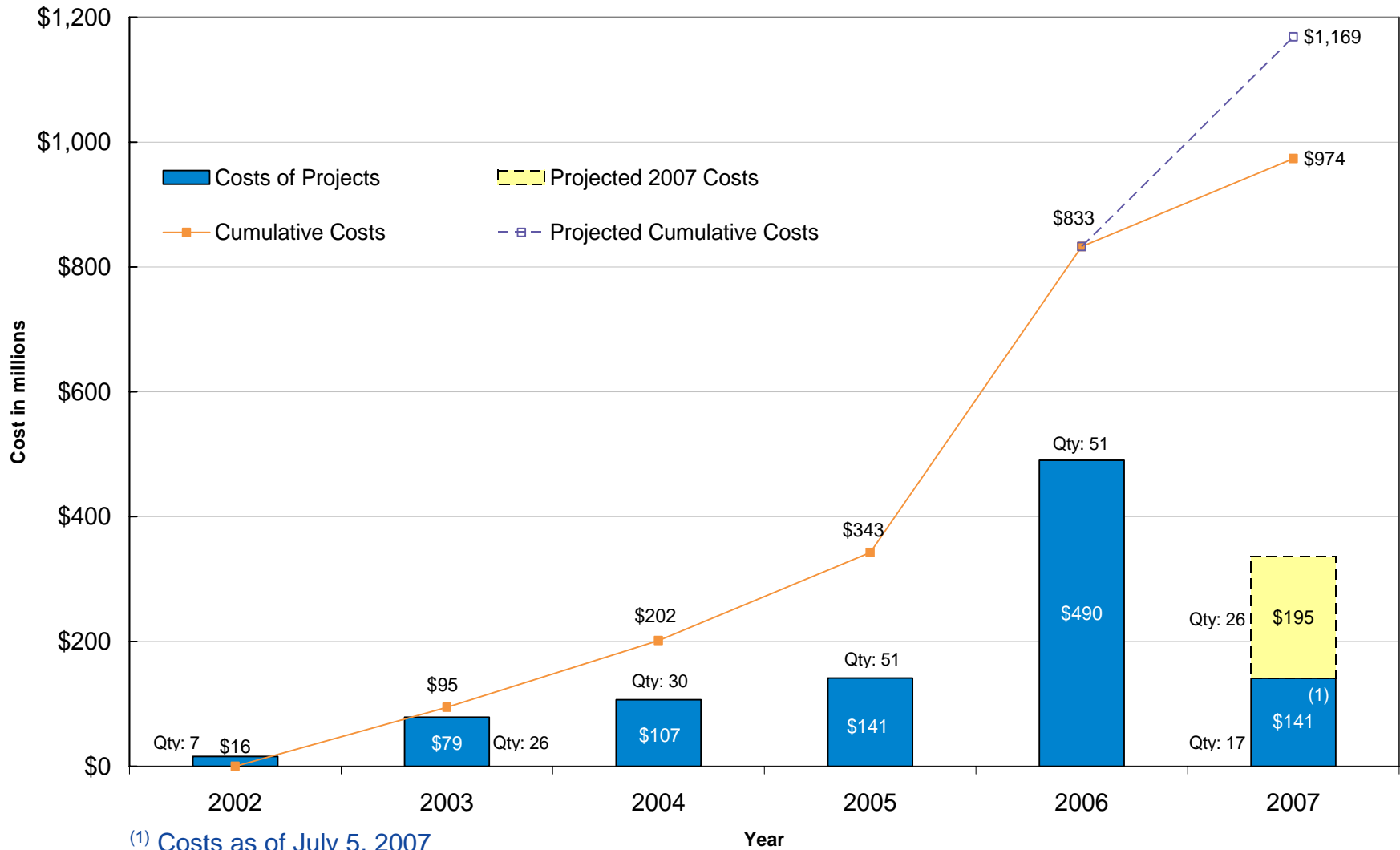
# Process for Transmission Cost Sharing

- 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
  - Consumers pay a share of costs based on their share of regional electricity consumption
    - Connecticut – Approx. 26% of total usage
  - Cost-sharing arrangement increases certainty that projects in the RSP will proceed
- FERC-approved process developed with stakeholders
  - Developed through an extensive stakeholder process in 2002/03
  - Approved by FERC in December 2003

# Investment in New England Transmission

- Major investment in transmission
  - More than 200 projects representing an investment of about \$1.2 billion now 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.)



