

**New England Council
Regional Energy Forum**

Addressing New England's Energy Challenges

June 30, 2014

Overview

- Regional Challenges: Reliability & Economic Disparity
- Background on New England Governors' Infrastructure Initiative
- Stakeholder interactions to date
- Status of state discussions, feedback requests and other processes

Regional Challenges: Reliability & Economic Disparity



- FERC's *2012 State of the Market Report* identified New England "as a market particularly at risk for service disruption due to limited pipeline capacity into the region."

- "New England continues to be an area of focus" and constraints will persist.

- Winter 2013-14 Energy Market Assessment Report to the Commission, Oct. 2013



- Pipeline infrastructure constraints in New England create potential for gas supply interruption to gas-fired generators and a reliance on "back-up" fuel for reliability.

- NERC 2013-2014 Winter Reliability Assessment

Regional Challenges: Reliability & Economic Disparity



- “[P]otential gas unavailability threatens the reliability of the electric system due to the limited-capacity pipelines used to transport gas, potential gas supply interruptions, and the ‘just- in-time’ nature of the resource.”

- ISO-NE, *Strategic Planning Initiative, Addressing Gas Dependence*, July 2012

- The region’s “dependence on natural gas is poised to increase and our operational options are becoming more limited.”

- Gordon Van Welie,
Testimony Before the House Energy & Commerce Committee, Subcommittee on Energy, Mar. 19, 2013



- “New England could face significant reliability issues when natural gas-fired power generators are not able to dispatch as a result of the gas pipeline capacity constraints.”

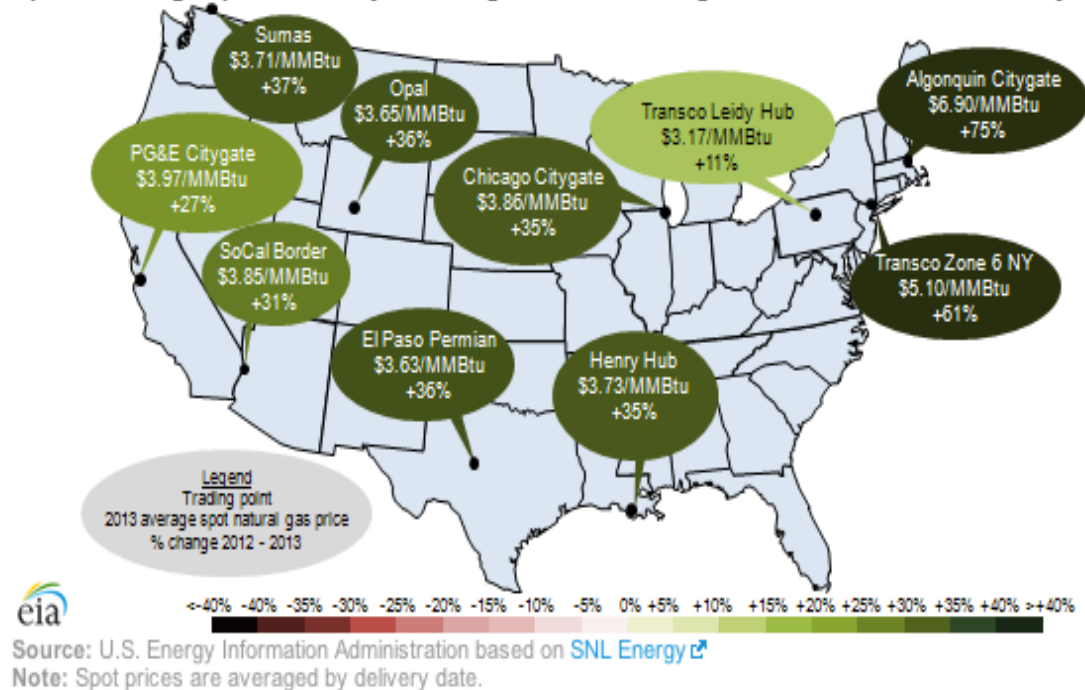
- NESCOE Phase III Study, fall 2013

Retirements of non-gas resources increase the need for greater access to natural gas supply and no/low carbon resources that provide fuel source diversity.

Regional Challenges: Reliability & Economic Disparity

- **New England has the highest natural gas prices in the U.S.**
- Spot price average over 2013 showed an **85%** basis differential – or **\$3.17/MMBtu** – between Algonquin Citygate (\$6.90/MMBtu) and Henry Hub (\$3.73/MMBtu).

