KEEGAN WERLIN LLP

ATTORNEYS AT LAW
265 FRANKLIN STREET
BOSTON, MASSACHUSETTS 02110-3113

(617) 951-1400

TELECOPIERS:
(617) 951- 1354
(617) 951- 0586

August 18, 2016

BY HAND DELIVERY

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

Re: Docket 4627 – In Re: Request for Approval of Firm Transportation Contracts with Algonquin Gas Transmission, LLC for the Access Northeast Project
Responses to Data Requests

Dear Ms. Massaro:

On behalf of National Grid,[1] enclosed are National Grid's responses to the Third Set of Data Requests issued by the Rhode Island Office of Energy Resources in the above-referenced matter.

Thank you for your attention to matter. If you have any questions, please contact me at (617) 951-1400, or Jennifer Brooks Hutchinson at 401-784-7685.

Very truly yours,

John K. Habib

Enclosures

[1] The Narragansett Electric Company d/b/a National Grid.

OER 3-1

Request:

The following questions refer to National Grid's Request for Approval of a Gas Capacity Contract, June 30, 2016, Schedule GJW-3, "Evaluation of Long-Term Economic Benefits from Proposed Incremental Energy Infrastructure into New England," prepared by Black & Veatch, June 2016.

a) In Table 10 on page 35 of 37, please confirm that the values for Greenhouse Gases are stated in million short tons of CO2, the values for NOx emissions are stated in thousand short tons, and the values for SO2 are stated in thousand short tons. If this is incorrect, please provide the correct units.
b) The values presented for Greenhouse Gas emissions in Table 10 do not appear to agree with the values for Greenhouse Gas emissions presented in Schedule ACB-2, Table 1, at page 11 of 18 (redacted). Please explain the difference, and if necessary, provide corrected values for all cases.
c) Are the values in Table 10 the cumulative total emissions over the forecast period, 2019 to 2039, an annual quantity, or some other value?
d) Do the values in Table 10 represent the emissions from power generation within New England? If not, please clarify what region is covered by Table 10.
e) Do the values in Table 10 include emissions from fossil-fired and non-fossil-fired (*e.g.*, biomass) generation? If not, please explain what emissions sources are included in this table.
f) Please provide all calculations that support the stated percent reductions of NOx (approximately 15%), SO2 (approximately 25%), and CO2 (0.85%) emissions when comparing the case with ANE to the Reference Case, and for Sensitivity Cases A and B.

Response:

a) Please see an amended Table 10 below with corrected units and values.

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OER 3-1, page 2

TOTAL POLLUTANT EMISSIONS 2019-2038			
Scenarios	**NO_X (Thousand Tons)**	**SO_2 Thousand Tons)**	**Greenhouse Gases (Million Tons $CO_{2)}$**
Reference Case	114	135	695
Reference Case - With ANE Only	96	100	689
Sensitivity Reference Case A	90	94	649
Sensitivity Reference Case A – With ANE	74	52	626
Sensitivity Reference Case B	76	58	593
Sensitivity Reference Case B – With ANE	68	44	590

b) The values for Table 10 have been corrected and are now in agreement with Schedule ACB-2, Table 1. The headings were correct in Table 10, but the values for CO2 emissions were incorrectly stated.

c) The values are cumulative total emissions from 2019-2038.

d) The values in Table 10 are from power generation emissions in New England only.

e) The emissions values are only from fossil-fired generation.

f) For Sensitivity Case A, the reductions for NOx would be 18% (1-74/90), SO2 would be 45% (1-52/94), and CO2 would be 4% (1-626/649). For Sensitivity Case B, the reductions would for NOx would be 11% (1-68/76), SO2 would be 24% (1-44/58), and CO2 would be 1% (1-590/593).

Prepared by or under the supervision of: Denny K. Yeung and Gary J. Wilmes

OER 3-2

Request:

The following questions pertain to the input data and results from the PROMOD model that was used by Black & Veatch to analyze electricity prices and emissions with and without the proposed ANE project, as presented in Schedule GJW-3.

