

Via Hand Delivery and Electronic Mail

September 8, 2023

Emma Rodvien, Coordinator
Energy Facility Siting Board
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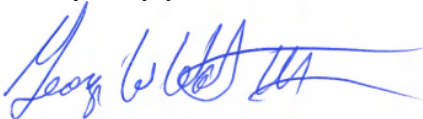
Re: **The Narragansett Electric Company
Aquidneck Island Gas Reliability Project
EFSB Docket No. SB-2021-04
Prefiled Testimony of Jeffrey A. Montigny, Jacques R. Afonso,
Julie M. Porcaro, Tim Casey and Brian K. Kirkwood**

Dear Ms. Rodvien:

I am enclosing for filing on behalf of The Narragansett Electric Company an original and seven (7) copies of the following prefiled testimony:

- Prefiled testimony of Jeffrey A. Montigny which is marked as Exhibit No. TNEC-17;
- Prefiled testimony and attachments of Brian K. Kirkwood which is marked as Exhibit No. TNEC-18;
- Prefiled testimony of Julie M. Porcaro which is marked as Exhibit No. TNEC-19;
- Prefiled testimony of Jacques R. Afonso which is marked as Exhibit No. TNEC-20; and
- Prefiled testimony of Tim Casey which is marked as Exhibit No. TNEC-21.

Very truly yours,



George W. Watson III

Enclosures

Copy to: Docket SB-2021-04 Service List (by electronic mail)

SB-2021-04 The Narragansett Electric Company's Application for a License to Mobilize and Operate a Liquefied Natural Gas (LNG) Vaporization Facility at Old Mill Lane (Portsmouth, RI)

Updated May 17, 2023

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**THE NARRAGANSETT ELECTRIC COMPANY
EFSB DOCKET NO. SB-2021-04
RE: AQUIDNECK ISLAND GAS RELIABILITY PROJECT
WITNESS: JEFFREY A. MONTIGNY
SEPTEMBER 8, 2023**

PRE-FILED DIRECT TESTIMONY

OF

JEFFREY A. MONTIGNY

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EXECUTIVE SUMMARY

Jeffrey A. Montigny is employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the “Company”) and testifies on its behalf. Mr. Montigny is a Principal Engineer in gas engineering and manages the Old Mill Lane project (“Project”). In his pre-filed testimony, Mr. Montigny describes the original estimated cost of the Project as approximately \$15 million with a future \$1.5 million annual operation and maintenance cost. He later testifies how the estimate to construct the site has decreased, while the cost to operate the site has increased.

He testifies that, subject to EFSB approval, the construction of the Project is expected to take approximately nine months of construction time, which would most likely be split into two spring / summer construction seasons due to the necessity to stop construction to allow for winter LNG operation set up. He testifies that the proposed mitigation to reduce the noise impacts from the Project include: (1) moving the operation further back into the site away from Old Mill Lane to lessen the noise emissions at the neighboring properties; (2) installing noise mitigating sound walls be erected around the vaporizing equipping and noise blankets on certain equipment to further quiet noise emissions from the equipment; and (3) purchasing new modern vaporizing equipment that operate more efficiently and at lower decibels.

Mr. Montigny also responds to the Portsmouth Zoning Board of Review’s Advisory Opinion and opines that the Project is compatible with surrounding uses and that it will not create a nuisance or a hazard in the neighborhood, especially in light of the noise mitigation proposed by the Company. He notes that the Zoning Board of Review’s finding that the special

use would not be in conformance with the purposes and intent of the comprehensive plan and zoning ordinance of the Town of Portsmouth is contrary to the Town of Portsmouth Planning Board Advisory Opinion that determined that the Project did comply with the Comprehensive Plan. He concludes that a reliable gas system during the winter months is in the interest of the health, safety and welfare of everyone on Aquidneck Island

1 **I. Introduction**

2 **Q. Please state your name and business address.**

3 A. My name is Jeffrey A. Montigny. My business address is 280 Melrose Street,
4 Providence, Rhode Island 02907.

5

6 **Q. By whom are you employed and in what position?**

7 A. I am employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the
8 “Company”) as a Principal Engineer in gas engineering.

