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February 23, 2023

VIA HAND DELIVERY & ELECTRONIC MAIL

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

RE: Docket No. 22-42-NG – Issuance of Advisory Opinion to EFSB re RIE Application to Construct an LNG Vaporization Facility on Old Mill Lane, Portsmouth, RI Responses to Town of Middletown's Data Requests – Set 3

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company (the "Company"), I have enclosed the Company's responses to the Town of Middletown's Third Set of Data Requests in the above-referenced docket.

Thank you for your attention to this matter. If you have any questions, please contact me at (401) 709-3351.

Sincerely,

George W. Watson III

Enclosures

cc: Docket 22-42-NG Service List

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate were electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.

Heidi J. Seddon

February 23, 2023
Date

Docket No. 22-42-NG – Needs Advisory Opinion to EFSB regarding Narragansett Electric LNG Vaporization Facility at Old Mill, Portsmouth, RI
Service List update 2/13/2023

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Middletown 3-1

Request:

Referring to the Company's response to Middletown Data Request 1-5, which states that 100% of customers served by the proposed facility would lose service under the non-infrastructure solution, please answer the following:

a. Does the estimate of 100% customers losing service include customers who have switched to electric heating, or only those customers that remain on gas service from the Company?

b. If the latter, what percentage of the Company's customers served by the proposed facility would have switched to electric heating by 2035 under the electrification under a non-infrastructure solution presented in the 2020 Long-Term Capacity Report and summarized in the Company's response to Middletown Data Request 2-1?

c. Is it correct that, under a non-infrastructure solution, the portion of customers that would otherwise be served by the proposed facility that would lose service in the event of a complete disruption of supply is 100% minus the portion of customers who had switched to electric heat?

Response:

a. The estimate of 100% of customers losing service in the event of an upstream disruption preventing adequate delivery of gas to the Portsmouth take station refers only to those customers remaining on gas service from the Company.

b. As noted in Table 18 of the Aquidneck Island Long-Term Gas Capacity Study published in September 2020, ~63% of the total baseline of forecasted gas customers would be electrified by 2034/35 under the non-infrastructure solution presented in that Study.

c. The quantity of customers that would lose service in the event of a disruption in 2034/35 as a percentage of the total customers that were forecasted to have been gas customers in 2034/35 would be 100% minus the portion of customers who had switched to electric heat. This would result in a value of ~37% under the assumptions

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made for the non-infrastructure solution defined in the September 2020 Aquidneck Island Long-Term Gas Capacity Study.

Middletown 3-2

Request:

The Company's response to Middletown Data Request 2-6b [Note: the second portion of the response is labeled "a" when it should be labeled "b"] lists a number of sources of methane releases from the facility that would occur under normal mobilization for the season. Please provide an estimate of the total quantity of methane expected to be released from the facility in the course of an operating season as a result of these operations. To the extent that the estimates would differ, please provide two estimates:

a. Assuming that the facility is not utilized for injection at all during the season, and;

b. Assuming the facility is utilized for injection four times per season for approximately six hours per day, as described in the Company's response to CLF Data Request 1-5a.

Response:

a. The amount of vented methane during the initial cool down and loading of the storage tanks to full capacity is approximately 294.50 MCF.

b. When operating the site for injection four times per season as described in CLF Data Request 1-5a the amount of vented gas will be initial gas vented during initial cooldown, plus two delivery trailers for each time the site is operated. The total amount is approximately 331.8 MCF.

The estimates provided above are for 6 storage queens filled to 84,000 gallons of LNG.

Middletown 3-3

Request:

Referring to the Company's response to Middletown Data Request 2-1, please provide the following:

a. An estimate of annual participant bill savings from the incremental energy efficiency efforts for C&I and Residential customers, separately. Provide all assumptions used to generate this estimate, including annual gas savings (in Dth or other appropriate unit) and the unit value of any and all avoidable volumetric bill components in $/Dth (or other appropriate unit).

b. An estimate of any annual participant bill savings for C&I demand response programs. Provide all assumptions used to generate this estimate, including the unit value of any and all avoidable demand-based bill components in $/Dth/day (or other appropriate unit).

