

141 Tremont St., Boston, MA 02111 (t) 617-902-2354 (f) 617-902-2349 www.nepga.org

April 30, 2008

VIA ELECTRONIC MAIL

W. Robert Keating Commissioner Massachusetts Department of Public Utilities One South Station, 3rd Floor Boston, MA 02110

RE: Proposed Maritimes and Northeast Pipeline Gas Quality Tariff Revisions

Dear Commissioner Keating:

As you are aware, NEPGA has been actively involved in the collaborative process reviewing the proposed changes to the Maritimes and Northeast Pipeline (M&N) Gas Quality Tariff Specifications. These changes are resulting from M&N's expansion of its system to transport new supplies of natural gas sourced from the proposed Canaport LNG terminal near Saint John, New Brunswick. Upon commercial operation, Canaport will have the ability to deliver approximately 0.73 Bcf/day of LNG to an interconnect with M&N at the US / Canada border. The tariff changes are intended to address the downstream evolution of the compositional unconformity in the pipeline resulting from the ensuing gas mix.

While this problem has been discussed in relation to other pipelines the issue at hand is unique in that the tariff revisions are largely the result of one source of LNG and the current supply does not warrant these broad revisions. Since the issue of the compatibility of LNG for electrical generation was first introduced, the industry has conducted new studies and has had the opportunity to raise new issues. Therefore, <u>NEPGA is formally requesting that the New England state utility commissions support NEPGA in its call for FERC to revisit its policy as it relates to the generating market.</u>

1. Issue Summary

NEPGA is generally concerned with the scope of the proposed tariff changes and the resulting gas composition under consideration on M&N. Changes in natural gas supply and gas composition raise concerns about how fuel variations could impact electrical generation equipment and what adjustments are needed to accommodate the changes. Ultimately, these fluctuations in the composition of the gas supply may reduce the ability of some generation equipment to perform reliably and efficiently and within prescribed emission limits. Based upon

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the preliminary information that we have been able to obtain to date, NEPGA is concerned with these specific elements of the resulting gas composition:

- **a.** Wobbe Index The Wobbe Index is used to compare the combustion energy output of different composition fuel gases. If two fuels have identical Wobbe Indices, then for given pressure and valve settings the energy output will also be identical. Typically variations of up to 4% are tolerable, as these would be less noticeable to the generation equipment.
- **b. Carbon** historic natural gas supplies generally have a low carbon dioxide content of two percent or less. In contrast, world gas markets potentially serving as sources for LNG have higher carbon dioxide content, ranging from 4 to 15 percent.
- c. **Sulfur** LNG from some markets contains significant amounts of sulfur that can be extremely corrosive, thereby resulting in maintenance and performance issues in gas turbines.
- d. Rate of Change a major concern voiced by NEPGA operators is that rapid transient changes in fuel heating value may affect their gas turbines. Pipeline gas composition changes due to an LNG "slug" (i.e. change greater than +/- 2%/minute) may result in operational disruptions to gas turbines. NEPGA is not confident of the commercial availability of vendor installed auto-tuning equipment for the affected gas turbine fleet.
- e. **Information Exchange** the gas quality and rate of change information provided by M&N must be embedded in the tariff so as to remove any discretion on the part of the pipeline operator.

2. Collaborative History

NEPGA has been actively involved with the collaborative process established by M&N. Additionally, on April 11, 2008, NEPGA participated in a webcast with Repsol to review the characteristics of the LNG anticipated to be injected at that source. NEPGA compiled the information in Appendix 1 to compare the proposed changes to the M&N tariff with the anticipated LNG supply. Based upon that information, NEPGA had a call with M&N on Friday, April 18, 2008, to focus on issues with the proposed tariff changes that are unique to the generation sector and to discuss our concerns relating to fuel quality prior to M&N filing its proposed tariff revisions.

On M&N's collaborative call on April 24, 2008, NEPGA proposed the following revisions to the tariff proposals:

i. Reduce the upper Wobbe index range from 1400 to 1390. As indicated in Appendix 1, there is not a Wobbe Index indicated in the existing tariff. The proposed index is

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a minimum of 1314 and a maximum of 1400. Based upon current supply, Canaport anticipates a Wobbe of 1379. The region has not received regular historic shipments beyond 1400; however, Everett has received shipments above that upper limit in the distant past.

Based upon NEPGA's request for a maximum Wobbe of 1400, M&N had an offline discussion with Canaport. Canaport indicated an unwillingness to negotiate a reduction because doing so would interfere with their strategy for obtaining LNG from the broader world spot markets. I spoke with Vince Morrissette from Repsol on April 24, 2008, and he indicated the same.

- ii. We are looking for a rate of change consistent with the OEM specs, which should not exceed +/- 2%/minute.
- iii. Memorialize the notice of change provisions in the tariff so as not to allow for discretion of notice on the part of the pipeline.