a) For each case (Reference Case, Reference Case With ANE Only, Sensitivity Reference Case A, Sensitivity Case A With ANE, Sensitivity Reference Case B, and Sensitivity Case B with ANE), please provide the annual emissions of NOx, SO2 and CO2 for ISO-NE. If available, provide the annual emissions for each pollutant by ISO-NE zone.
b) For the PROMOD model used to analyze electricity prices and emissions, what footprint was modeled? Did Black & Veatch model only New England, or some larger footprint?
c) If only New England was modeled, how were electricity imports and exports between New England and neighboring control areas determined?
d) If a larger footprint was modeled, please provide the CO2 emissions data requested in part (a) for each of the other modeled control areas outside of ISO-NE.
e) Specify the source of the load forecast in all modeled control areas (*e.g.*, ISO-NE, NYISO, PJM).
f) Provide the annual fuel use by type (including but not limited to natural gas, coal, distillate fuel oil, kerosene, jet fuel, residual fuel oil) for each year of the forecast, for each modeled case (with and without ANE and each sensitivity case). Provide this information by ISO-NE load zone, if available, and for each of the other modeled control areas outside of ISO-NE. If not available by ISO-NE load zone, provide the information for all of ISO-NE and for each other control area included in the modeled footprint.
g) For each technology type listed below, provide the annual MWh of generation by technology type listed below for each PROMOD case (with and without ANE), for ISO-NE and for each other control area included in the modeled footprint. Provide this information for each case (with and without ANE and each sensitivity case).
    i. Combined cycle plants
    ii. Combustion turbines
    iii. Oil-fired steam plants
    iv. Coal-fired plants
    v. Nuclear

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vi. Wind
vii. Hydro (excluding pumped storage)
viii. Solar
ix. Imports
x. Biomass, landfill gas
xi. Other

h) Provide a list of all new generation resources added over the forecast period. Indicate the generation technology, installed capacity (MW), load zone, and in-service date.
i) Were the Renewable Energy Standards (RES), Renewable Portfolio Standards (RPS), and similar clean energy targets applicable to each state within the model footprint reflected in the resource buildout of the PROMOD model? Please explain how the quantity and type of wind, solar, and other renewable resources added over the forecast period was determined within ISO-NE and the rest of the model footprint, if applicable.
j) Provide the forecast of CO2, NOx, and SO2 allowance prices utilized in the model, and discuss the assumptions used to develop these forecasts.

Response:

a) Emissions for the Reference Case and Reference Case with ANE Only have been previously provided in by the Company's Massachusetts affiliates in D.P.U. 16-05 as Attachment NEER-1-1(b) (Highly Sensitive Confidential Information) and Attachment NEER-1-1(c) (Highly Sensitive Confidential Information). The emissions for the other four cases have been previously submitted by the Company's Massachusetts affiliates in D.P.U. 16-05 in Attachment NEER-2-55(a) (Highly Sensitive Confidential Information). Each of these exhibits was provided in response to Data Request PUC 1-1.
b) Black & Veatch modeled the Eastern Interconnect.
c) Imports and Exports between ISO New England, Eastern Canada, and New York were determined economically based on supply/demand, and transmission between these areas.
d) The response is limited to New England, which is the area of focus for the Black & Veatch report.
e) Load forecasts used in the forecast come from various sources, including the 2015 ISO-NE CELT report, the NYISO Gold Book, the PJM Load report, and FERC 714 filings.
f) Fuel Use by Type for Reference Case and Reference Case with ANE Only have been previously provided by the Company's Massachusetts affiliates D.P.U. 16-05 as

Attachment NEER-1-1(b) (Highly Sensitive Confidential Information) and Attachment NEER-1-1(c) Highly Sensitive Confidential Information). Each of these attachments was provided in response to Data Request PUC 1-1. The Fuel Use by Type for the other four cases has been previously submitted by the Company's Massachusetts affiliates in D.P.U. 16-05 in Attachment NEER-2-55(b) (Highly Sensitive Confidential Information); this attachment was provided in response to Data Request PUC 1-1.

g) Annual MWh of generation for Reference Case and Reference Case with ANE Only have been previously provided by the Company's Massachusetts affiliates in D.P.U. 16-05 as Attachment NEER-1-1(b) (Highly Sensitive Confidential Information) and Attachment NEER-1-1(c) (Highly Sensitive Confidential Information). The Fuel Use by Type for the other four cases has been previously submitted by the Company's Massachusetts affiliates in D.P.U. 16-05 in Attachment NEER-2-55(a) (Highly Sensitive Confidential Information). Each of these attachments was provided in response to Data Request PUC 1-1.

h) New generating resources installed over the analysis period have been previously provided by the Company's Massachusetts affiliates in D.P.U. 16-05 as Attachment NEER-1-6(a); this attachment was provided in response to Data Request PUC 1-1.

i) Yes. Please see Exhibit NEER-1-12 filed by the Company's Massachusetts affiliates in D.P.U. 16-05 for a description of how renewable installation is determined; this exhibit was provided in response to Data Request PUC 1-1.

j) Black & Veatch did not use allowance prices for SO2 and NOx. CO2 prices have been previously submitted in Massachusetts docket D.P.U. 16-05 as Attachment CLF-1-9(a) (Supplemental) (Highly Sensitive Confidential Information) provided in response to Data Request PUC 1-1. The level of CO2 prices used in the analysis is the level needed to comply with various regional programs such as RGGI and the Clean Power Plan.