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February 1, 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 2

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 Second 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 1, 2023

Date

**Docket No. 22-42-NG – Needs Advisory Opinion to EFSB regarding Narragansett Electric LNG Vaporization Facility at Old Mill Lane, Portsmouth, RI
Service List update 1/27/23**

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Middletown 2-1

Request:

Page 34 of the Siting Report states that a non-infrastructure option assessed in the September 2020 Long-Term Capacity Report included “maximum levels of achievable Energy Efficiency and Gas Demand Response,” and further that this option “required the continued use of Old Mill Lane until 2035.” Please provide a table summarizing the quantities of energy efficiency and demand response (separately) included in that alternative on a yearly basis, by customer class, as well as the cost to achieve those results.

Response:

Table 1, below, shows the cumulative design day impact of incremental energy efficiency, incremental demand response, and incremental electrification of heat 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 the term “incremental” in this case refers to demand-side management (“DSM”) measures that would be pursued beyond assumed baseline levels of energy efficiency, demand response, and electrification already planned for, and included in, the Gas Load Forecast, meaning those baseline DSM levels are not included in Table 1.

Table 1. Cumulative Design Day Savings of Incremental DSM [Dth/day]

Season	Energy Efficiency		Demand Response		Electrification	
	C&I*	Residential	C&I	Residential	C&I	Residential
2020-21	0	0	609	0	0	0
2021-22	10	18	792	0	111	221
2022-23	32	52	884	1	326	669
2023-24	65	104	1,066	1	651	1,320
2024-25	107	174	1,155	1	967	1,930
2025-26	149	243	1,245	1	1,282	2,537
2026-27	191	312	1,244	1	1,594	3,132
2027-28	233	382	1,332	1	1,903	3,742
2028-29	275	451	1,420	1	2,210	4,292
2029-30	317	520	1,508	1	2,516	4,852
2030-31	359	590	1,595	1	2,839	5,383
2031-32	401	659	1,681	1	3,157	5,894
2032-33	443	728	1,679	1	3,469	6,390

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Season	Energy Efficiency		Demand Response		Electrification	
	C&I*	Residential	C&I	Residential	C&I	Residential
2033-34	485	797	1,765	1	3,788	6,868
2034-35	527	867	1,850	1	3,768	6,786

*C&I refers to commercial and industrial (i.e., non-residential) customers.

Table 2, below, shows the estimated annual incentive and administrative cost to the utility of achieving the level of incremental DSM savings presented in Table 1. Note that incremental electrification incentives were assumed to end in the final analyzed season (i.e., 2034-35), because the need for the LNG vaporization facility at Old Mill Lane was assumed to end at that time.

Table 2. Annual Utility Cost (Incentives + Administrative Expense) of Incremental DSM [\$000s]

Season	Energy Efficiency		Demand Response		Electrification	
	C&I	Residential	C&I	Residential	C&I	Residential
2020-21	\$0	\$0	\$303	\$66	\$0	\$0
2021-22	\$107	\$496	\$683	\$89	\$775	\$5,153
2022-23	\$241	\$985	\$578	\$114	\$1,532	\$10,701
2023-24	\$339	\$1,491	\$814	\$123	\$2,369	\$15,766
2024-25	\$433	\$1,992	\$697	\$133	\$2,365	\$15,756
2025-26	\$411	\$1,974	\$757	\$142	\$2,412	\$16,004
2026-27	\$385	\$1,955	\$606	\$150	\$2,460	\$16,257
2027-28	\$360	\$1,931	\$838	\$155	\$2,509	\$16,512
2028-29	\$330	\$1,904	\$894	\$159	\$2,560	\$16,772
2029-30	\$300	\$1,876	\$953	\$162	\$2,611	\$17,012
2030-31	\$264	\$1,841	\$1,014	\$165	\$2,837	\$16,815
2031-32	\$233	\$1,810	\$1,076	\$166	\$2,893	\$16,977
2032-33	\$203	\$1,784	\$916	\$167	\$2,951	\$17,265
2033-34	\$174	\$1,757	\$1,181	\$167	\$3,072	\$17,558
2034-35	\$137	\$1,721	\$1,250	\$177	\$0	\$0

For more information about the methodology used to generate the values listed in Table 1 and Table 2, above, including important caveats about their application, see Section 14 of the 2020 Aquidneck Island Long-Term Gas Capacity Study published in September 2020.