9

10 **Q. What are your responsibilities as a Principal Engineer?**

11 A. My current responsibilities include managing the Old Mill Lane project in Portsmouth as
12 well as other major projects in the development and/or engineering stage that are
13 typically categorized as Complex Engineering.

14

15 **Q. Please describe your education, training, and experience.**

16 A. I hold a Bachelor of Science in Mechanical Engineering Technology that I received from
17 the University of Massachusetts – Dartmouth. For the past 23 years I have worked in the
18 gas industry, primarily in an engineering capacity. I was first employed by Fall River
19 Gas Company in 2000. The Fall River Gas Company was acquired by New England Gas
20 Company in 2002, and New England Gas Company was acquired by National Grid in
21 2006. Prior to working in the gas industry, I worked as an engineer for a temperature

1 controls company and also worked in a manufacturing environment in the textile
2 engineering field. On May 25, 2022, PPL Rhode Island Holdings, LLC, a wholly owned
3 indirect subsidiary of PPL, acquired 100 percent of the outstanding shares of common
4 stock of the Company from National Grid USA, at which time I began working in my
5 current position.

6
7 **Q. Are you familiar with the Aquidneck Island Gas Reliability Project (the “Project”)?**

8 A. Yes. Prior to managing the Project, I served as the Manager of Distribution Engineering
9 with National Grid and participated on the project team for a time in the evaluation of the
10 different locations considered along the Burma Road area in Middletown and/or on the
11 U.S. Navy base in Newport for this project.

12
13 **Q. Are you familiar with Application and Siting Report dated April 2022 (“Siting
14 Report”) that were submitted to the Rhode Island Energy Facility Siting Board (the
15 “Siting Board”)?**

16 A. Yes. By that time, I was fully involved with the Project and worked along with the new
17 team to prepare the Application.

18
19 **II. Purpose and Structure of Testimony**

20 **Q. What is the purpose of your testimony in this proceeding?**

21 A. In my testimony, I will provide an overview of the estimated cost, construction practices,

1 schedule for the Project, a summary of the proposed mitigation to reduce the noise
2 impacts from the Project, and respond to the Portsmouth Zoning Board of Review's
3 Advisory Opinion.

4
5 **Q. How is your testimony structured?**

6 A. Section I is the Introduction. Section II presents the purpose and structure of my
7 testimony. Section III presents a description of the Project. Section IV presents the
8 estimated cost of the Project. Section V describes the construction practices and schedule
9 for the Project. Section VI is the Conclusion.

10
11 **III. Description of Project**

12 **Q. Please describe the Project.**

13 A. The Project for which the Company is requesting a license from the Siting Board is the
14 use of portable equipment for the storage and conversion of LNG at Old Mill Lane in
15 Portsmouth to be used to backup / supplement the supply of natural gas to the Company's
16 gas distribution system that serves Aquidneck Island. The Project includes a number of
17 site improvements proposed for impact mitigation and operational reasons.

18
19 **IV. Estimated Cost of the Project**

20 **Q. What is the estimated cost of the Project?**

21 A. The Company had originally estimated a total Project cost of approximately \$15 million

1 plus approximately \$1.5 million annually for equipment rental, staffing, and the annual
2 operation and maintenance costs. It should be noted that at the current time, the estimate
3 for site development has decreased, while the annual cost of operation has increased.
4 These estimate changes are described in response to the next question.

5
6 **Q. Please breakdown how much of the estimated cost is for site work, equipment rental**
7 **or purchase, staffing, and general operation costs.**

8 A. The original Project estimate for the sitework was \$14,597,782 which includes the
9 sitework plus the annual operation and maintenance costs for the first year. If you
10 remove these costs and the contingencies associated with these costs, the updated
11 estimate for the sitework is \$12,649,304.