Response:

a. Table 3.3.1 below lists the cumulative retail annual natural gas savings from incremental energy efficiency under the "No Infrastructure (Match Trucked LNG @ NNS Contingency ASAP)" solution presented in the Aquidneck Island Long-Term Gas Capacity Study published in September 2020. Note that this estimation of savings was based on potential for EE savings that are incremental to the savings already included in the gas load forecast at the time that report was published and may no longer reflect current potential for EE.

Table 3.3.1. Cumulative Retail Annual Natural Gas Savings from Energy Efficiency [MMBtu/yr]

Season	Commercial and Industrial	Residential
2020-21	0	0
2021-22	743	1,365
2022-23	2,532	4,067

Prepared by or under the supervision of: David Moreira

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2023-24	5,063	8,133
2024-25	8,338	13,536
2025-26	11,613	18,939
2026-27	14,887	24,342
2027-28	18,162	29,745
2028-29	21,436	35,148
2029-30	24,711	40,551
2030-31	27,986	45,954
2031-32	31,260	51,357
2032-33	34,535	56,760
2033-34	37,809	62,163
2034-35	41,084	67,566

Table 3.3.2 below lists the assumed commodity cost of natural gas, which is sourced from the October Re-Release of the Avoided Energy Supply Components in New England: 2018 Report, amended October 24, 2018 ("2018 AESC").[1] The values are shown as nominal dollars, assuming 2% annual inflation.

Table 3.3.2. Commodity Cost of Natural Gas [Nominal $/MMBtu]

Season	C&I	Residential
2020-21	$8.49	$9.39
2021-22	$8.57	$9.49
2022-23	$8.75	$9.69
2023-24	$9.02	$9.97
2024-25	$9.22	$10.18
2025-26	$9.48	$10.47
2026-27	$9.71	$10.71
2027-28	$10.05	$11.06
2028-29	$10.37	$11.41
2029-30	$10.65	$11.70
2030-31	$11.07	$12.14

[1] Available at: https://www.synapse-energy.com/project/aesc-2018-materials

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2031-32	$11.30	$12.39
2032-33	$11.44	$12.55
2033-34	$11.54	$12.67
2034-35	$11.80	$12.95

The product of the values in Table 3.3.1 and Table 3.3.2 yield a first-order estimate of the total annual participant bill savings associated with the energy efficiency in the "No Infrastructure (Match Trucked LNG @ NNS Contingency ASAP)" solution presented in the Aquidneck Island Long-Term Gas Capacity Study published in September 2020. Those values are shown in Table 3.3.3.

Note that this represents a "first-order estimate" because it does not account for the change in commodity unit costs associated with this incremental EE. First, this incremental energy efficiency would have wholesale market impacts where reductions in energy demand relative to the baseline would lead to some reductions in wholesale energy prices relative to the baseline. Second, the cost of implementing this program by the utility would be cost-recovered, which would lead to incrementally higher delivery charges for customers. Given the scale of this incremental program relative to the size of Rhode Island total gas deliveries and the New England marketplace as whole, these impacts are likely minor.

Table 3.3.3. Value of Avoided Gas Commodity from Energy Efficiency [Nominal $/yr]

Season	C&I	Residential
2020-21	$0	$0
2021-22	$6,370	$12,962
2022-23	$22,164	$39,407
2023-24	$45,668	$81,100
2024-25	$76,843	$137,851
2025-26	$110,122	$198,249
2026-27	$144,516	$260,674
2027-28	$182,442	$329,128
2028-29	$222,324	$401,005
2029-30	$263,132	$474,615

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2030-31	$309,664	$557,909
2031-32	$353,159	$636,371
2032-33	$395,068	$712,411
2033-34	$436,173	$787,347
2034-35	$484,654	$874,709

b. Medium and large C&I customers pay a monthly demand charge per therm of their maximum average daily quantity (MADQ) from the most recent November through April period based on historical billing data. For low load factor commercial and industrial ("C&I") customers this demand charge was $1.50 per therm in 2020.[2] The impact that demand response ("DR") may have on this MADQ depends on when events are called and the individual load profiles of customers.