Spot natural gas prices at major trading locations through December 31, 2013 delivery date



Regional Challenges: Reliability & Economic Disparity

Futures Prices in New England Soar

Source: Derived from ICE data.

[^]January and February 2014

^{*}January and February 2013

*Power Note: Prices in \$/MWh; 2013 shows Peak Fin-swap prices and 2014 shows peak future prices. SP15 peak futures for Jan and Feb 2014 have not traded yet and the price is the average of the last bid and offer.

*Gas Note: Prices in \$/MMBtu. Regional futures natural gas prices are the sum of the Henry Hub futures contract price plus the regional basis futures.

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Location	2014 [^]	2013 [*]
Massachusetts Hub	\$100.00	\$65.65
PJM Western Hub	\$44.35	\$48.00
Northwest (Mid-C)	\$37.37	\$34.58
Southern California (SP-15)	\$43.12	\$42.63
New England (Algonquin)	\$11.75	\$6.59
Mid-Atlantic (Dominion South)	\$3.66	\$3.78
Southern California Border	\$3.95	\$3.88
Henry Hub	\$3.87	\$3.77

New England power futures for Jan/Feb 2014 were more than 2x higher than the Mid-Atlantic region...

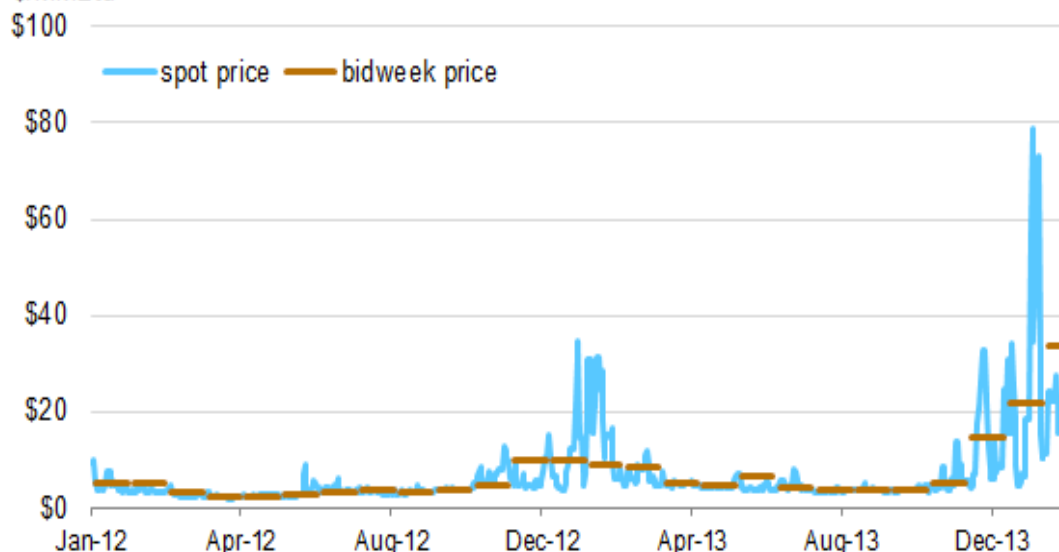
...and natural gas price futures were more than 3x higher.

Regional Challenges: Reliability & Economic Disparity

- Spot price spikes driven to a high of \$34/MMBtu in 2013, with prices in 2014 averaging \$22.53 MMBtu through 2/18/14.
- Spot prices driven to almost \$80/MMBtu as a high point.