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Middletown 2-2

Request:

The Siting Report states that the non-infrastructure alternative “asks customers to adopt a technology that will likely lead to higher ongoing cost for at least the near-term future.” (p. 36). Please provide the basis for this statement in the form of comparative cost estimates between natural gas-fired heating systems and heat-pump heating systems in both new construction and end-of-life replacement situations in residential and small commercial premises.

Response:

The following parameters and assumptions can be used to make comparative cost estimates for residential and small commercial customers:

- Per the U.S. Energy Information Administration (“EIA”), the average residential natural gas price in 2021 for Rhode Island was \$16.18/Mcf.¹
- Per EIA, the average residential electricity price in 2021 for Rhode Island was \$0.223/kWh.²
- Assume 1 Mcf of natural gas is equivalent to 1.037 MMBtu of gas.
- 1 kWh of electricity is equivalent to 0.003412 MMBtu of electricity.
- Assume natural gas space heating has an Annual Fuel Utilization Efficiency (“AFUE”) of 80% (1 MMBtu of gas = 0.95 MMBtu of heat output).³
- Assume heat pump space heating has an annual effective Coefficient of Performance (“COP”) of 3.0 (1 MMBtu of electricity = 3 MMBtu of heat output).⁴

Using the above parameters and assumptions, it can be estimated that, for Rhode Island in 2021, gas heating cost \$19.50 per MMBtu of heat while heat pump heating cost \$21.79 per MMBtu of heat. That equates to roughly ten percent higher space heating costs for a heat pump heating system versus a gas heating system. From a unit cost perspective, new construction versus end-

¹ See data at: https://www.eia.gov/dnav/ng/ng_pri_sum_dc_u_SRI_a.htm.

² See data at: https://www.eia.gov/electricity/sales_revenue_price/pdf/table5_a.pdf.

³ The minimum AFUE for gas furnaces is 80 percent, though Energy Star rated gas furnaces have an AFUE of at least 95 percent for Rhode Island. The latest DOE furnace-related rule making correspondence is available at: <https://www.energy.gov/sites/default/files/2022-06/res-furnaces-ecs-nopr.pdf>, and the Energy Star product criteria are available at: https://www.energystar.gov/products/heating_cooling/furnaces/key_product_criteria.

⁴ See Table B-2 and Table C-9 of the December 2020 Rhode Island Strategic Electrification Study, available at: <http://rieermc.ri.gov/wp-content/uploads/2021/01/rhode-island-strategic-electrification-study-final-report-2020.pdf>.

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of-life replacement should have no impact on the ongoing cost differential if the systems are sized the same. Note that this cost differential may close if gas prices were to increase at a relatively higher amount than electricity prices during the heating season, which is why the statement was only made in reference to the near-term future.

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Middletown 2-3

Request:

The Energy Facility Siting Board's Order 150 in Docket SB-2021-04 requires the Company to include with its supplemental application "a full explanation of its forecasting methodology" to include "a complete set of schedules showing all the assumptions and calculations associated with its forecasts used in the application to justify the proposed long-term solution (...) and evaluating the EE/DR/E alternative." (page 36).

- a. Does Appendix B of the Supplemental Application include any schedules showing assumptions regarding energy efficiency, demand response, or electrification? If so, please indicate which tables provide this information.
- b. Does Appendix C of the Supplemental Application include any schedules showing assumptions regarding energy efficiency, demand response, or electrification? If so, please indicate which tables provide this information.

