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**Sent:** Thursday, April 10, 2014 10:32 AM

**To:** Katie Dykes; Scott, Robert; Meredith Hatfield; Welch, Thomas L; Woodcock, Patrick C; Marion Gold; Chris Recchia; Clarke, Steven (ENE); Kates-Garnick, Barbara (ENV); Sylvia, Mark (ENE); Ann Berwick; Margaret Curran

**Cc:** Heather Hunt; Ben D'Antonio; Birud Jhaveri; Ed McNamara; George McCluskey; Nick Ucci; Alexander Speidel; Eric Jacobi; Tracy Babbidge; Mark Quinlan; Snook, Robert D.; Jeff Bentz; Allison Smith; Dorothy Capra; todd.bianco@puc.ri.gov; Jason Marshall

**Subject:** Background docs; Qs for Monday

Please find the following documents attached, per prior GIG discussions:

1) **Summary of some regional dialogue opportunities on infrastructure challenges and opportunities:** This list is in the near term for your state's reference and use as you interact with anyone interested in process opportunities. If we missed anything significant, please let us know. We'll circulate a revision. At some point, the content may be useful in the context of a filing. Your state may have state-specific processes as well, which you could refer to in any dialogue in or about your state.

2) **Summary of some environmental implications of natural gas use.**

A third document on economic implications is in process.

3) A list of **questions** from NEPOOL's **Supplier Sector for Monday's meeting** in Boston.

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**New England States  
Committee on Electricity**

**To: GIG**  
**From: NESCOE (contact: Heather Hunt)**  
**Date: April 10, 2014**  
**Subject: Discussion Opportunities Related to Infrastructure Challenges  
and Potential Solutions**

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As discussed, ISO-NE, and New England states and stakeholders have long discussed in a wide range of venues issues associated with infrastructure challenges and potential solutions. This memo summarizes some of the primary regional matters, with some narrative to provide context, which encouraged, enabled and informed state and stakeholder dialogue.

**ISO-NE ACTIVITIES AND RELATED NEPOOL STAKEHOLDER DISCUSSION  
ON CHANGES TO ADDRESS GAS-ELECTRIC RISKS AND ISSUES**

- ***ISO-NE Studies 2001- 2012***
  - ISO-NE began studying gas-electric risks in 2001, initiating a series of studies from 2001-2004 regarding the interstate pipeline system's capability to serve local gas company distribution (LDC) customers while at the same time meeting growing demand from natural gas-fired generators. In 2012, ISO-NE published a study that assessed the quantity of incremental gas system supply needed for the electric power system.
- ***2004 Winter Cold Snap***
  - Lack of firm gas and pipeline capacity limitations cited as central factors for system operational events and high gas prices during the January 2004 cold snap.<sup>1</sup>
  - FERC investigated pipelines into New England and eastern Canada and offered a number of recommendations, primarily around coordination between the gas and electric markets and potential market mechanisms.<sup>2</sup>
- ***Strategic Planning Initiative***

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<sup>1</sup> ISO New England Inc., Market Monitoring Department, Final Report on Electricity Supply Conditions in New England During the January 14-16, 2004 "Cold Snap," Oct. 12, 2004.

<sup>2</sup> FERC, Investigation of New England Gas-Electric Market Events, Jan. 13-16, 2004, presented to the New England Conference of Public Utility Commissioners, May 24, 2004.

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- As part of its Strategic Planning Initiative, ISO-NE identified an increased reliance on natural gas for electric fuel generation as a risk to reliable system operations due to potential gas unavailability. See ISO-NE Strategic Planning<sup>3</sup> web site for dates and ranges of early issue identification and analysis, as well as whitepapers and other materials. In 2011, ISO-NE began discussing the Strategic Planning Initiative with states and stakeholders.

In furtherance of the gas-electric challenges ISO-NE has identified, ISO-NE, New England stakeholders, through NEPOOL, and states have discussed at length electric market-related solutions. The following are those solutions that, after regional discussion and applicable FERC approval, ISO-NE has implemented:

1. Improved communication on maintenance/outage scheduling and pressure restrictions between gas pipeline and ISO-NE.
2. Requirement that generators submit information to ISO-NE on their fuel status.
3. Moving Day-Ahead Market and the Reserve Adequacy Assessment timelines forward.
4. Implementation of rule changes that encourage better unit availability during scarcity conditions.
5. The 2013/2014 Winter Program, which made payments to certain oil and dual fuel capable units to maintain oil inventory levels and maintain oil-burning capabilities, as well as payments to certain demand response resources .
6. Allowing generators to submit bids based on two fuels if the generator is dual fuel capable.
7. Changing certain mitigation methodology so that generators can reflect price risk in their offers.