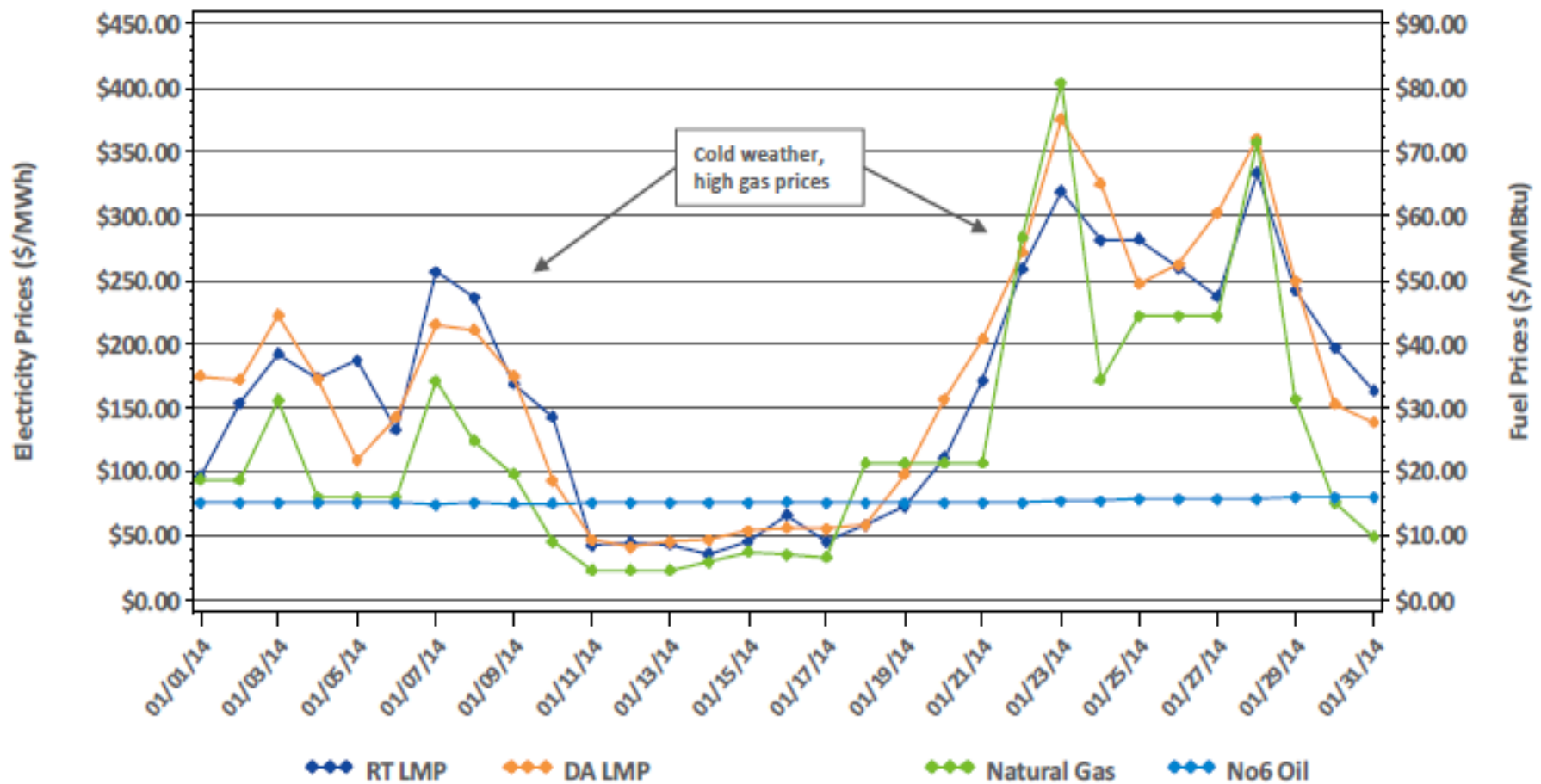
- “The high winter prices in New England suggest a natural gas delivery system that is stretched significantly.”
- *EIA, Feb. 7, 2014*
- Record high price since data tracking began in ‘01 and 50% higher than same period in 2013. - *EIA, Feb. 21, 2014*

Algonquin Citygate natural gas spot and bidweek prices
(January 1, 2012-February 18, 2014)
\$/MMBtu



Source: IntercontinentalExchange Inc.
Note: Spot prices by trade date. Bidweek prices are determined during the final three trading days of the prior month.

Daily DA and RT ISO-NE Hub Prices and Input Fuel Prices: January 1-31, 2014



Underlying natural gas data furnished by:

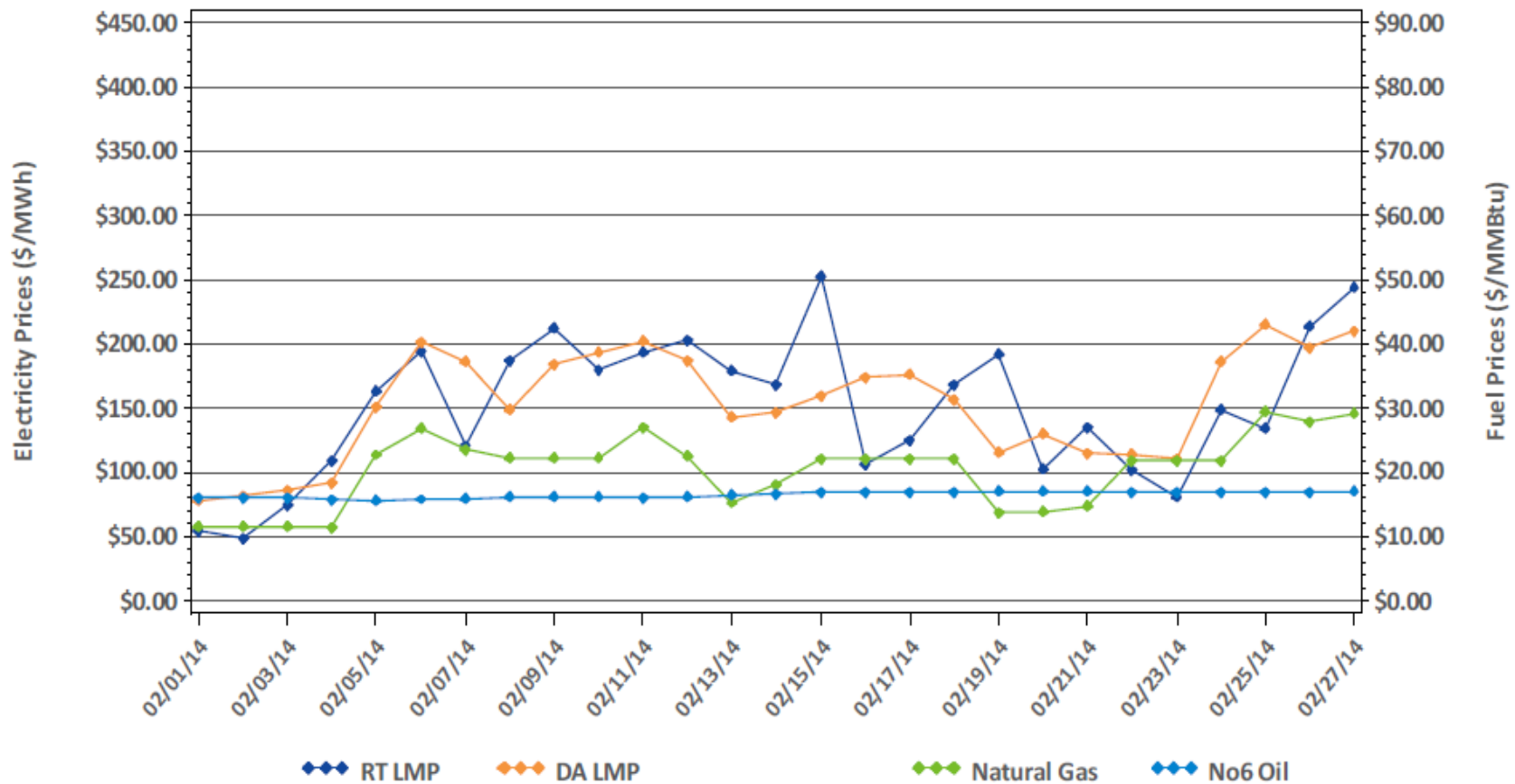


Average price difference over this period (DA-RT): \$5.93
 Average price difference over this period ABS(DA-RT): \$25.99

Average percentage difference over this period ABS(DA-RT)/RT Average LMP: 16%

Gas price is average of Massachusetts delivery points; No6 Oil is New York Spot Price from DOE's Energy Information Administration

Daily DA and RT ISO-NE Hub Prices and Input Fuel Prices: February 1-27, 2014



Underlying natural gas data furnished by:



Average price difference over this period (DA-RT): \$1.71

Average price difference over this period ABS(DA-RT): \$33.08

Average percentage difference over this period ABS(DA-RT)/RT Average LMP: 22%

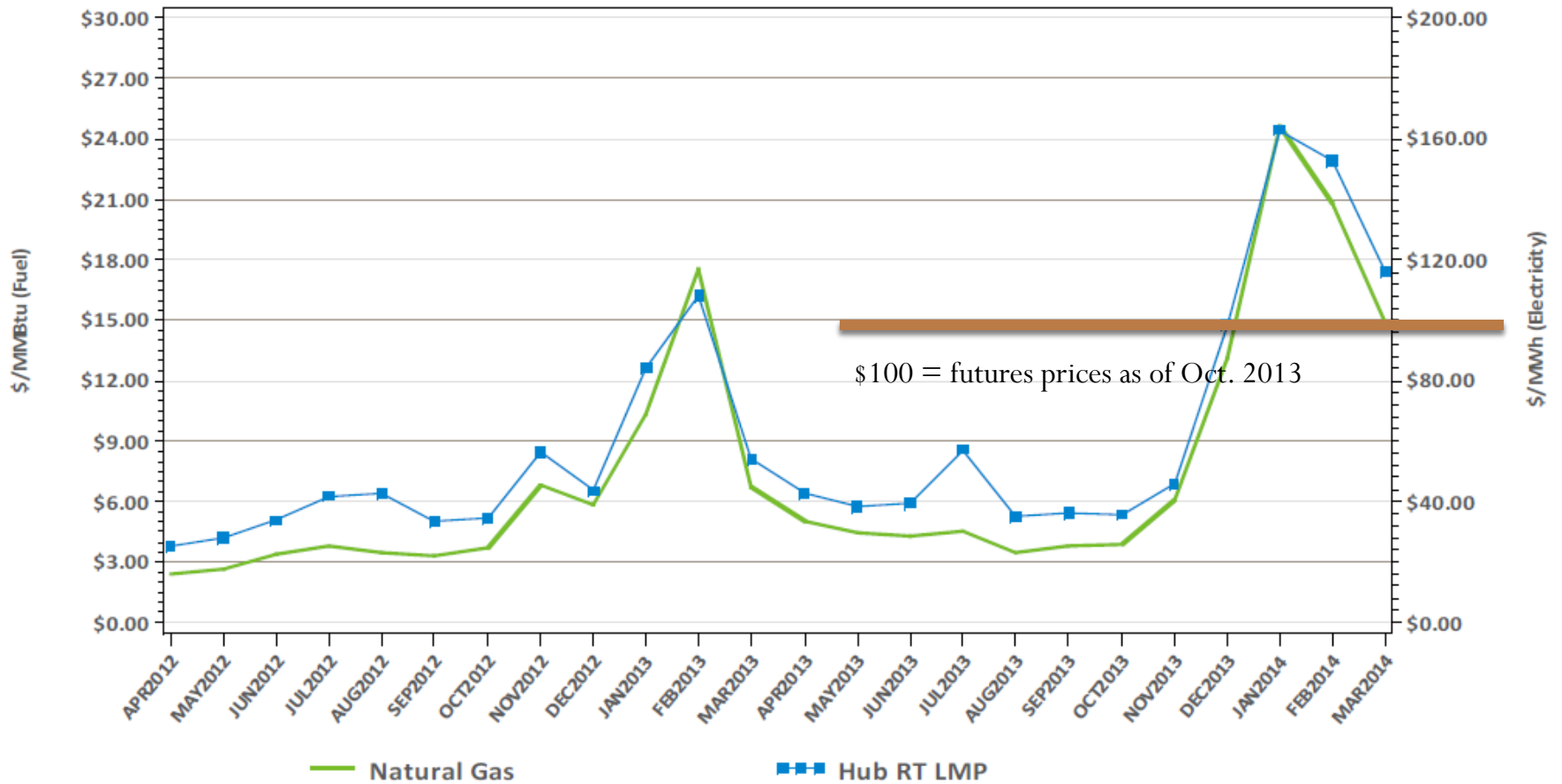
Gas price is average of Massachusetts delivery points; No6 Oil is New York Spot Price from DOE's Energy Information Administration

Winter Gas Prices Nearly Doubled in a Year



* Algonquin Citygate price, December – February average

Electricity Prices Followed Gas Prices: Monthly Average Gas Price and RT Hub LMPs