Response:

- a. No. Appendix B of the Supplemental Application does not include any schedules showing assumptions regarding energy efficiency, demand response, or electrification programs. On page 9 of Appendix A, the Company discussed the impact of these three types of programs that were included in its forecast. The results of its forecast are summarized in Appendix B.
- b. No. Appendix C of the Supplemental Application does not include any schedules showing assumptions regarding energy efficiency, demand response, or electrification programs. On page 9 of Appendix A, the Company discussed the impact of these three types of programs that were included in its forecast. The detailed results of its forecast are presented in Appendix C.

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Middletown 2-4

Request:

On December 13, 2022, the Company submitted to the EFSB a letter from Algonquin Gas Transmission (AGT) notifying property owners of a planned pipeline maintenance project in which the existing six-inch pipeline crossing the Sakonnet River will be replaced with a new twelve-inch pipeline.

- a. Did AGT submit any notification of this project directly to the Company?
If so, please provide a copy of that notification and any and all subsequent correspondence between the Company and AGT regarding this project.
- b. Will this project replace the entirety of the six-inch pipeline that runs approximately four miles between the Portsmouth M&R facility on Old Mill Lane and its connection point to the AGT G-system?
 - i. If yes, please provide documentation of these plans.
 - ii. If no, please provide documentation of any planning, assessments, or other studies that resulted in sizing of the twelve-inch replacement line.
- c. If the same flow rate of gas (i.e., volume per unit time) is transported through a twelve-inch pipeline and a six-inch pipeline, what will be the relative pressures in those two lines?
- d. If the project to replace a portion six-inch line with a twelve-inch line is completed, what will be the effect on the pressure of gas delivered to the Portsmouth M&R facility? What will be the effect on the pressure of gas delivered to the Company's customers on Aquidneck Island served by the Portsmouth M&R facility?

Response:

- a. Yes. On September 17, 2022, AGT asked the Company if it would be available to have a discussion on September 30, 2022, regarding a potential pipeline project. The Company was informed during this September 30, 2022 meeting that AGT was

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considering upgrades to the G-lateral delivering gas to Aquidneck Island. The Company informed the Energy Facility Siting Board of this communication in a letter dated October 18, 2022.

The first direct written notice provided to the Company of AGT's plans was a copy of the letter dated December 8, 2022, which is a generic letter to landowners. Please see Attachment Middletown 2-4. The Company was also notified of the scope of the project during a meeting between AGT and Company leadership on December 7, 2022. Please also see Confidential Attachment Division 1-1-3 for a PowerPoint presentation that was provided to the Company at the December 7, 2022 meeting. The Company and AGT also met on January 24, 2023, to initiate discussions on project planning and the impact to the Company's Portsmouth meter station. At the meeting, the Company and AGT discussed the potential need for portable LNG equipment to supply the Island if a disruption of service is necessary in the course of construction activities.

- b. No, the proposed scope does not replace the entire segment of single line six-inch pipeline on the G-2. The scope is for two miles out of the total four miles. Further, the scope is to replace the existing segment, not loop it, so there will still be a single line feeding Aquidneck Island. Please see Attachment Middletown 2-4 for scope and associated map provided by AGT.
- c. Relative pressures can vary in the pipeline depending on transmission pipeline operation. The Company has no knowledge or input into how AGT operates its pipeline.
- d. It is expected that, in general, under high demand conditions, pressures in the pipeline will improve over pressures that would be experienced with the segment as six-inch. Pressures for customers on Aquidneck Island are regulated by the Company's facilities at Portsmouth meter station and should remain generally unchanged.