Similarly, after regional discussion, those solutions that are planned or in-progress as of the spring 2014 include:

1. Disclosure of generation output to pipelines.
2. Allowing generators to reoffer hourly during the intraday period and to allow for variable offer curves (collectively energy market offer flexibility).
3. Changes in cost allocation to encourage more commitment in the day-ahead energy market.
4. Changing certain mitigation methodology and consultation deadlines.
5. Implementation of ISO's Performance Incentive proposal, NEPOOL's EFORD proposal, currently pending at FERC, or other proposed alternatives as may be ordered by FERC.

The gas industry has also implemented, or is on a path to implement, system and/or

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<sup>3</sup> [http://www.iso-ne.com/committees/comm\\_wkgrps/strategic\\_planning\\_discussion/materials/index.html](http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/index.html)

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gas market-related solutions including:

1. Communication on maintenance/outage scheduling and pressure restrictions between gas pipelines and the ISO-NE.
2. Pipeline nomination flexibility that reflects enhancements including hourly rights.
3. Public posting of information regarding pipeline capacity status and restrictions.
4. Availability of LNG imports during the winter of 2013/2014 subject to commercial restrictions.
5. Continued cooperation between the gas industry and generators concerning explanation of restriction points and potential input sources to avoid bottlenecks.
6. Continued use of line pack by pipelines to provide transportation services to the region.
7. Active pipeline expansion proposals that have been proposed by Algonquin, Tennessee and PNGTS that would add capacity to the region.
8. Availability of “negotiated rate” arrangements that offer substantial flexibility to pipelines and their customers.

While these solutions assist in addressing gas constraint-related power system reliability, they have not, individually or collectively, fundamentally solved New England’s operational challenges or the economic disparity between New England consumers and consumers in other regions.

### **FERC TECHNICAL CONFERENCES (DOCKET NOS. AD 12-12 AND AD14-8) AND RELATED SUBJECT MATTER DOCKETS (ER 13-356, EL 13-66, ER13-1877, RM 13-17, PF 13-16, ER 13-1851, ER 13-2266)**

New England state officials have participated in and otherwise monitored FERC-sponsored technical conferences on gas-electric challenges, including the conference held in Boston, Massachusetts on August 20, 2012. NESCOE has submitted a series of comments to FERC in connection with gas-electric matters:

- NESCOE Comments to FERC<sup>4</sup> - March 2012
- NESCOE Letter to FERC<sup>5</sup> - August 2012
- NESCOE Comments to FERC<sup>6</sup> - November 2012
- NESCOE Comments to FERC<sup>7</sup> - June 2013
- NESCOE Comments to FERC<sup>8</sup> - July 2013
- NESCOE Comments to FERC<sup>9</sup> - August 2013

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<sup>4</sup> [http://www.nescoe.com/uploads/GasvElectric\\_30March2012.pdf](http://www.nescoe.com/uploads/GasvElectric_30March2012.pdf)

<sup>5</sup> [http://www.nescoe.com/uploads/Letter\\_RE\\_Gas-Electric\\_Conference.pdf](http://www.nescoe.com/uploads/Letter_RE_Gas-Electric_Conference.pdf)

<sup>6</sup> [http://www.nescoe.com/uploads/Info\\_Policy\\_ER13-356\\_Nov\\_21\\_12.pdf](http://www.nescoe.com/uploads/Info_Policy_ER13-356_Nov_21_12.pdf)

<sup>7</sup> [http://www.nescoe.com/uploads/NEPGA\\_complaint\\_comments\\_EL13-66\\_6-21-13.pdf](http://www.nescoe.com/uploads/NEPGA_complaint_comments_EL13-66_6-21-13.pdf).

<sup>8</sup> [http://www.nescoe.com/uploads/Offer\\_Flexibility\\_as\\_filed\\_July\\_22\\_2013.pdf](http://www.nescoe.com/uploads/Offer_Flexibility_as_filed_July_22_2013.pdf).