NEPGA has yet to propose limitations on sulfur and CO₂ because the proposed changes to the M&N tariff currently seek a reduction in those limits. However, Western Canadian LNG suppliers are advocating for an increase in those limits based upon the composition of those supplies. NEPGA needs to remain vigilant to these components and prepare to negotiate changes favorably within the broader fuel composition.

3. Further Analysis is Needed

In September 2003, the National Petroleum Council (NPC) completed a report on the natural gas industry, which contained a number of findings and policy recommendations and highlighted the increased importance of LNG in meeting expected demand growth over the ensuing decade. FERC held a public conference to discuss gas quality and interchangeability issues on February 18, 2004. On February 28, 2005, the Natural Gas Council filed with the Commission two technical papers entitled: *Natural Gas Interchangeability and Non-Combustion End Use* and *Liquid Hydrocarbon Drop Out in Natural Gas Infrastructure* (collectively, NGC+ Reports). Both Reports suggest interim recommendations *and urge additional research*.

Recognizing that more research is needed, the NGC+ Interchangeability Work Group makes interim recommendations, to be implemented pending further study and deliberation. These interim guidelines provide for: (1) use of the local average historical Wobbe Index average with an allowable range of variation of plus or minus four percent; (2) subject to a maximum Wobbe Index level of 1,400; (3) a maximum heating value limit of 1,110 Btu/scf; (4) a limit on butanes and heavier hydrocarbons (butanes+ or C4+) of 1.5 mole percent; and (5) an upper limit on the amount of total inert gases (principally nitrogen and carbon dioxide) of up to four mole percent.

On June 15, 2006, the Commission issued a Policy Statement in Docket No. PL04-3. The Policy Statement states in \P 32,

"[f]urthermore, the interim guidelines recognize that additional research and development are needed to arrive at more clearly defined limits to interchangeability specifications and to address the need for better and more timely operational information on natural gas quality and pipeline operations. The Commission's policy will keep step with improved knowledge on gas quality and interchangeability."

4. Conclusion

Based on what we have learned over the last 2 years since the Policy Statement was issued, it is clear that the Interim Guidelines are not appropriate for generating units without adding system retrofits, which in many cases have not yet been developed or tested. The generation sector needs more information from equipment vendors and gas suppliers to:

- a. Evaluate the impact of fuel chemistry changes on gas turbine system performance (i.e. mechanical, technical, and physical impacts to the equipment).
- b. Identify environmental impacts related to gas interchangeability (i.e. increases in carbon and sulfur content).
- c. Fill in key data gaps identified by the NGC+ report

As such, NEPGA is formally requesting that the New England state utility commissions support NEPGA in its call for FERC to revisit its policy as it relates to the compatibility of LNG for the generating market. If you have any questions please don't hesitate to contact me.

Sincerely, Murden Mas Christopher P. Sherman General Counsel

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cc. Chairman Joseph T. Kelliher - FERC **Commissioner** Jon Wellinghoff - FERC **Commissioner** Marc Spitzer- FERC Commissioner Suedeen G. Kelly - FERC Commissioner Philip D. Moeller- FERC Chairman Donald W. Downes - Connecticut DPUC Chairman Elia Germani – Rhode Island PUC Chairman Kurt Adams – Maine PUC Chairman Paul J. Hibbard - Massachusetts PUC Chairman Thomas B. Getz – New Hampshire PUC Chairman James Volz, - Vermont PSB William M. Nugent – NECPUC Stephen G. Whitley – ISO-NE Mark Babula – ISO-NE Peter Fuller – NEPGA Angela O'Connor - NEPGA

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Appendix 1

Specification	Existing M&N Tariff	Canaport (Trinidad)	Proposed M&N Tariff
Heating Value	Min: 967 Btu/scf Max:1100 Btu/scf	1044	Min: 967 Btu/scf Max:1110 Btu/scf
Wobbe Index	Not stated	1379	Min: 1314 Btu/scf Max: 1400 Btu/scf
Total Inerts (CO ₂ & N ₂)	Max: 4.0 % vol	.01%	Max: 4.0 % vol
Carbon Dioxide (CO ₂)	Max: 3.0 % vol	0.00%	Max: 2.0 % vol
Nitrogen (N ₂)	Not stated	0.01%	Not stated
Total Diluents (N ₂ & O ₂)	Not stated	0.01%	Max: 2.75 % vol
Oxygen (O ₂)	Max: 0.20 % vol	0.0%	Max: 0.20 % vol
Liquefiable Hydrocarbons	15° F at 100 - 1440 psig		15° F at 100 - 1440 psig (~ 0.032 GPM of C6+)
Total Non-Methane Hydrocarbons	Not stated	Not stated	Total C2+ shall not exceed 12% and of that, total C4+ shall not exceed 1.5%
Total Sulfur	Max: 20 grains per 100 cf	<mark>n/a</mark>	Max: 10 grains per 100 cf
Posted Gas Quality Information	NAESB requirements	NAESB requirements	NAESB requirements, plus hourly average chromatograph data for selected chromatographs and additional NAESB requirements per any future Commission directive