12
13 With respect to equipment rental & staffing, initially the annual estimated cost for renting
14 equipment and staffing the winter operation had been approximately \$1.5 million. This
15 estimate includes rental of LNG equipment, LNG equipment owner staffing, Company
16 LNG staffing, 24-hour security on site whenever LNG is being stored in the tanks, snow
17 removal, maintenance, and sanitation services. This cost is increasing primarily due to
18 increasing equipment leasing and staffing costs and currently has increased to
19 approximately \$1.84 million dollars per year. Due to this increase, moving forward, the
20 Company would prefer to purchase equipment, which is more cost effective and also to
21 ensure that the required equipment for the operation is available at all times.

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With respect to equipment purchase, updated pricing for new equipment has recently been obtained. The previous estimate that the Company provided to the Public Utilities Commission in connection with this proceeding was based on the cost to purchase the Cumberland equipment.

As described in Mr. Kirkwood’s testimony, the new equipment for Old Mill Lane would be nearly identical to the recently purchased Cumberland equipment with a few enhancements to reduce noise, monitor emissions, increase operability, and refine operator controls. The estimated cost to purchase new equipment for the Old Mill Lane Project is approximately \$12.5 million. Purchasing the equipment is more cost effective for the Company as mentioned previously and also gives the Company more control by having new and modern equipment on hand that is correctly sized and fit for use, as opposed to rental equipment that may not be available or in the condition acceptable to the Company. The new equipment is also expected to operate more quietly and, with the addition of sound mitigation walls and blankets, meet the local noise ordinance requirements during the vaporization operation. It should be noted that thus far there has been no purchase of new equipment for this Project. It should also be noted that the annual cost for Rhode Island Energy to operate the winter operation with Company owned equipment and Company employees is estimated at \$815,000, which is less than

1 the \$1.84 million cost for leased equipment and contracted staffing services mentioned
2 above.

3
4 **V. Construction Practices and Schedule**

5 **Q. Please describe the construction sequence for the Project.**

6 A. The construction sequence for the Project includes site preparation and limited vegetation
7 clearing, soil erosion and sedimentation controls, and facility construction as more
8 specifically described in Section 3.2.1 of the Siting Report.

9
10 **Q. What is the construction schedule for the Project?**

11 A. The schedule depends on the time of year that the Project is approved by the Siting Board.
12 Construction of the Project is expected to take approximately nine months of construction
13 time, which would most likely be split into two spring / summer construction seasons due
14 to the necessity to stop construction to allow for winter LNG operation set up. It should
15 also be noted that any back up LNG support work for Enbridge projects (new main
16 installation / inspections) could also affect the construction schedule. Saying that, limited
17 construction such as vegetation removal and/or grading could occur during the winter
18 months as long as it does not interfere with the winter operation which spans between
19 December and March.

20

1 Civil Work would begin on the rear section of the project footprint with the aforementioned
2 vegetation removal and general grading. Site utility improvements (gas & electric
3 relocations & environmental improvements) would then occur followed by the final
4 surfacing of the project footprint with a permeable surface. It should be noted that all
5 necessary soil testing will be performed prior to the work to ensure that the soil on the site
6 is clean. If contaminants are found, the timeline for this phase may need to be extended to
7 remediate the areas of concern.

8
9 **Q. Are you familiar with the noise concerns that have been raised about the project.**

10 **A.** Yes. Initially, the LNG support operation was set up on an emergency basis and located
11 closer to the front of the site that borders Old Mill Lane. While this equipment set up has
12 been successful in allowing Rhode Island Energy to inject vaporized LNG when needed
13 into the distribution system, it is acknowledged that the equipment has emitted noise that
14 has been bothersome to some neighbors. It has been noted that that there have been
15 complaints regarding lighting on the site at night, as well as the general visual appearances
16 of the site. In response to these complaints, Rhode Island Energy has made several
17 improvements to address these complaints.