ENBRIDGE

Algonquin Gas Transmission, LLC
890 Winter Street, Suite 320
Waltham, MA 02451
877-379-0338 *toll free*

December 8, 2022

Reference: Algonquin Gas Transmission, LLC
Natural Gas Pipeline Maintenance Project

Dear Landowner:

Algonquin Gas Transmission, LLC (“Algonquin”)¹ is an interstate natural gas pipeline transmission company that maintains and operates interstate pipelines extending from New Jersey through the states of New Jersey, New York, Connecticut, Rhode Island, and Massachusetts. Our interstate pipeline network includes an existing six-inch diameter pipeline that is partially located in Portsmouth and Little Compton, Rhode Island that interconnects with Rhode Island Energy, the local gas distribution company. Our existing pipeline is the sole source of natural gas for homes and businesses on Aquidneck Island. This pipeline was originally installed in 1954.

Recently, Algonquin determined that it needs to conduct a pipeline maintenance project in Portsmouth and Little Compton that would install a new twelve-inch diameter replacement natural gas pipeline and appurtenant facilities primarily within the same easement as the existing six-inch diameter pipeline. The attached map provides information on the approximate location of the proposed work that will take place between our existing meter and regulating station on Old Mill Lane in Portsmouth and the eastern shore of the Sakonnet River in Little Compton (the “Project”). After the replacement pipeline is installed and operational, Algonquin intends to abandon in place its existing six-inch pipeline by filling it with grout.

To help us refine the scope of the Project, company representatives are beginning to collect and evaluate information necessary to determine the design of the Project. Our intent is to proceed in a way that has the least overall impact on our neighbors and the environment, while balancing constructability considerations for the installation of the replacement pipeline and appurtenant facilities. You are receiving this letter because your property is near the study corridor that is being reviewed to finalize the design of the Project. You may see our representatives in the field undertaking civil, environmental, cultural or geotechnical surveys as we evaluate the route for the installation of the replacement pipeline. These survey activities will

¹ Algonquin constructs, maintains, and operates interstate natural gas transmission pipelines under the exclusive jurisdiction of the Federal Energy Regulatory Commission (“FERC”) pursuant to the Natural Gas Act (15 U.S.C. §§ 717-717w). Algonquin’s principal place of business is 915 North Eldridge Parkway, Suite 1000, Houston, Texas 77079.