For example, one could assume five DR events (the assumed annual number of events used in the Aquidneck Island Long-Term Gas Capacity Study published in September 2020) all occurred in the single month with the most usage in the year, which would set the MADQ, and assume that each day in that month had the same design day usage. This would represent a realistic maximum bill savings scenario because it's likely that not all events would occur in a single month and, if they did, that month's demand may drop below another month's demand.

Applying that approach to calculating the impact on demand charges in a single year along with an estimate of annual natural gas commodity cost savings and annual fuel oil expenses for the incremental demand response assumed under the "No Infrastructure (Match Trucked LNG @ NNS Contingency ASAP)" solution presented in the Aquidneck Island Long-Term Gas Capacity Study published in September 2020 yields the values presented in Table 3.3.4 below. Note that the incremental demand response programs and participation levels used in this estimate were based on hypothetical potential for customers identified in 2020 as part of the Long-Term Gas Capacity study and may no longer reflect current potential for demand response.

[2] See tariff notes, here: https://www.nationalgridus.com/media/pdfs/billing-payments/rigas_tariff.pdf

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Table 3.3.4. Estimate of C&I Participant Bill Savings from DR by DR Tier

Parameter	Calculation *	Tier 1	Tier 2	Tier 3
Design Day Demand per Customer [therm/day]	(a)	3,200	960	180
Design Day Savings per Event [therm/day]	(b)	3,040	912	4
MADQ Savings [therm/day]	(c) = ((a)*30-(b)*5)/30	506	152	0.7
Annual Demand Charge Savings per Customer ($/yr)	(d) = (c)*$1.50*12	$9,120	$2,736	$12
Annual Natural Gas Commodity Cost Savings per Customer ($/yr)	(e) = (b)/10*5*$8.49	$12,904	$3,871	$17
Annual Fuel Oil Commodity Cost Added per Customer ($/yr)	(f) = (b)/10*5*(1/0.89)*$17.06	$30,451	$9,135	*N/A*
Total Annual Participant Bill Savings ($/yr)	(g) = (d)+(e)-(f)	-$8,427	-$2,528	$29
Incentive per Customer ($/yr)	(h)	$66,640	$20,000	$3,000
Participant Bill Savings as Percent of Incentive	(i) = (g)/(h)	-13%	-13%	1%

** Constants in calculations refer to (in order of appearance): 30 days in a month, 5 DR events, $1.50 per therm of MADQ demand charge, 12 months in a year, 10 therms per MMBtu, $8.49/MMBtu price of natural gas for C&I customers in 2021, 89% fuel oil-powered equipment efficiency relative to natural gas-powered equipment efficiency, and $17.06/MMBtu price of fuel oil for C&I customers in 2021.*

Note there is no forecast of gas demand charges for C&I customers that would be akin to Table 3.3.2. So, assuming 2% annual inflation on demand charges from 2020 levels, and applying the approach laid out in Table 3.3.4 to all participants under the "No Infrastructure (Match Trucked LNG @ NNS Contingency ASAP)" solution presented in the Aquidneck Island Long-Term Gas Capacity Study published in September 2020 yields the estimate of bill savings for DR shown in Table 3.3.5 below.

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Table 3.3.5. Annual Value of Total Customer Energy Bill Savings from Demand Response in Nominal Dollars

