Panel 2

What Are the Drivers of Electric Prices in Connecticut and New England?
Connecticut Power and Energy Society

Electricity Price Drivers

James Daly
VP Energy Supply
Eversource Energy
March 11, 2015
New England had a $6.8 Billion 2013/14 Winter

Winter Season Wholesale Electricity Costs December thru March; ISO-NE region ($ billions)

Winter Weather:

- 2010 – 2011: Normal
  - Winter Season Wholesale Electricity Costs: $3.1

- 2011 – 2012: Warmer
  - Winter Season Wholesale Electricity Costs: $1.6

- 2012 – 2013: Normal
  - Winter Season Wholesale Electricity Costs: $3.6

- 2013 – 2014: Colder
  - Winter Season Wholesale Electricity Costs: $6.8
Last Winter’s Prices & Volatility Have Significantly Raised New England Energy Rates

Risk Premium in Customer Rates

Avg. Increase Energy Rates Fall to Winter 2013-2014

Avg. Increase Energy Rates Fall to Winter 2014-2015

REGIONAL ENERGY MARKET PRICES (WINTER 2013-14)

- ISONE AVG. LMP $/MWhr
- AGT CG Price ($/MMBtu)

27%

60%
## Residential Rates

<table>
<thead>
<tr>
<th>Energy Rate (c/kWh)</th>
<th>% Change</th>
<th>Upcoming Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connecticut</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CL&amp;P 10.0</td>
<td>12.5</td>
<td>25%</td>
</tr>
<tr>
<td>United Illuminating 8.7</td>
<td>13.3</td>
<td>53%</td>
</tr>
<tr>
<td><strong>Massachusetts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSTAR 9.4</td>
<td>15.0</td>
<td>60%</td>
</tr>
<tr>
<td>WMECO 8.8</td>
<td>14.0</td>
<td>58%</td>
</tr>
<tr>
<td>National Grid 8.3</td>
<td>16.2</td>
<td>96%</td>
</tr>
<tr>
<td>Fitchburg 8.5</td>
<td>14.1</td>
<td>66%</td>
</tr>
<tr>
<td><strong>New Hampshire</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSNH 9.9</td>
<td>10.56</td>
<td>7%</td>
</tr>
<tr>
<td>Unitil 8.4</td>
<td>15.5</td>
<td>85%</td>
</tr>
<tr>
<td>Liberty 7.7</td>
<td>15.5</td>
<td>100%</td>
</tr>
<tr>
<td>NH Elec Coop 9.0</td>
<td>11.6</td>
<td>29%</td>
</tr>
</tbody>
</table>

*Estimate
Winter Gas Basis Remain High But Lower Than Last Winter
New England Customer Capacity Prices ($/kW-mo)

<table>
<thead>
<tr>
<th>Region</th>
<th>$/kW-mo</th>
<th>¢/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rest of Pool</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td>NEMA/Boston</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td>SEMA/RI</td>
<td>3.0</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Total Cost to Pool</strong></td>
<td><strong>$1.2 B</strong></td>
<td><strong>$4.0 B</strong></td>
</tr>
</tbody>
</table>

In FCA7 (6/16 - 5/17) NEMA/Boston cleared at $14.999/kW-mo for new capacity but existing resources will be paid $6.661/kW-mo as shown in FCA8 the clearing price was $15/kW-mo for new resources and NEAM/Boston but administratively set to $7.025/kW-mo for all other existing resources.

In FCA9 SEMA/RI had inadequate supply so new resources will be paid $17.728/kW-mo and existing will get paid $11.08/kW-mo.
Policy Costs Growing in New England

- Incremental costs of clean energy policies is material portion of rates
- 2015 total cost near $1B in Massachusetts and $300M in CT
- RPS requirements continue to grow in all states
Energy Price Drivers This Winter

- ISO Winter Reliability Program ensured oil and some natural gas supply for generation
- Oil price dropped from over $110/Bbl to circa $45/Bbl
- LNG imports quantity and diversity increased
  - Seeking higher gas prices versus lower oil related prices in Europe and Asia
- Planned retirements (Brayton Point) still in the market
- Cold weather came in February versus January when loads are higher
- Generation availability in PJM was better – last year >20% of generation was unavailable due to cold weather issues
- Result was lower prices and reduced volatility in NE
Energy Price Outlook New England

- Electricity prices are driven by natural gas prices
- Resource mix is changing away from coal, oil and nuclear and towards gas and renewable energy
- Implications for large hydro, natural gas expansion and renewables
  - Hydro and gas expansion support intermittent renewable generation
  - Hydro and renewables provide needed diversity
  - Hydro and gas can increase reliability and reduce cost to consumers
- Infrastructure expansion takes time – not likely before 2018/19
- Need is urgent on reliability, higher costs on the way
Standard Service Power Procurement

Jeffrey R. Gaudiosi, Esq.
Power Procurement Manager
Public Utilities Regulatory Authority
Connecticut Department of Energy & Environmental Protection
History

- 1999-2006 Transitional Standard Offer - capped generation rate
- 2006-2012 Standard Service – three year laddering provision
- 2012-Present Standard Service – 6 month rates
Current Process

• Public Act 11-80 creates position of Power Procurement Manager

• Feb. 2012-June 2012 – development of Connecticut’s first Power Procurement Plan

• October 2012 – approval of Plan by PURA
Power Procurement Plan

• The State is directly involved in the process
• Rates change each 6 months (Jan-Jun, Jul-Dec)
• Closer to market pricing
• Divides expensive winter months, rates drop during peak summer usage
• Flexibility of process
• Mix of products (full requirements & self management)
What are the Drivers of Electric Prices in Connecticut and New England?