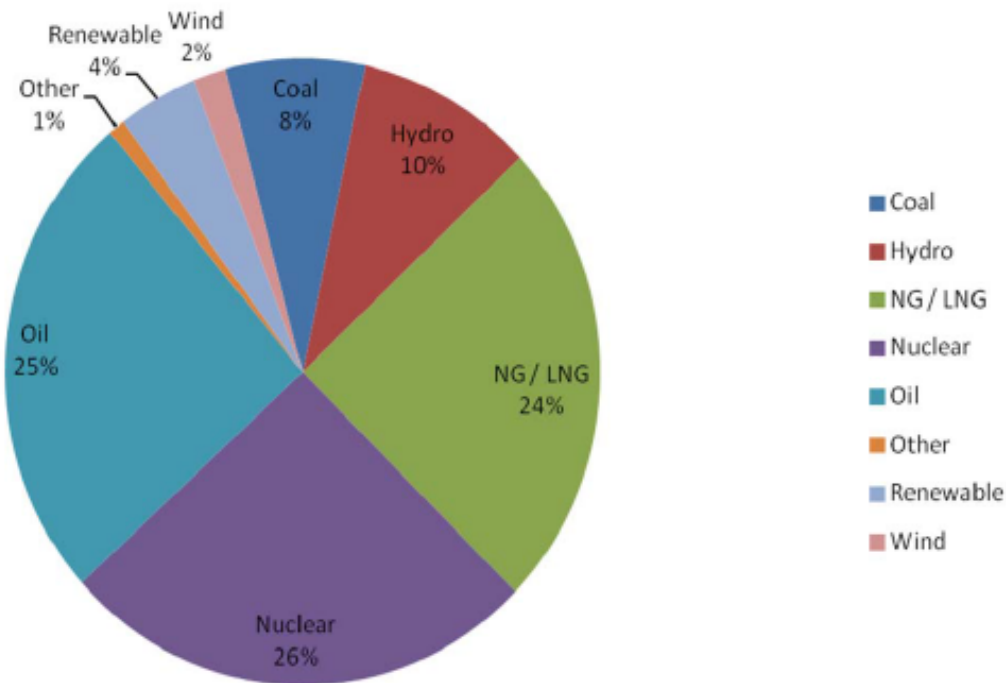


Winter 2013/2014

- Energy market costs exceeded \$5 billion this past winter.
 - Compare to \$5.2 billion...for ALL of 2012.
- 64% of average daily real-time prices were $> \$100$
 - 28% in Winter 2012/13
- For first time in a decade, average daily price exceeded \$250...not just once, but nine times!
- Winter average real time price (Hub) was \$132.10
 - Up 84.4% from Winter 2012/2013 (December through March)

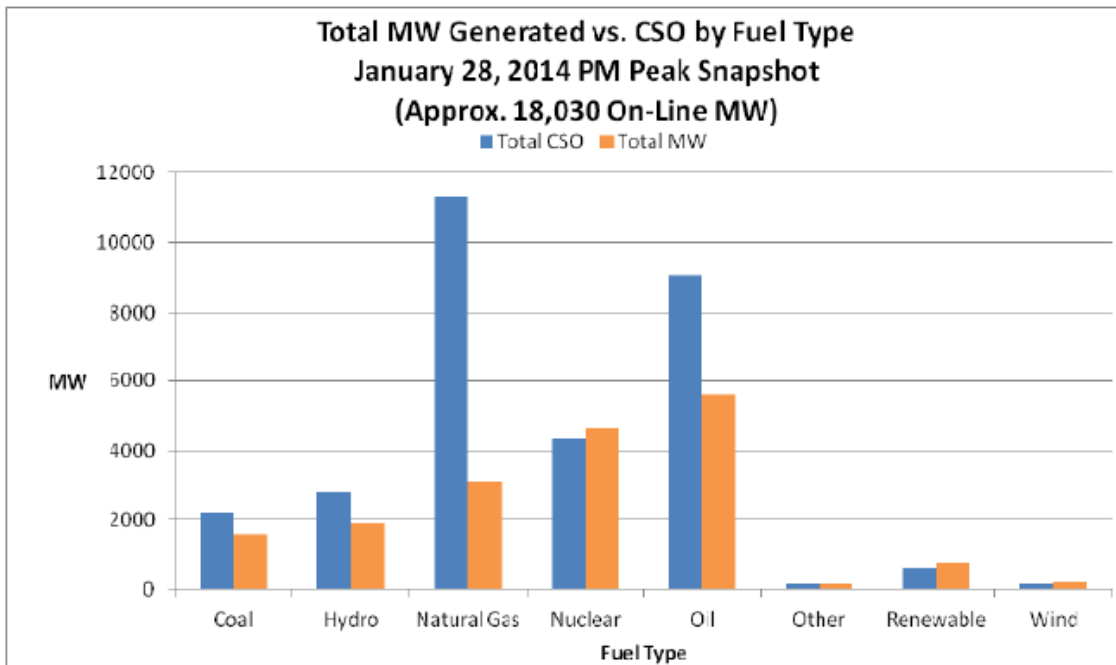
Winter 2013/2014

Average Fuel Use at 1800: 20 Jan-24 Jan 2014



- Natural gas pipeline constraints drove economics and system reliability needs.
- Oil “in the money”
- Gas prices exceeded oil prices 57% of winter days, compared to 18% in Winter 2012/13.

Winter 2013/2014



- While oil produced more energy and other assets approached capacity limits, gas units produced far less than capable.
- i.e. on one cold day, at peak, gas gens produced just 3,000 of 11,000 MW capacity

Don't just take our word for it...