Season	Tier 1	Tier 2	Tier 3	Total C&I DR
2020-21	-$14,247	$0	$59	-$14,188
2021-22	-$20,088	-$6,019	$150	-$25,957
2022-23	-$26,764	-$12,033	$306	-$38,491
2023-24	-$28,089	-$21,048	$471	-$48,665
2024-25	-$30,588	-$27,505	$641	-$57,452
2025-26	-$32,264	-$33,849	$855	-$65,258
2026-27	-$33,697	-$35,354	$1,042	-$68,009
2027-28	-$34,189	-$40,994	$1,244	-$73,939
2028-29	-$35,546	-$47,950	$1,456	-$82,040
2029-30	-$37,881	-$56,779	$1,672	-$92,988
2030-31	-$39,602	-$65,296	$1,912	-$102,986
2031-32	-$42,252	-$75,999	$2,143	-$116,108
2032-33	-$43,284	-$77,856	$2,370	-$118,770
2033-34	-$45,863	-$89,372	$2,599	-$132,636
2034-35	-$47,496	-$99,675	$2,856	-$144,315

Note: Negative values indicate increase in total customer energy bills

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Middletown 3-4

Request:

Referring to the Aquidneck Island Long-Term Gas Capacity Study published in September 2020, Figure 16, "Net Rhode Island Cost Comparison across Solutions:"

a. Please specify the value of avoided non-embedded greenhouse gas emissions in $/short ton used in these results.

b. Please provide comparable net Rhode Island Cost comparisons for the alternatives shown in Graphic 4 and Table 4-4 in the Siting Report.

Response:

a. The value of avoided non-embedded greenhouse gas emissions used in the Aquidneck Island Long-Term Gas Capacity Study published in September 2020 was based on a $68/ton value (i.e., in alignment with Table 155 and the right-most column of Table 156 of the October Re-Release of the Avoided Energy Supply Components in New England: 2018 Report, amended October 24, 2018, or the "2018 AESC").[1]

b. Table 1 below presents the net cost of the alternatives from the perspective of the Rhode Island ("RI") Cost Test, relative to the assumed baseline. As these are net costs, positive values represent costs (i.e., the alternative costs more money than the baseline) while negative values represent negative costs (i.e., the alternative saves money relative to the baseline). The values are net present values in 2020 dollars, using a 7.54% discount rate and 2.00% inflation rate. Infrastructure costs ("Infra.") include fixed annual costs assumed to incur between the install year and 2034/35, net of commodity cost savings, which are based on forecasted normal year consumption through 2034/35. Moratorium costs ("Mor.") include the net commodity cost to customers of fuel oil versus natural gas and the non-embedded greenhouse gas emissions costs of fuel oil versus natural gas, assuming all customers prevented from joining the natural gas network due to the moratorium instead use fuel oil and that fuel oil-powered equipment is 89% as efficient as natural gas-powered equipment.

[1] Available at: https://www.synapse-energy.com/project/aesc-2018-materials

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The unit costs of commodity and the non-embedded greenhouse gas emissions costs are based on the 2018 AESC. Demand-side resource costs (energy efficiency or "EE", demand response or "DR", and electrification of heat or "Elec.") include incremental technology costs and non-incentive program costs, net of benefits accumulated over the useful life of each resource. These benefits are based on the RI Cost Test and monetized per the 2018 AESC, except non-energy benefits and macroeconomic benefits which are excluded. Avoided electric distribution capacity benefits are similarly monetized using the 2018 AESC, which calculates a net benefit from electrification due to reduced summer peak usage, although high levels of electrification may instead necessitate upgrades due to increases in winter peak usage, which may manifest as a net cost in practice.

Table 1. Net Cost of Alternatives based on Rhode Island Cost Test [2020 Dollars in Millions]

Solution	Infra.	Mor.	EE	DR	Elec.	Tot.
Moratorium with Seasonal LNG Trucking (Baseline)	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Seasonal LNG Trucking	$0.0	-$12.6	$0.0	$0.0	$0.0	**-$12.6**
Seasonal LNG Trucking with Incremental DSM	$0.0	-$12.6	$8.4	$4.5	$0.0	**$0.3**
Moratorium with Incremental DSM, with Seasonal LNG Trucking discontinued in 2030	-$9.2	$0.0	$7.6	$4.5	$4.9	**$7.8**
Incremental DSM, with Seasonal LNG Trucking discontinued in 2030	-$9.2	-$12.6	$11.3	$4.5	$11.0	**$5.2**