# 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**

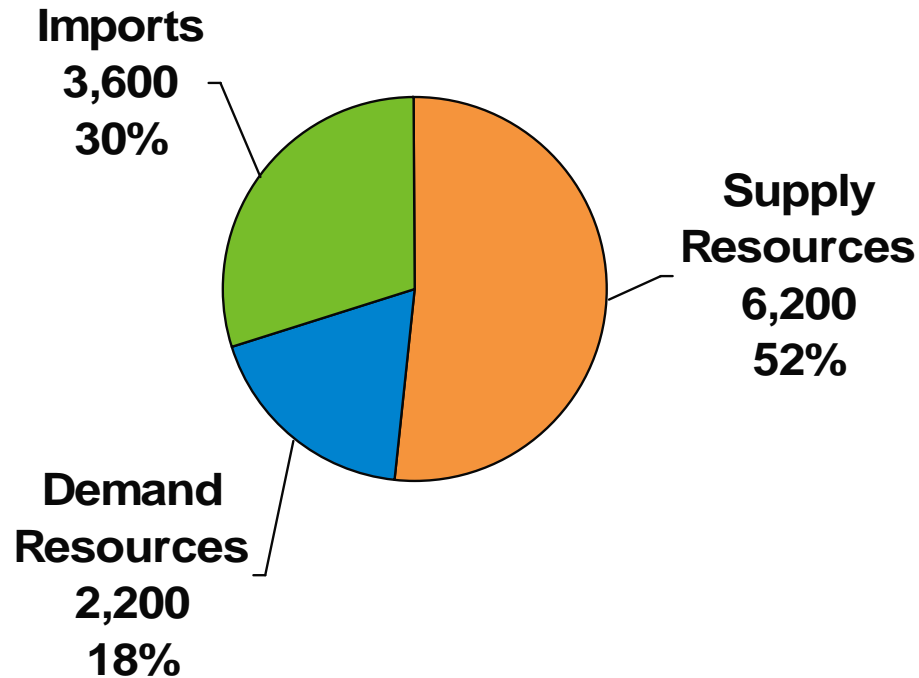
- Generation proposals subject to ISO reliability review
  - Projects must not create adverse reliability impacts on the system
- Proposals studied in the order received
  - Interconnection study “queue” updated regularly on ISO Web site