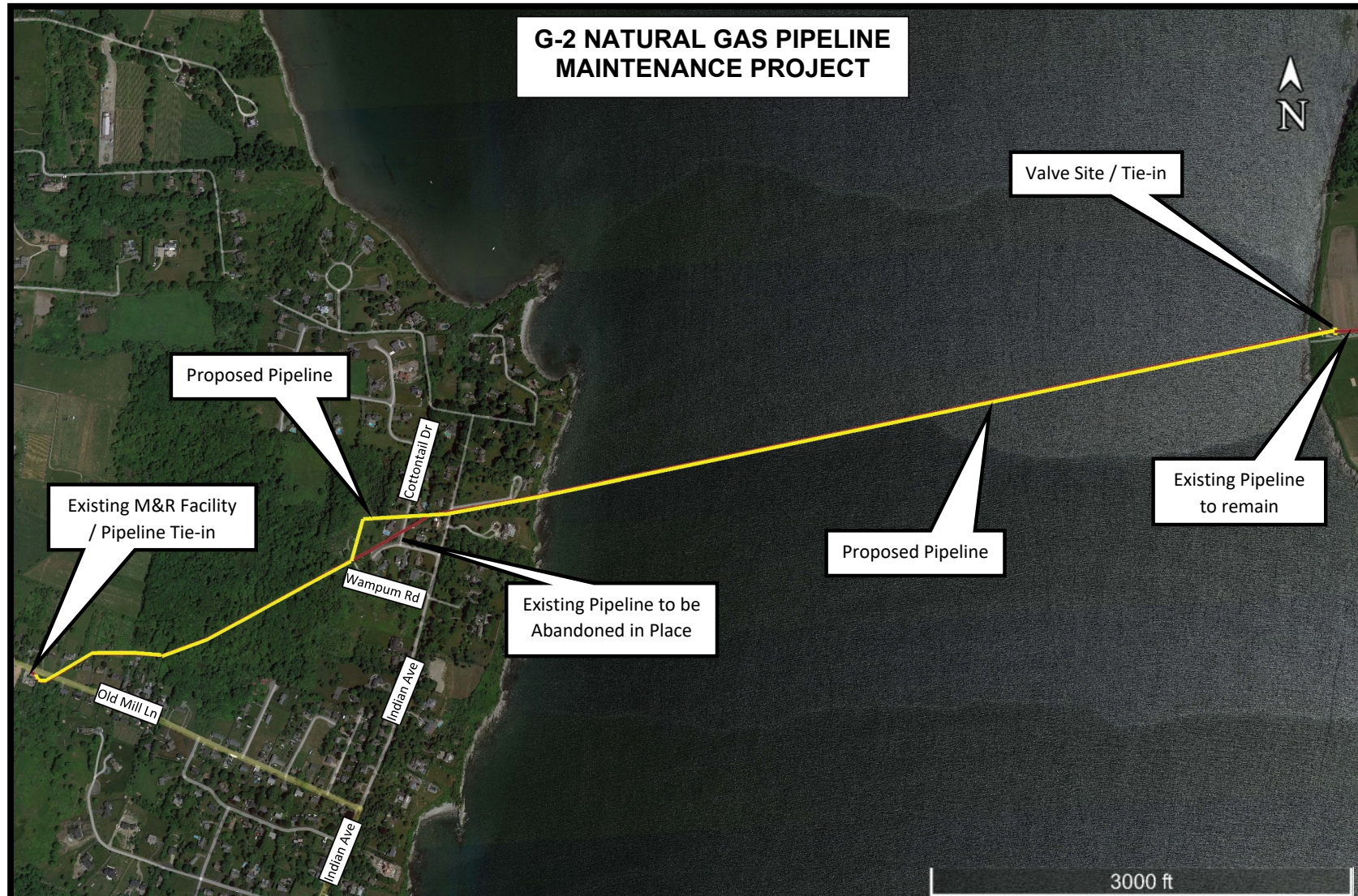
be performed in a minimal amount of time with the goal of little to no inconvenience to you and your neighbors.

It is also our intent to communicate with you early and often about our Project in order to foster a constructive relationship throughout the Project lifecycle. If you have any questions or would like to discuss or obtain additional information concerning the Project please call our landowner hotline toll-free at 877-379-0338.

Very truly yours,



Nancy A. Kist
Senior Advisor, Lands & ROW
U.S. Projects



Algonquin Gas Transmission, LLC
915 N Eldridge Pkwy, Houston, TX 77079

PROJECT OVERVIEW EXHIBIT
NEWPORT COUNTY
PORTSMOUTH AND LITTLE COMPTON, RI

DWG.: OVERVIEW EXHIBIT
SCALE: AS NOTED
REVISION: A

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Middletown 2-5

Request:

Page 38 of the Supplemental Application states that the LNG operations at Naval Station Newport continued until 2010, "when the Company procured additional pipeline capacity from Algonquin."

- a. Has the Company attempted to procure additional capacity from Algonquin since 2010? Have these attempts been successful?
- b. How much additional capacity was procured from Algonquin in 2010?
- c. How much additional capacity, if any, has been procured from Algonquin since 2010?

Response:

- a. The Company successfully procured an additional 5,000 Dth/day of capacity from Algonquin Gas Transmission in 2022.
- b. In 2010, the Company procured an additional 10,000 Dth/day of capacity from Algonquin Gas Transmission.
- c. Please see response to part a., above.

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Middletown 2-6

Request:

On page 6, Witness Olney states the following: “Even in the alternatives in which the Project is discontinued in 2030, there are no additional GHG savings from avoided Project operation. Again, that is because the Project is not expected to be utilized in normal operation, because it is only utilized in the event of an upstream system disruption that would have otherwise caused system shutoffs.”