18
19 NOISE:

20 With respect to noise from the operation, Rhode Island Energy acknowledges that the
21 vaporization equipment used on the site can create sound that is objectionable to the

1 neighbors during times that it is operated. To eliminate the noise issue, Rhode Island
2 Energy has taken certain steps to reduce the noise, such as arranging for overhead wire
3 electrical supply at the front of the site to eliminate the use of diesel operated emergency
4 generators. The Company is also proposing multiple ways to lessen the noise so that it
5 complies with the Town Noise Ordinance. To start with, noise studies have been
6 performed by a consulting firm specializing in this field to obtain baseline noise emission
7 data from the equipment. The noise data can then be modeled for different locations on the
8 Project site. This drives the decision to move the operation further back into the site away
9 from Old Mill Lane to lessen the noise emissions at the neighboring properties.

10 Additionally, it is proposed that noise mitigating sound walls be erected around the
11 vaporizing equipping to further quiet noise emissions from the equipment. Rhode Island
12 Energy has also explored and visited the manufacturer of the vaporizing equipment to
13 identify equipment that operates at lower decibels, and the Company plans to purchase such
14 equipment for use on the site if the Project is approved. Currently, Rhode Island Energy
15 leases the equipment at the Old Mill Lane site, and therefore does not have control over
16 what specific equipment is sent to the site. Hence the leased equipment sent could
17 potentially create more noise than is desired. Purchasing new, more quiet equipment and
18 surrounding it with noise mitigating walls will bring the vaporizing operation into
19 compliance with the Town Noise Ordinance. Over time, the Company has also changed
20 its' operation schedule so that certain operations are performed during the day, and thereby
21 do not affect the neighbors at night. An example of this operational schedule change is the

1 daily startup and warm up of the vaporizers. By starting them only during daytime hours,
2 neighbors are not disturbed at night. Additionally, the Company had a boiloff gas manifold
3 designed, built and installed, so that normal gas that boils off inside of the storage tanks can
4 be piped directly into the 55psig distribution system, which eliminated the previous regular
5 practice of boil off venting noise to atmosphere. This manifold effort has been very
6 successful at eliminating that noise.

7
8 LIGHTING:

9 The Company acknowledges complaints about night lighting at the site. To remedy this
10 complaint, the Company made adjustments to the lighting on the utility poles by
11 repositioning the lighting and adding equipment to the lighting fixtures to focus the light
12 more directly onto the site so as not to affect neighboring homes. The lighting is now dark
13 sky compliant.

14
15 VISUAL:

16 The Company acknowledges complaints received about the appearance of the site when the
17 site was first set up. In response to that, permanent fencing has been installed around the
18 entire perimeter of the project site. In addition, a more visually pleasing fence at the front
19 of the property running parallel to Old Mill Lane has been installed to improve the view
20 from the roadway. Inside the fence, a permeable surface has been installed, which handles

1 stormwater and has successfully eliminated any standing water since its installation. It also
2 provides a very flat and clean surface that is covered with peastone.

3
4 **Q. Can the site meet the noise ordinance?**

5 A. As the project site currently stands, there is one aspect of the operation that does not meet
6 the noise ordinance, that being the venting of LNG tanks during refilling, and therefore the
7 answer is no. It should be noted that this would occur on perhaps 3-5 days of operation
8 over the course of a normal winter.

9
10 The remainder of the operation, including the cycling and operation of the glycol
11 vaporizers, is projected to be below the nighttime noise limits. This will be achieved by the
12 relocation of the equipment away from the street, the use of newer, more efficient and
13 quieter equipment, and by sound mitigation walls and blankets.

14
15 The Company respectfully requests a waiver from complying with the noise ordinance for
16 activities related to venting of the storage tanks and delivery tanks as we are unable to
17 further reduce the noise generated during those activities. As it has in the past, the
18 Company will limit those activities to business hours during weekdays whenever possible.
19 An example of when it may not be possible is if the facility is required to operate for an

1 extended period of time. If such an event were to occur, it is possible that delivery trucks
2 would occur frequently throughout the day to resupply the facility.