<sup>9</sup> [http://www.nescoe.com/uploads/Gas-Elec\\_Comm\\_RM13-17\\_8-26-13.pdf](http://www.nescoe.com/uploads/Gas-Elec_Comm_RM13-17_8-26-13.pdf)

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- NESCOE Letter to FERC<sup>10</sup> - December 2013
- NESCOE Comments to FERC<sup>11</sup> - July 2013, August 2013 and September 2013

Additional FERC technical conferences on gas-electric challenges include:

- February 2013 (information sharing and communications)
- April 2013 (gas and electric market scheduling)
- May 2013 (special Commission meeting on gas and electric market coordination)
- October 2013 (RTO/ISO presentation to Commission)
- April 2014 (impacts of recent cold weather events on RTOs/ISOs)

### NEW ENGLAND GAS-ELECTRIC FOCUS GROUP

The New England Gas-Electric Focus Group was established to provide an open regional forum where members from the gas and electric industries, state officials, ISO-NE representatives, and other interested stakeholders could share information, further discuss and identify regional challenges and explore potential solutions. The Focus Group was led by Tri-Chairs representing the gas and electric industries and the states. The Focus Group met regularly from October 2012 through May 2013 and on an as-needed basis thereafter. Several ISO-NE and other measures were implemented during the course of the Focus Group's meetings, none of which fundamentally solved the challenge at issue. Several other potential solutions that require further analysis were identified. The Focus Group did not arrive at consensus in relation to any particular long-term solution to the region's gas-electric challenges.

The Gas-Electric Focus Group was also the regional forum through which NESCOE shared information with interested stakeholders in connection with the Black & Veatch *Gas-Electric Study* described below. NESCOE discussed each phase of the three-phase study with stakeholders at Focus Group meetings in January 2013, February 2013, April 2013, May 2013, and October 2013, including the New England states' written observations<sup>12</sup> in connection with the study's ultimate findings.

NESCOE invited stakeholders to provide written comments on the study. Two natural gas pipelines<sup>13</sup>, a hydroelectricity importer<sup>14</sup>, and a regional natural gas industry trade association<sup>15</sup> provided written comments on aspects of the study, including input assumptions and the cost and benefit analysis.

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<sup>10</sup> [http://www.nescoe.com/uploads/AIM\\_Comments\\_PF13-16\\_12-20-13.pdf](http://www.nescoe.com/uploads/AIM_Comments_PF13-16_12-20-13.pdf)

<sup>11</sup> [http://www.nescoe.com/uploads/Winter\\_Program\\_July\\_19\\_2013.pdf](http://www.nescoe.com/uploads/Winter_Program_July_19_2013.pdf) and [http://www.nescoe.com/uploads/Comments\\_ER13-1851-001\\_19Aug2013.pdf](http://www.nescoe.com/uploads/Comments_ER13-1851-001_19Aug2013.pdf) and [http://www.nescoe.com/uploads/Winter\\_13\\_14\\_ER13-2266\\_9-9-13-1.pdf](http://www.nescoe.com/uploads/Winter_13_14_ER13-2266_9-9-13-1.pdf)

<sup>12</sup> [http://www.nescoe.com/uploads/Notice\\_of\\_Issuance\\_G-E\\_Study\\_Sept\\_9\\_2013.pdf](http://www.nescoe.com/uploads/Notice_of_Issuance_G-E_Study_Sept_9_2013.pdf)

<sup>13</sup> [http://www.nescoe.com/uploads/Tennessee\\_Letter\\_October\\_2013.pdf](http://www.nescoe.com/uploads/Tennessee_Letter_October_2013.pdf) and [http://www.nescoe.com/uploads/Spectra\\_Ltr\\_to\\_NESCOE\\_re\\_Gas\\_Electric\\_Study\\_10172013.pdf](http://www.nescoe.com/uploads/Spectra_Ltr_to_NESCOE_re_Gas_Electric_Study_10172013.pdf)

<sup>14</sup> [http://www.nescoe.com/uploads/HQUS\\_on\\_Gas-Elec\\_11\\_06\\_2013.pdf](http://www.nescoe.com/uploads/HQUS_on_Gas-Elec_11_06_2013.pdf)

<sup>15</sup> [http://www.nescoe.com/uploads/NGA\\_letter\\_to\\_NESCOE\\_on\\_gas\\_phase\\_3\\_10-16-13.pdf](http://www.nescoe.com/uploads/NGA_letter_to_NESCOE_on_gas_phase_3_10-16-13.pdf)

As noted in the *New England Governors' Commitment to Regional Cooperation on Energy Infrastructure Issues* statement, dated December 2013 and discussed below, the New England states have arrived at a consensus point of view that New England needs to advance new energy infrastructure. In January 2014, NESCOE issued a written notice to Focus Group participants to submit data or analysis relative to the level of incremental pipeline capacity needed to address the region's challenges. The New England states indicated at that time that they are currently working together on potential mechanisms to facilitate infrastructure development that would help diversify the region's fuel resource mix, enhance reliability and help advance carbon reduction goals. The Focus Group discussed the content of the Governors' solution concepts in February 2014.