Eric Johnson
DIRECTOR, EXTERNAL AFFAIRS
ISO New England Is Implementing Solutions to the Region’s Top Reliability Risks

Reliability requires a flexible, high-performance fleet to address these risks:

• Natural gas dependency
• Power plant retirements
• Renewable resource integration
New England Has Seen a Dramatic Shift in Energy Sources Used to Produce Electricity

Percent of Total Electric Energy Production by Fuel Type (2000 vs. 2014)

Source: ISO New England Net Energy and Peak Load by Source

Other renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and miscellaneous fuels
Natural Gas and Wholesale Electricity Prices Are Linked

Monthly Average Natural Gas and Wholesale Electricity Prices in New England

- 2005
- 2008
- 2012/13
- 2013/14

Wholesale Electricity at New England Hub (Real-Time LMP)
Natural Gas
>10% of Existing Fleet Will Retire Within 5 Years

More than 3,500 MW of coal, oil, and nuclear resources will retire between 2014 and 2019

**Key retirements:**

**Connecticut**
Norwalk Harbor 340 MW

**Massachusetts**
Brayton Point 1,535 MW
Salem Harbor 749 MW
Mt. Tom 142 MW

**Vermont**
Vermont Yankee 604 MW

*Additional retirements are looming*
Proposed Generation Is Primarily Gas and Wind

Developers propose >5 GW of gas-fired generation and approximately 4 GW wind; wind is mostly onshore in northern New England and offshore in southern New England.

All Proposed Generation

- Natural gas: 57%
- Wind: 42%
- Other: 1%

Wind Proposals

- ME 3,330 MW
- VT 127 MW
- NH 63 MW
- MA 467 MW

Source: ISO Generator Interconnection Queue (January 2015)
FERC Jurisdictional Proposals Only
2014/2015 Winter Operations

• The region’s power grid has been operating well through the cold weather this winter, with sufficient resources available to meet peak demand and provide reserves.

• The ISO continues to monitor and coordinate with generators and natural gas pipeline companies to help ensure this continues.

• Natural gas pipelines serving New England continue to be utilized at near full capacity, supplemented with injections of Liquefied Natural Gas (LNG) occurring in the eastern portion of the system.

• These injections have helped meet the high demand for natural gas for power generation.

• In addition, with the extremely cold weather, we have seen an increased use of oil-fired generation to meet demand for electricity.
For much of the winter, wholesale electricity prices have been lower than last winter.

The most significant factor in this winter’s lower wholesale power prices is lower fuel prices for natural gas, LNG, and oil.

Oil prices have fallen across the globe, to approximately half what they were a year ago, which has dramatically reduced the cost of operating oil-fired power plants.

LNG has been in much greater supply this winter than last, which has resulted in greater competition with pipeline natural gas from the west.

<table>
<thead>
<tr>
<th>Month &amp; Year</th>
<th>Average Real-Time Price of Electricity (Hub) ($/MWh)</th>
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</thead>
<tbody>
<tr>
<td>December 2013</td>
<td>98.53</td>
</tr>
<tr>
<td>January 2014</td>
<td>162.88</td>
</tr>
<tr>
<td>February 2014</td>
<td>152.84</td>
</tr>
<tr>
<td>December 2014*</td>
<td>42.47</td>
</tr>
<tr>
<td>January 2015*</td>
<td>65.59</td>
</tr>
<tr>
<td>February 2015*</td>
<td>126.70</td>
</tr>
</tbody>
</table>

*preliminary figures
Capacity Prices Vary with Changes in Supply

Excess Capacity

Clearing Price*

* Prices cleared at the floor price in the first seven auctions due to excess capacity; therefore, resources were paid a slightly lower prorated price. The clearing price in NEMA/Boston was $14.999/kW-month for FCA 7 (new capacity received $14.999/kW-month and existing capacity received an administrative price of $6.66/kW-month). The clearing price in FCA 8 was $15.00/kW-month (new capacity in all zones and existing capacity in NEMA/Boston received $15.00/kW-month and existing capacity in all other zones received an administrative price of $7.025/kW-month).
Capacity Zones Show Where New Resources Are Needed Most

- **Rest of Pool**: $9.55/kW-month for all resources
- **NEMA/Boston**: $9.55/kW-month for all resources
- **SEMA/RI**:
  - $17.73/kW-month for new resources
  - $11.08/kW-month for existing resources
- **Connecticut**: $9.55/kW-month for all resources
- **Imports from New York**: $7.97/kW-month
- **Imports from New Brunswick**: $3.94/kW-month
2014 Report of the Consumer Liaison Group Published This Week

• The 2014 Report of the Consumer Liaison Group summarizes the activities of the CLG in 2014:

• The report also provides an update on ISO activities and initiatives, as well as wholesale electricity costs and retail electricity rates in New England
For More Information...

- **Subscribe to the ISO Newswire**
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