# 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
  - 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

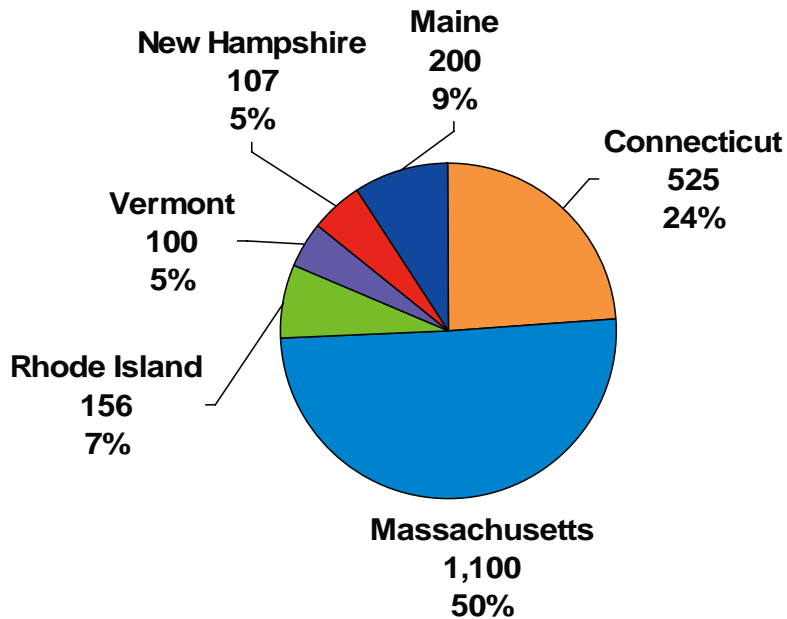
*Proposed Resources by Type (MW and %)*



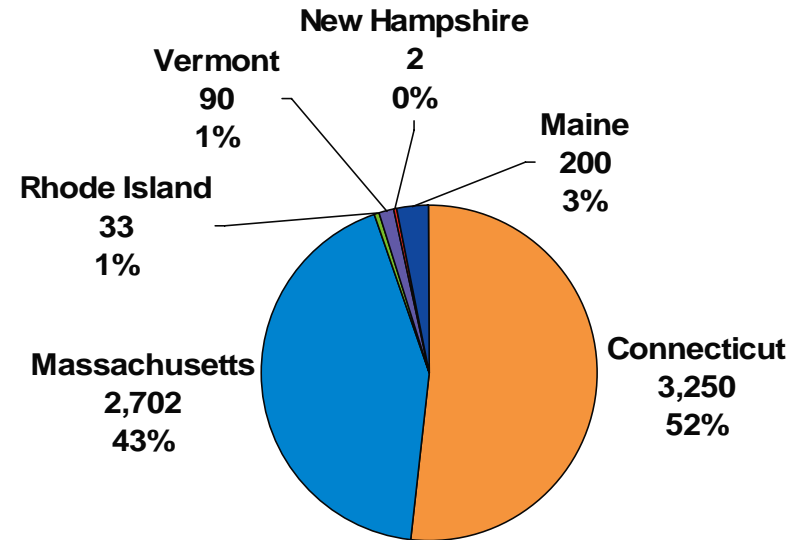
# FCM Qualification Package Applications

*Proposed Resources by State (MW and %)*

## Demand Resources



## Supply Resources



# Evolution of Federal Policy

- 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)
  - Latest FERC order builds on this framework (Order 890)
- In New England, an “Independent” System Operator and regional system planning have been key to fulfill these provisions of federal policy

# Review of Regional Planning Process

- FERC has identified nine principles to guide regional planning across the country
  1. Coordination
  2. Openness
  3. Transparency
  4. Information Exchange
  5. Comparability
  6. Dispute Resolution
  7. Regional Coordination
  8. Economic Planning Studies
  9. Cost Allocation

# ISO's Regional Planning Process

- ISO is working with stakeholders to show that New England's approach is consistent with FERC principles
  - Draft transmission planning “Strawman” issued May 29 following discussion with stakeholders through the PAC
  - *ISO seeking input from the States*
  - Revised regional planning process framework to be issued by Sept. 14
  - Revised planning process framework to be filed by Dec. 7

# ISO's Transmission Planning Strawman

- Description of open stakeholder process used to develop and review the “Strawman” for regional planning
- Description of ISO-NE regional planning process following FERC principles
  - Existing planning process review and description
  - Existing Tariff provisions that support regional planning
  - Existing stakeholder interaction, including States, NEPOOL, and other interested parties
  - Existing inter-regional planning forums
- Description of actions by Transmission Owners in New England
- Listing of comments, concerns and questions raised by stakeholders, state regulators and other interested parties
- Working draft of the revised planning process framework

# Next Steps

- Regional System Plan
  - Public meeting: September 6, 2007 (Boston)
- Forward Capacity Market
  - Auction in February 2008 for 2010/11 commitment period
- Transmission Planning Strawman
  - Finalize regional planning process framework with New England states and stakeholders
  - File revised tariff language with FERC by December 7

# 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 and diverse types of 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

*Questions?*