The Focus Group issued a Final Report<sup>16</sup> on March 28, 2014, and will convene as needed on a going forward basis.

## **NESCOE GAS-ELECTRIC STUDY**

In the fall of 2012, NESCOE commissioned Black & Veatch to conduct a study of New England's gas-electric challenges. The study concluded in September 2013. The *Gas-Electric Study* examined the adequacy of New England's natural gas infrastructure to meet the growing needs of the electric generation sector and analyzed the relative costs and benefits of various solutions that could alleviate natural gas pipeline congestion. The *Gas-Electric Study* occurred in three phases, as follows:

- Phase I Report<sup>17</sup> - December 2012
- Phase II Report<sup>18</sup> - April 2013
- Phase III Report<sup>19</sup> - September 2013

In Phase I, *Natural Gas Infrastructure & Electric Generation: A review of issues facing New England*, Black & Veatch reviewed existing studies and concluded that New England's natural gas infrastructure will become increasingly stressed as regional demand for natural gas grows, leading to infrastructure inadequacy at key locations.

In Phase II, Black & Veatch analyzed the extent and duration of historical and forecasted natural gas congestion. Black & Veatch concluded that with the existing and planned natural gas infrastructure, significant portions of New England would experience infrastructure constraints lasting for more than thirty days in the relatively near future. In consultation with states, Black & Veatch designed an economic analysis of the natural gas and electricity market interactions using computer simulation modeling and cost-of-service cost estimation techniques.

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<sup>16</sup> [http://www.nescoe.com/uploads/NEGas-ElectricFocusGroup\\_FinalReport\\_31Mar2014.pdf](http://www.nescoe.com/uploads/NEGas-ElectricFocusGroup_FinalReport_31Mar2014.pdf)

<sup>17</sup> [http://www.nescoe.com/uploads/Phase\\_I\\_Report\\_12-17-2012\\_Final.pdf](http://www.nescoe.com/uploads/Phase_I_Report_12-17-2012_Final.pdf)

<sup>18</sup> [http://www.nescoe.com/uploads/Phase\\_II\\_Report\\_FINAL\\_04-16-2013.pdf](http://www.nescoe.com/uploads/Phase_II_Report_FINAL_04-16-2013.pdf)

<sup>19</sup> [http://www.nescoe.com/uploads/Phase\\_III\\_Gas-Elec\\_Report\\_Sept.\\_2013.pdf](http://www.nescoe.com/uploads/Phase_III_Gas-Elec_Report_Sept._2013.pdf)

In Phase III, *Natural Gas Infrastructure and Electric Generation: Proposed Solutions for New England*, Black & Veatch estimated the costs and benefits associated with various gas and electric supply and demand-side solutions under three future scenarios: a Base Case (most likely outcome based on current outlooks at the time), a High Demand Scenario (increased gas use through market and policy drivers), and a Low Demand Scenario (flat or declining gas use across all sectors).

Upon completion of the *Gas-Electric Study*, NESCOE issued a *Notice of Issuance*, which included some principles that may provide guidance on the way forward and states' observations on the study's results.<sup>20</sup> For example, the New England states observed that an *additional* hypothetical pipeline, beyond that in process toward commercial operation, provides the most substantial economic net benefits to electricity consumers of all solutions studied under the Base Case and the High Demand Case. The states also observed that the actual costs of incremental hydroelectric imports are unknown absent a competitive process to identify a fixed bid price, a negotiated price in relation to a specific project, or an actual project advancing to operation. The states further observed that the competitive wholesale market is not designed to help further state public policy objectives, such as emissions reductions and clean energy deployment, and thus states have generally executed those objectives or requirements through programs outside of the regional wholesale competitive market. Finally, the states noted that the competitive wholesale electricity markets' economic incentives provided to generators today are unlikely to support long-term infrastructure development. There is no evidence that current proposals to modify the competitive wholesale electricity market would result in incentives to support long-term infrastructure development.