Forbes



“The result is an escalating energy crisis in New England. Although the northeast has become the largest natural gas producing region in the United States, New England currently has the nation’s highest natural gas prices.”

*William Pentland,
December 5, 2013
[emphasis added]*

“We have increasing confidence that the northeast gas basis blow-out vs. Henry Hub this winter will reoccur in future years...”

“... we see an argument for continued higher gas and power prices for the ‘14/’15 winter. We see the greatest uplift to the thesis as the ‘end of the pipe’ in Boston/New England, where Algonquin prices could further expand...”

*Global Research, April 2, 2014
[emphasis added]*

New England requires a reliable, secure, and cost-competitive electric system to sustain and grow its economy

- “The challenges to grid reliability are not a question of if they will arise, but when - and when is now.”
- Gordon van Welie, CEO, ISO-NE, 2014 Regional Electricity Outlook
- *Forbes on ISO-NE's 2013/2014 Winter Program:* “The strategy was expensive and dirty, but it was probably the only reason New England avoided rolling blackouts this winter.”
- A consequence of not moving toward adequate infrastructure is keeping New England consumers in an adverse economic position relative to other consumers.
 - Example: over the weekend of 11/23/13, delivered natural gas prices at New England locations were *more than double* the prices at other northeastern locations outside of New England (PA, NJ, NY)

Market-Based Pipeline Solutions Not Meeting New England's Needs

- Gas and Electricity Markets' Term Mismatch
 - Nationally, the natural gas pipeline industry is based on long-term contractual commitments (e.g., 20-years)
 - In New England, the electric industry is based on short-term market price signals (up to seven years)
- Gas Marketers – New Infrastructure Diminishes Arbitrage
- Gas Producers – More Attractive Opportunities Elsewhere?

Recent pipeline projects in New England have had zero electric power generators subscribe for firm natural gas transportation

Spectra's AIM project was downsized from original design due to lack of subscription from 500 mmcf/day to 342 mmcf/day

Urgent Need for Action

Absent significant change...

- New England's power system will be increasingly vulnerable to electric service disruptions,
- Consumers will needlessly pay more for energy than consumers in nearby states and elsewhere, and
- Our region will remain at an unacceptable economic and competitive disadvantage to neighboring states and regions.

After lengthy and robust regional discussions of potential solutions, no other comprehensive long-term solution has emerged to move New England beyond the status quo.

Think *locally*...

- The New England states remain committed to continued, robust investment in clean energy and energy-alternative resources...
 - Energy efficiency and Least-Cost Procurement
 - Distributed Renewable Generation
 - Renewable Energy Standards
 - Utility-scale development of Renewable Energy
- Importantly, many of these investments generate local economic opportunities and create local jobs, while diversifying our fuel mix.

...but also act *Regionally*.

- The problem is too big for any one state to solve – our energy system crosses borders and is highly integrated.
- A **reliable** bulk electric system is a necessity to local health and safety, and to our shared economy.
- The New England states share common **economic, environmental, and energy goals**.
- New England is **competing** with other regions to attract new businesses and investment opportunities.

The New England Governors' Energy Infrastructure Initiative

- Make strategic, coordinated investments in regional energy infrastructure that will:
 - Improve energy system reliability;
 - Diversify our energy supply portfolio;
 - Strengthen state and regional economic competitiveness;
 - Meet common energy and environmental policy goals;
 - Increase the supply of cleaner, no-to-low carbon generation;
 - Mitigate energy price volatility; and
 - *Achieve what no single state could do on its own.*

Energy Infrastructure Initiative Scope

- These goals can be achieved through two major energy infrastructure investment strategies:
 - Expand pipeline capacity to increase natural gas supply into New England, reducing supply constraints and associated energy price volatility.
 - Expand electric transmission to facilitate utility-scale development and delivery of no-to-low carbon energy resources, such as hydroelectricity.

Expanding Natural Gas Capacity

- Drive investment in pipeline infrastructure by allowing for recovery of costs through FERC electric tariffs.
- Costs shared appropriately by the six New England states.
- Work with ISO-NE and stakeholders to develop tariff language and a structure that will ensure any new capacity will be made available in a manner that primarily benefits electricity customers.
- Tariff & cost allocation will require FERC approval.

Expanding Transmission to Facilitate Clean Energy

- The States will issue one or more coordinated RFPs to advance the development of transmission and delivery of at least 1000+ MWs of clean energy into New England.
- Infrastructure costs would be recovered through ISO-NE tariff or through merchant projects in a manner that ensures costs are shared appropriately among the states.
- Depending on procurement structure, a subset of states (directly or through their utilities) may procure the power to ensure its delivery into the region.