3

4 **Q. Can the operation of the facility during injection of gas system meet the nighttime**
5 **noise limits?**

6 A. Yes, as mentioned above it can, but only if the Company purchases the new, quieter
7 equipment and also relocates the equipment further back on the site away from Old Mill
8 Lane. As noted in Brian Kirkwood's testimony, the Company has been unable to reliably
9 lease quieter equipment on a regular basis. Purchasing new, quieter equipment will enable
10 the Company to own and maintain its own equipment which will increase equipment
11 reliability, will be more cost effective than leasing, and will allow the Company to comply
12 with the Town Noise Ordinance.

13

14 **Q. Can the Project meet the noise ordinance using the layout from previous**
15 **mobilizations?**

16 A. No. The current layout places the equipment too close to Old Mill Lane and does not allow
17 any space for sound mitigation. As noted by testimony from our noise experts, additional

1 mitigation in the form of sound walls and blankets are required to reduce the operational
2 noise levels to below 50 dBA.

3
4 **Q. Did any of the agencies submitting advisory opinions raise the importance of**
5 **complying with the noise ordinance?**

6 A. The Rhode Island Department of Health and Statewide Planning identified compliance with
7 the noise ordinances as being important for integration. This issue was also discussed in
8 great detail before the Portsmouth Town Council. The Portsmouth Town Council
9 ultimately voted against granting the variance which should only be needed on a limited
10 basis during the initial setup to cool and fill the tanks and briefly during infrequent LNG
11 deliveries over the winter which would occur during the day, as described in greater detail
12 by Brian Kirkwood. To be clear, while the venting noise generated during tank refill is
13 unfortunate, there are presently no other options for limiting the noise, and it would be
14 impossible to operate the facility without receiving LNG deliveries. It should be
15 mentioned that the Company is investigating the use of muffling equipment that could be
16 used during venting but it is in the early stage of investigation.

17
18 **Q. Are you familiar with the Portsmouth Zoning Board of Review Advisory Opinion**
19 **regarding the special use permit?**

20 A. Yes. The Zoning Board of Review determined that the Project meets the following
21 requirements for a special use permit: (i) adequate protection is afforded to the surrounding

1 property by the use of open space and planting; (ii) safe vehicular access and adequate
2 parking are provided; and (iii) solar rights of the abutters are provided for. Ultimately, the
3 Zoning Board of Review voted against issuing a special use permit finding that the Project
4 did not meet the other five criteria for granting a special use permit. Below is the
5 determination from the Zoning Board of Review’s Advisory Opinion. Town of Portsmouth
6 Zoning Board of Review Advisory Opinion dated July 21, 2023.

7 The Board determined that the use would be detrimental to the surrounding area and
8 would not be compatible with the neighboring land uses as the use is an industrial
9 use in a residential zone surrounded by residential homes. The project could
10 potentially create a nuisance or a hazard in the neighborhood as the large tanker
11 trucks containing liquified natural gas used for the project can only access the
12 project site via Old Mill Lane, which is a two-lane road, primarily used for
13 residential use. The Board found, based on testimony presented, that there is
14 considerable noise that comes from the project site that relates to the current
15 operation and determined that there is limited control of the noise as the applicant is
16 actively seeking a noise variance from the Town Council. The Board further
17 determined that the proposed special use would not be in conformance with the
18 purposes and intent of the comprehensive plan and the zoning ordinance of the
19 Town of Portsmouth, and that the health, safety, and welfare of the community
20 would not be protected.