In the *Notice of Issuance*, the states observed that adequate infrastructure influences consumer costs, and so timeliness in achieving infrastructure adequacy, whether through decreased demand or increased resources, matters. The states indicated that in the fall of 2013, the states would consider the path forward in light of the results of the *Gas-Electric Study*.

NESCOE presented the *Gas-Electric Study* results to New England Governors in September 9, 2013.<sup>21</sup>

NESCOE presented the study to the New England Gas-Electric Focus Group on multiple occasions, including in January 2013, February 2013<sup>22</sup>, April 2013<sup>23</sup>, May 2013, and October 2013. NESCOE also presented the results to various other stakeholder groups between April 2013 and December 2013, including: ISO-NE Consumer Liaison Group, Industrial Energy Consumers Group, Law Seminars International/Energy in the Northeast, Platts Northeast Energy Markets Conference, NECA Fuels Conference,

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<sup>20</sup> [http://www.nescoe.com/uploads/Notice\\_of\\_Issuance\\_G-E\\_Study\\_Sept\\_9\\_2013.pdf](http://www.nescoe.com/uploads/Notice_of_Issuance_G-E_Study_Sept_9_2013.pdf)

<sup>21</sup> [http://www.nescoe.com/uploads/Quebec\\_slides\\_Sept\\_5\\_13\\_FINAL.pdf](http://www.nescoe.com/uploads/Quebec_slides_Sept_5_13_FINAL.pdf)

<sup>22</sup> [http://www.nescoe.com/uploads/NESCOE\\_GasStudyUpdate\\_FG\\_2.26.13.pdf](http://www.nescoe.com/uploads/NESCOE_GasStudyUpdate_FG_2.26.13.pdf)

<sup>23</sup> <http://www.nescoe.com/uploads/PhIIGasStudyUpdateApril192013.pdf>



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Business Council on Sustainable Energy, Restructuring Roundtable, and the Northeast International Committee on Electricity.

**NESCOE INCREMENTAL HYDRO IMPORTS WHITEPAPER**<sup>24</sup>, September 2013  
and **BLACK & VEATCH HYDRO IMPORTS ANALYSIS**<sup>25</sup>, November 2013

To inform the Governors' interest in considering issues associated with the potential to increase hydropower imports, NESCOE produced an *Incremental Hydro Imports Whitepaper* (the Whitepaper). The Whitepaper described the current New England and eastern Canadian Provinces' power systems, including both supply and transmission, and summarized relevant market rules and issues to provide a context for the analysis of hydroelectric imports. The Whitepaper observed some potential risks and benefits associated with increasing hydroelectric imports into the New England region. It also identified a range of potential approaches for policymakers' consideration, together with potential illustrative advantages and disadvantages of each.

NESCOE also commissioned Black & Veatch to produce the *Hydro Imports Analysis*, which provides a high-level view of economic and environmental impacts associated with hypothetical incremental hydro import levels. NESCOE's *Gas-Electric Study* examined hydropower as a potential solution, and this further analysis, along with NESCOE's *Incremental Hydro Imports Whitepaper*, was an additional piece of information. These and other studies, data and information produced by ISO-NE, individual states and market participants were available to inform policymakers' consideration of issues related to power system reliability, natural gas congestion and states' environmental objectives. The *Hydro Imports Analysis* was not a resource plan. The actual cost of incremental hydroelectric imports is unknown absent a competitive process to identify a fixed bid price, a negotiated price in relation to a specific project, or an actual project advancing to operation. Moreover, the actual cost of hydroelectric imports may be influenced by New England's electricity market prices, which may in turn be influenced by a number of factors *not* assessed in the analysis, such as natural gas supply and prices. Accordingly, the *Hydro Imports Analysis* did not present annual carrying costs associated with the hypothetical incremental transmission configurations and imported hydro supply.

NESCOE reviewed its hydro work together with presentations on its *Gas-Electric Study* to the New England Governors/Eastern Canadian Premiers, the Consumer Liaison Group, the New England Gas-Electric Focus Group, Law Seminars International – Energy in the Northeast Conference, NECA Fuels Conference, the Business Council for Sustainable Energy, the Restructuring Roundtable on Gas-Electric Challenges, and the Industrial Energy Consumer Group.