Incremental infrastructure is in addition to, not in lieu of, sustained, aggressive investment in energy efficiency and other clean energy resources

- Four New England states - **Massachusetts, Connecticut, Rhode Island, Vermont** - are in the top ten states nationally for energy efficiency, based on ACEEE rankings.
- This aggressive investment is reflected in New England's system planning through ISO-NE's Energy Efficiency Forecast:
 - The 2018-2023 ISO-NE EE Forecast shows MA will invest another \$3 billion over the time period for savings of at least 4.5 TWh and 605 MW.
 - The New England states together will invest \$5.7 billion for total savings of 9.1 TWh and 1.2 GW by 2023
- Further EE in development
 - New Hampshire PUC in stakeholder process exploring an Energy Efficiency Resource Standard

Similarly, the Governors' Infrastructure Initiative includes investment in no/low carbon energy consistent with New England's history of increasing the amount of clean energy in its resource mix.

Governors' Communications

Governors' Statement, December 2013

- “To ensure a reliable, affordable and diverse energy system, we need investments in additional energy efficiency, renewable generation, natural gas pipelines, and electric transmission....”
- “...advance a regional energy infrastructure initiative that diversifies our energy supply portfolio while ensuring that the benefits and costs of transmission and pipeline investments are shared appropriately among the New England States”



Request to ISO-NE for technical, related support, January 2014

- Requested assistance to advance the development of transmission infrastructure that would enable delivery of 1200 MW - 3600 MW of no and/or low carbon emissions resources into New England electric system
- Requested assistance to develop and file tariffs with FERC enabling the recovery of the cost of firm natural gas pipeline capacity and infrastructure expansion

Stakeholder Interactions To Date

- Input from New England Gas Electric Focus Group on gas level
 - Generally advised to procure higher levels than states initially identified
- Constructive informal conversations by and between stakeholders and states
- NEPOOL Participants Committee monthly updates
- Meetings with each NEPOOL Sector
 - Common Issues/Questions
 - Whether supportive or concerned about state action, generally consistent agreement that New England has a problem to solve
 - Nature of the problem: reliability & economic competitiveness
 - Markets vs. other means
 - Role of ISO-NE
- Multiple requests for NEPOOL and New England Gas-Electric Focus Group comments on gas concepts, related issues

Status of State Discussions

No/Low Carbon Resources

- ✓ Anticipate one-time solicitation for blocks of incremental transmission with power
- ✓ All states share in costs of transmission
- ✓ EDC participation in seeking & evaluating power proposals critical, in some states statutorily required
 - ✓ States developing protocols to address EDC Conflicts of Interest
- ✓ States that enter power contracts will share power costs

Natural Gas Pipeline

- ✓ Anticipate one-time solicitation for incremental capacity
- ✓ Will request proposals priced in increments of 200 mmcf/day to allow the evaluation of the cost of adding sufficient increments of additional capacity to achieve levels of at least 1bcf above 2013 levels.
- ✓ Seek input on and alternatives to concepts the states have set out

Cost Allocation on Transmission, Pipeline

Still talking, anticipate consensus view in the near-term

Natural Gas Pipeline Development Concept

- On multiple occasions and in several forums, the New England states have sought comment on concepts through which to develop incremental gas pipeline for electric power system reliability.
- States heard from about 20 stakeholders by end of May 2014
- Among other items, the states have solicited for comments on:
 - Amount of natural gas needed for system reliability;
 - Characteristics of contracting entity and capacity manager to best serve electric customers and minimize transaction costs
 - Alternative configurations and structural means to minimize market distortions
 - Specific proposals offered by stakeholders
 - Specific going-forward market adjustments that would eliminate the need for state action to ensure reliability and economic competitiveness

Next Steps

- ✓ States presented a proposal on the tariff approaches for incremental transmission and natural gas pipeline to NEPOOL on June 20th
 - ✓ Stakeholder discussions to continue over the summer
 - ✓ Looking toward a potential September NEPOOL vote
 - ✓ FERC filing with stakeholder input process thereafter
- ✓ Request for Further Information on (Pipeline) Capacity Management, Other Concepts and Counterparty Interest
- ✓ RFP draft and approach to be released for public comment
- ✓ Once RFP issued proposals to be evaluated for cost effectiveness before final consideration
- ✓ Stakeholder input and dialogue on needed market changes sought
- ✓ The states continue to welcome comments, and any other input, at:
RegionalInfrastructure@nescoe.com