- a. Will LNG be stored at the facility during the winter mobilization season in anticipation of an event requiring the operation of the facility? If so, please indicate the volume of LNG stored at the facility and the duration of that storage. How much additional capacity was procured from Algonquin in 2010?
- b. Does the Company assert that, in the event LNG is stored at the facility in anticipation of facility operation, no methane will be released from the facility's equipment? If so, please provide documentation or evidence supporting this assertion.
- c. In the event that the facility is needed, and vaporization and injection operations occur, what is the estimated leakage rate of methane from the facility's equipment? How does this compare with leakage rates from permanent distribution system equipment such as the take station?

Response:

- a. Yes, LNG will be stored at the facility during the winter mobilization season for the purpose of pipeline reliability and capacity reinforcement. Up to 84,000 gallons of LNG will be stored onsite for the December through March winter heating season. This increase in the current storage capacity is a result of the Company's plan to purchase advanced queen trailers outfitted with submerged high-pressure pumps, as noted in Section 3.2.2 of the Siting Report, that replace the requirement for a standalone high pressure pump trailer.

Please see the Company's response to Middletown 2-5 for details on the additional capacity procured from Algonquin in 2010.

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- a. No, some methane is manually released at the facility under the following conditions:
- When the storage equipment is conducting initial cool down from ambient temperature to LNG storage temperatures, venting to atmosphere is required. During this cool down process, most of the boil-off gas ("BOG") is not able to be recovered in BOG recovery manifold due to pressure differences of the vessel being cooled down and the distribution pipeline pressure connected to the BOG manifold.
 - When transport trucks have completed offloading LNG, they are required to reduce trailer pressure before leaving the site. The BOG manifold's minimum pressure is greater than the minimum pressure requirement of the LNG transport trailers thus requiring venting to atmosphere.
 - After initial cool down has been completed, normal operations for unloading LNG transports do not require venting to atmosphere. In certain instances, however, it may be required to vent BOG to the atmosphere when capacity of the preferred BOG recovery manifold is exceeded. Factors that can increase BOG pressure are the LNG quality and temperature, the quality of the storage trailer insulation, atmospheric pressure, and the rate of LNG transfer between tanks.
 - When LNG trucking transfer is completed, a small amount of methane is released during the hose purge upon disconnection. It is not possible to recapture this small amount of released gas.
 - Finally, though it is extremely rare and has not occurred since the commissioning of the BOG manifold in 2021, extremely low atmospheric pressures can temporarily increase BOG rates greater than the BOG recovery manifold's capacity. If an extreme low atmospheric pressure condition occurred, the BOG recovery manifold would be used to its full extent; however, it is possible that further venting to atmosphere would be required.

Out of normal operations at the facility, there have been no unintentional methane releases such as equipment leakage. Gas detection, both fixed and portable, is utilized while the site is in standby and in operation. Any abnormal operating conditions, including the unintentional release of methane, are required to be reported to management.

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- c. There are no detectable leakage rates observed from the facility during vaporization and injection operations aside from the manual releases summarized in the response to part b., above. With respect to the requested comparison to “leakage rates from permanent distribution system equipment such as the take station,” there are no detectable gas leaks at take stations. All take stations have fixed gas detection that calls out to gas control. In its most recent System Integrity Report,¹ the Company estimates that lost and unaccounted for gas accounts for 2.7 percent of the total of volume of gas delivered to, or injected into, the Company's distribution system in Rhode Island. This percentage includes losses from leaks, broken meters, releases during repairs, and theft.

¹ Please see the Company's Fiscal Year 2024 Gas Infrastructure, Safety, and Reliability Plan filing in Docket No. 22-54-NG at Bates page 136 available at <https://ripuc.ri.gov/sites/g/files/xkgbur841/files/2022-12/2254-RIE-Book1-2024FY-GasISR%2012-22-22.pdf>.