## NEW ENGLAND GOVERNORS INFRASTRUCTURE STATEMENT

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<sup>24</sup>[http://www.nescoe.com/uploads/Incremental\\_Hydropower\\_Imports\\_Whitepaper\\_Sept.\\_2013.pdf](http://www.nescoe.com/uploads/Incremental_Hydropower_Imports_Whitepaper_Sept._2013.pdf)

<sup>25</sup>[http://www.nescoe.com/uploads/Hydro\\_Imports\\_Analysis\\_Report\\_01\\_Nov\\_2013\\_Final.pdf](http://www.nescoe.com/uploads/Hydro_Imports_Analysis_Report_01_Nov_2013_Final.pdf)



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Each of the New England Governors have observed New England's gas-electric challenges and the consequences of inadequate infrastructure, as evidenced in both the substantial operational-related information ISO-NE has produced and in the adverse economic consumer implications documented by the U.S. Energy Information Administration (EIA) and widely reported in the media. As noted above, New England Governors' representatives followed closely and participated in discussion of the range of potential solutions discussed by ISO-NE, NEPOOL, and the New England Gas-Electric Focus Group.

The New England Governors have also had available a variety of data and studies, including each phase of NESCOE's *Gas-Electric Study* and hydro information, which was presented to the Governors at the New England Governors/Eastern Canadian Premiers Annual Meeting in Quebec in September 2013.<sup>26</sup>

In the fall of 2013, NESCOE indicated in its *Notice of Issuance* of the *Gas-Electric Study* that because adequate infrastructure influences consumer costs, timeliness in achieving infrastructure adequacy matters. The notice further indicated that states would consider the path forward in light of the results of the *Gas-Electric Study*.

In September 2013, the New England Governors and Eastern Canadian Premiers adopted Resolution 37-1, in which they jointly recognized the work underway to address New England's natural gas supply issues and incremental low-carbon import opportunities.<sup>27</sup> In that Resolution, the Governors and Premiers affirmed support for regionally coordinated competitive procurement processes and directed the Northeast Committee on Energy (NICE) to information share and explore means to verify environmental attributes of incremental imports.

Pursuant to that direction, representatives of the New England Governors and Eastern Canadian Premiers, through NICE, have met on numerous occasions in 2013 and 2014 to share information about NESCOE studies, described above, and to explore environmental attribute verification.

In December 2013, the New England Governors issued a Statement that set forth preferred solutions to New England's gas-electric challenges, in the form of concepts requiring further discussion and development.<sup>28</sup> In January 2014, the New England Governors, through NESCOE, sent a letter to ISO-NE requesting various technical assistance associated with such solutions as NESCOE begins furthering the Governors' common interests in cooperation with ISO-NE and stakeholders.<sup>29</sup> The New England states further indicated that they will work with ISO-NE and NEPOOL to advance the states' shared objectives.

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<sup>26</sup> [http://www.nescoe.com/uploads/Quebec\\_slides\\_Sept\\_5\\_13\\_FINAL.pdf](http://www.nescoe.com/uploads/Quebec_slides_Sept_5_13_FINAL.pdf)

<sup>27</sup> <http://www.cap-cpma.ca/images/ECP%20Documents/NEG-ECP%20Resolution%2037-1%20Energy%20EN.PDF>

<sup>28</sup> [http://www.nescoe.com/uploads/New\\_England\\_Governors\\_Statement-Energy\\_12-5-13\\_final.pdf](http://www.nescoe.com/uploads/New_England_Governors_Statement-Energy_12-5-13_final.pdf)

<sup>29</sup> [http://www.nescoe.com/uploads/RequestISO-NEassistanceTransGas\\_21Jan2014.pdf](http://www.nescoe.com/uploads/RequestISO-NEassistanceTransGas_21Jan2014.pdf)

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Through NESCOE, the New England Governors solicited from New England stakeholders input on, or alternatives to, the solution concepts in the Governors' statement including, for example, the following:

- Request for feedback on or alternatives to Governors' solution concepts from the NEPOOL Participants Committee at meetings in January, February, March<sup>30</sup> and April 2014.
- Written request to New England Gas-Electric Focus Group participants for information on the adequacy of increased levels of gas pipeline capacity, January 2014.<sup>31</sup> Twelve participants responded.<sup>32</sup>
- Written communication to NEPOOL Sectors concerning solution inputs and alternatives, March 2014.<sup>33</sup>
- State/NEPOOL sector meetings on Governors' solution concepts (transmission, generation, alternative resource sectors) on March 31, 2014 and (end user, public power, supplier sectors) on April 14, 2014.

