Connecting the Dots: Major New England Energy Initiatives

Restructuring Roundtable

Robert Ethier

VICE PRESIDENT, MARKET OPERATIONS

New England Has Two Overarching Policy Goals – *Are They Compatible?*

1. Achieving reliability through **competitive wholesale markets**, and

2. Achieving **reductions in carbon emissions**

Goal 1 rests on the premise that efficient merchant investors have the opportunity to recover their costs and a return on equity through the market

If carbon reductions require 'out of market' financial support, do we sacrifice Goal 1 to achieve Goal 2?

Achieving a Mostly Renewable Power System Raises Complex Policy and Market Design Questions

- **Decarbonizing the entire economy** will increase the need for a highly reliable electric power system as heating and transportation sectors are electrified
- **Very high renewable penetration** will dramatically reduce energy market revenues for all resources
  - Renewable resources have low to zero marginal costs, and, with policy incentives (e.g., tax credits, RECs), can offer into the wholesale market at negative prices
- How do you pay for the ***backup system*** that will be needed when renewable resources cannot produce electricity?
  - Through the capacity market, or cost of service for all resources?
- How does the region pay for the ***environmental attributes*** that policymakers desire?

NEPOOL Has Launched a New Initiative Called Integrating Markets and Public Policy (IMAPP)

- In August, NEPOOL launched a stakeholder process with the goal of identifying **potential adjustment(s)** to the wholesale electricity market(s) to accommodate and achieve the New England states' **public policy objectives**
- The region's competitive wholesale electricity markets are designed to maintain **reliability** through the selection of the most economically-efficient set of resources
- The states have **environmental** and **renewable energy** goals that are beyond the objectives of the wholesale electricity markets

Overview of the IMAPP Schedule

- NEPOOL's goal is to develop a **"framework document"** by December 2 to provide guidance to the ISO regarding potential changes to the wholesale power markets
- This is an extremely important effort and we are encouraged by the attention of both NEPOOL and the New England states to this initiative
- In 2017, **ISO New England will work with the states, NEPOOL and the FERC** to determine the most effective path forward

Note: For information on the individual proposals, visit the NEPOOL website or the ISO's Wholesale Markets and State Public Policy Initiative webpage.

Three General Market-Based Types of IMAPP Proposals Have Been Introduced by Stakeholders

Pricing Carbon in Energy Market

Forward Clean Energy Market

New Re-Pricing Rules for the FCM

Pricing Carbon in the Energy Markets

- Overview
  - Some stakeholders are proposing the use of a shadow carbon price in the energy market
  - Under this proposal the ISO would use resource-specific offer adders that reflect each generator's carbon emissions and a tariff-based carbon cost (per ton CO_2)
  - Provides new revenue and incentives for future investment in low-carbon resources
  - Similar in effect to the successful regional and national SO_2 and NO_X emissions programs
  - Can complement RGGI
- **<u>Questions remain</u>**:
  - Emission price?
  - Rebate allocations?
  - Jurisdictional concerns?

Pricing Carbon in Energy Market

Forward Clean Energy Market

- Overview
  - Numerous stakeholders are proposing the creation of a new forward market that will provide new revenue and incentives for production and investment from qualified clean energy resources
  - Quantity of clean energy purchased would be set to meet state emission goals
  - Cost would be allocated to states' load
- **Questions remain**:
  - Resource eligibility?
  - Jurisdictional concerns?
  - What about the Minimum Offer Price Rule and its purpose?

Forward Clean Energy Market

New Re-Pricing Rules for the FCM

- Overview
  - Propose to undo the effect of state subsidies to select low-carbon resources in the FCM, paying different capacity prices to resources with and without subsidies
  - Purpose would be to ensure that the FCA could attract new merchant resources when needed
- **Questions remain**:
  - Can the ISO pay different prices for the same obligation in the FCA, or is the product differentiated?
  - Hidden complexities and unintended consequences?

New Re-Pricing Rules for the FCM

2016 Economic Study to Help IMAPP Discussions

- Reflecting NEPOOL's priorities, the ISO is reviewing potential impacts of emerging public policy on performance of the power system and markets in New England
- After completion of the production cost modeling, the next phase will:
  - examine representative capacity auction clearing prices for several scenarios;
  - analyze intra-hour ramping, regulation, and reserve requirements; and
  - assess natural gas system deliverability issues
- Results will be part of the region's IMAPP consideration

5 Scenarios Included in 2016 Economic Study

1. Generation fleet meeting existing RPS and retired units replaced with natural gas combined cycle (NGCC) units
2. Generation fleet meeting existing RPS and all future needs, including retirements, met with new renewable/clean energy resources
3. “RPS-plus scenario” - Generation fleet meeting existing RPS plus additional renewable/clean energy resources
4. Generation fleet meeting existing RPS in part through Alternative Compliance Payments (ACP) with NGCC additions, and with no retirements
5. Existing fleet meeting existing RPS in part through ACP and retirement replacement with NGCC additions

Initial Observations 2016 Economic Study (Phase I)

- Scenarios 1, 4, and 5 are generally similar to each other and results intuitively make sense
  - Natural gas is generally on the margin
  - Low capacity factors for oil-fired units and combustion turbines
  - Scenario 1 shows some congestion in the northern interfaces
  - Scenarios 4 and 5 have essentially no congestion

5 Scenarios Included in Study

1. **Generation fleet meeting existing RPS and retired units replaced with natural gas combined cycle (NGCC) units**
2.
3.
4. **Generation fleet meeting existing RPS in part through Alternative Compliance Payments (ACP) with NGCC additions, and with no retirements**
5. **Existing fleet meeting existing RPS in part through ACP and retirement replacement with NGCC additions**

Initial Observations 2016 Economic Study (Phase I) (*cont.*)

- Scenario 2 and 3 results are different from today's system
  - Some hours the system operates with three nuclear units and no "traditional spinning generation"
  - Low emissions, low energy costs, low energy revenues for generators
  - Fossil units, including natural gas combined cycle units, have relatively low capacity factors as compared with today's system
  - Large amounts of wind generation additions are bottled in Maine
  - Benefits of storage use are more readily apparent

5 Scenarios Included in Study

1.
2. **Generation fleet meeting existing RPS and all future needs, including retirements, met with new renewable/clean energy resources**
3. **"RPS-plus scenario" - Generation fleet meeting existing RPS plus additional renewable/clean energy resources**
4.
5.

ISO-NE Will Continue to Work with Stakeholders to Manage the Transformation of the Power System

- **New England's wholesale markets provide a framework to ensure resource adequacy and reliability**
  - Competitive wholesale electricity markets have resulted in high levels of reliability, produced significant efficiencies and have driven billions of dollars of investment in New England's power system
  - However, the competitive market framework is vulnerable, and the transformation of the power system is presenting new risks
- **New England needs additional energy infrastructure**
  - Growing levels of renewable generation will require a fleet of flexible resources, with an equally flexible fuel system, to reliably balance the variability of renewable resources
- **Thoughtful balance of public policy goals and wholesale market operations can achieve effective results**
  - New England has a history of achieving environmental goals within the framework of wholesale energy markets

Questions