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<sup>30</sup> [http://www.nescoe.com/uploads/RegionalInfrastructure\\_UpdateToNEPOOL\\_3-7-14.pdf](http://www.nescoe.com/uploads/RegionalInfrastructure_UpdateToNEPOOL_3-7-14.pdf)

<sup>31</sup> [http://www.nescoe.com/uploads/RequestFocusGroupInfoonGasLevels\\_27Jan2014.pdf](http://www.nescoe.com/uploads/RequestFocusGroupInfoonGasLevels_27Jan2014.pdf)

<sup>32</sup> [http://www.nescoe.com/Regional\\_Infrastructure.html](http://www.nescoe.com/Regional_Infrastructure.html)

<sup>33</sup> [http://www.nescoe.com/uploads/LettertoNEPOOLonInfrastructure\\_27Mar2014.pdf](http://www.nescoe.com/uploads/LettertoNEPOOLonInfrastructure_27Mar2014.pdf)

**New England States  
Committee on Electricity**

**To: GIG**  
**From: NESCOE (contact: Allison Smith)**  
**Date: April 10, 2014**  
**Subject: Some Environmental Data Points In Connection with Natural Gas**

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The following list summarizes some of the environmental implications related to existing gas supply constraints and outlines certain environmental benefits from increased utilization of gas-fired electric generation. This list is not exhaustive.

- Lower emissions than coal, oil
  - As coal plants and oil plants retire, that energy and capacity must be replaced. Gas plants have lower SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> emissions during power production than coal or oil generating plants.
  - As described further below, power generation during the winter of 2013-2014 used 2,700,468 barrels of distillate fuel oil, which has 37% more CO<sub>2</sub> per kWh than natural gas.<sup>1</sup> Burning oil instead of natural gas this past winter resulted in approximately 372,000 tons of *additional* CO<sub>2</sub> emissions from the New England power sector.
- Oil-fired electric generation supplied significantly more power generation in January-February 2014 than previous winters due to gas pipeline constraints:
  - Over the last fourteen years, energy production from oil-fired generators in New England decreased significantly from 22% of energy produced in 2000 to 0.6% energy produced in 2012.
    - Partially as a result of this, SO<sub>2</sub> and NO<sub>x</sub> emissions in the region have declined by over 60% from 2000 levels. CO<sub>2</sub> is also down 12% in the region.
  - January 7, 2014 and January 20-24, 2014: oil-fired generators supplied 25% of power consumed on peak.
  - Oil generators supplied 13-15% of total electricity generated in January and February 2014.
- Most efficient fossil fuel plants

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<sup>1</sup> Winter Program oil usage figures from April 4, 2014 ISO-NE Chief Operating Officer's report to NEPOOL Participants Committee, at 138, available at [http://www.nepool.com/uploads/NPC\\_20140404\\_Composite5.pdf](http://www.nepool.com/uploads/NPC_20140404_Composite5.pdf). Emissions factors of generating electricity with fossil fuels from U.S. Energy Information Administration, available at <http://www.eia.gov/tools/faqs/faq.cfm?id=74&t=11>.

## **DRAFT CONFIDENTIAL FOR DISCUSSION**

- The newest, most efficient baseload power generators are natural gas. Gas plants generate more MWhs per BTU of energy consumed than coal or oil plants.
- Older, oil-fired power plants more frequently experience complications such as:
  - Delayed start-up times in cold weather
  - Mechanical failures
  - Emission restrictions
- Less long-term risk than nuclear generators
  - Gas generators do not create the waste and storage issues that nuclear power does.
- Flexible resource to back up variability of wind, solar, demand response
  - Because wind and solar are variable energy resources, the power system needs to be able to respond quickly to changes in output of these generators.
  - Gas power plants can quickly increase and decrease power production to meet the electricity demand when intermittent solar and wind resources reduce output.
- Newer, natural gas generators can be operated as baseload and flexible resources. When fuel availability challenges are addressed gas generators are a more reliable source of power, compared to older oil and coal units.
- Domestic fuel
  - Significant portions of natural gas are produced in the eastern United States, rather than imported by barge from South America or the Middle East.
  - Lower fuel consumption (and associated emissions) in transporting domestically sourced natural gas to New England power generators, compared with other fossil fuel sources.

## **Supplier Sector Questions Regarding the Governors' Infrastructure Initiative**

New England States meeting with the NEPOOL Supplier Sector

April 14, 2014

### **Increased Natural Gas Pipeline Capacity**

#### ***General Thematic Questions***

- Have the states evaluated other alternatives in lieu of building/expanding pipeline capacity?
- Is developing a natural gas pipeline network the most cost effective solution to address the problem of 14 or so days of peak load?

#### ***Questions Related to General Project Structure***

- Please clarify what you hope to achieve with the expansion of pipeline capacity. Is this to ensure reliability, decrease energy prices, both, or neither?
- Do the states have a preferred route?
- What are the proposed receipt and delivery points?
- Do the states envision an expedited permitting process?
- Have the states considered a bonding structure like that used by the Wyoming Pipeline Authority to build a state-sponsored pipeline? If so, how would that work?
- What sorts of entities would be permitted to hold firm transportation (FT) on the pipeline? Anyone willing to commit to the "max rate"? Generators only?
- How would the manager of the capacity be identified and for what length of time?
- Who would oversee the capacity manager?
- What will be the governance structure of the entity that owns the natural gas capacity?
- How would capacity be allocated and on what frequency?
- Is there an available estimate of total cost of building/expanding pipeline capacity?
- What are the states proposing for cost allocation?
- Have the states examined their curtailment policies for LDCs to determine whether power plants behind LDCs are curtailed frequently? Are power plants considered "human needs" customers and, thus, subject to less curtailment? Will power plants behind LDCs continue to be subject to curtailment ahead of "human needs" customers if this new pipeline capacity is available?

- If the gas pipeline proposal goes forward as proposed when would charges start coming through the Tariff? When will the charge rate be known? Will it be assessed to all load regardless of their supply choices, i.e. would customers who choose an “all renewable” product pay for the gas pipeline?

### ***Regulatory Issues***

- At least one FERC commissioner has expressed reluctance to have a surcharge on the ISO’s rates. Have the states considered other funding mechanisms?
- Given the recent activity at FERC regarding gas/power coordination, are the states willing to table their ideas until the FERC NOPR and other filings (RM14-2, EL14-22, and RP14-442) have played out?
- How does the states’ proposal to build/expand pipeline capacity and use the ISO tariff for cost recovery line up with the principles of cost causation?
- How does the states’ proposal to build/expand pipeline capacity and use the ISO tariff for cost recovery line up with the principles of developing competitive markets?

### ***Market Impacts and Issues***

- ISO NE and FERC have identified energy price formation problems which are negatively affecting hedging, procurement, and investment in maintenance, repair, and new capacity. Will the states’ proposals complement ISO-NE and FERC’s efforts to resolve the energy price formation problem? If not, why do the states believe their proposals are preferable?
- ISO-NE has stated that resolving the energy price formation problems is its number one priority. Would the states be willing to postpone development of their proposals until the energy price formation problem and uplift issues have been resolved?
- In the opinion(s) of the states, what design improvements would have to occur in ISO NE’s energy market and/or capacity market to offset the need for the states to propose building/expanding pipeline capacity?
- What type(s) of cost recovery design improvement(s) would be needed in ISO NE’s capacity market (or other markets) to ensure that generators are able to recover appropriate costs that would incent the contracting of firm transportation or maintaining firm fuel supplies?
- Assuming the additional pipeline capacity is built, electricity prices will most likely decline, which will put upward pressure on the capacity market price. Are the states willing to accept this outcome?
- This past winter demonstrated a change in fuel economics and perhaps even the economics of pipeline development. Will the states put their proposal on hold to allow the market to respond to these signals (e.g. investment in pipeline development, investment in dual fuel capability, LNG contracting, etc.)?

- The states' proposal clearly favors one type of fuel, which will have an impact on the usage of other fuels in ISO NE's market. How do the states view their proposal's impact on fuel diversity?
- Have the states evaluated the likelihood of Marcellus gas prices increasing within the next five to ten years due to increasing LNG exports?

### ***Alternatives***

- Have the states considered having LDCs contract for pipeline capacity and building the costs into state-approved rates?
- Have the states considered flexibility that could be provided by a connection to LNG facilities?

## **Electric Transmission Infrastructure**

### ***Questions Related to General Project Structure***

- Will such transmission development and generation supply be economic to rate payers?
- Will the states develop another classification of RECs for this new supply?
- Will any entities outside of ISO NE's footprint pay for any of the development costs?

### ***Regulatory Issues***

- What cost allocation structure will apply for the transmission development? Will this differ from any current ISO NE tariff provisions?

### ***Market Impacts and Issues***

- What are the views of the states on the impact on fuel diversity that this proposal will have?
- What are the views of the states on the impact on LMP that this proposal will have?

### ***Alternatives***

- Will merchant transmission developers be included when the states evaluate transmission solutions?