21
22
23 **Q. What is your response to the Zoning Board of Review’s determination?**

24 A. I’m not qualified to speak to the first issue concerning the impact on surrounding areas, but
25 our real estate expert agreed with the appraiser hired by the Board who concluded that the
26 Project would have limited impact on the surrounding area. Based on their reports I would
27 have to disagree with the Zoning Board of Review’s conclusion. As for the compatibility
28 with the surrounding uses, the site has historically supported this use (although the site was
29 dormant since the early 1990s and ultimately removed in 2014). The Project will also

1 mitigate the impact of the current mobilization by moving the equipment further away from
2 the street and mitigating the noise impacts from the equipment. We also believe that the
3 Project will not create a nuisance or a hazard in the neighborhood. As noted by Brian
4 Kirkwood, the system meets the regulatory requirements, and the past four years have
5 proven that the equipment and LNG can safely be delivered to the site. We also believe
6 that the proposed facility's projected compliance through the use of sound mitigation walls
7 and blankets will prevent the facility from being a nuisance and sufficiently addresses the
8 concerns the Zoning Board of Review raised with regarding whether the "control of noise,
9 smoke, odors, lighting and any other objectionable feature is provided." Noise being the
10 relevant criteria, as the site does not generate smoke or odors, and the lights are now
11 shaded to be dark sky compliant. In addition, the lights are turned off at night and are only
12 used if the site is injecting supply to the system. Finally, the Zoning Board of Review
13 found that the special use would not be in conformance with the purposes and intent of the
14 comprehensive plan and the zoning ordinance of the Town of Portsmouth. I would like to
15 point out that this finding is contrary to the Town of Portsmouth Planning Board Advisory
16 Opinion that determined that the Project complied with the Comprehensive Plan. See Town
17 of Portsmouth Planning Board Advisory Opinion dated July 19, 2023. As for conformance
18 with the zoning ordinance, utility use is permitted in this zone by special use permit, so
19 clearly the zoning ordinance contemplates allowing such uses in a residential district.
20 Finally, we believe that having a reliable gas system during the winter months is in the

1 interest of the health, safety and welfare of everyone on Aquidneck Island.

2
3 **Q. Are you familiar with the Portsmouth Town Council’s advisory opinion dated July**
4 **25, 2023 regarding the Company’s application seeking a variance (the “Variance**
5 **Application”) from the restrictions of §257-18 of the Town of Portsmouth Code of**
6 **Ordinances (the “Noise Ordinance”)?**

7 A. Yes.

8
9 **Q. Does the Company believe that the Portsmouth Town Council appropriately**
10 **analyzed the Variance Application?**

11 A. No. In order to determine whether to grant a variance from the restrictions of the Noise
12 Ordinance, the Portsmouth Town Council was obligated to “balance the hardship to the
13 applicant, the community and other persons, if the sound variance is not allowed, against
14 the adverse impact on the health, safety and welfare of persons affected, the adverse
15 impact on property affected, and other adverse impact, if the sound variance is allowed.”¹
16 The Portsmouth Town Council’s advisory opinion does not contain any consideration of
17 the adverse impacts on the community or other persons if the Project is not allowed to
18 operate. As explained in the Siting Report, the Project is needed to ensure a reliable
19 supply of natural gas to thousands of customers on Aquidneck Island that rely upon

¹ Advisory Opinion of Portsmouth Tow Council on Application for Sound Variance dated July 24, 2023, at Page 2 quoting § 257-18.D of the Town of Portsmouth Code of Ordinances.

1 natural gas to heat their homes and operate their businesses. The Portsmouth Town
2 Council did not weigh any of their interests in rendering its advisory opinion. Because of
3 my role as liaison to other affected customers and communities it causes concern that
4 their interests were not addressed or considered in the Portsmouth Town Council's
5 advisory opinion.

6

7 **VI. Conclusion**

8 **Q. Does this complete your testimony?**

9 A. Yes, it does.

**THE NARRAGANSETT ELECTRIC COMPANY
EFSB DOCKET NO. SB-2021-04
RE: AQUIDNECK ISLAND GAS RELIABILITY PROJECT
WITNESS: BRIAN K. KIRKWOOD
SEPTEMBER 8, 2023**

**PREFILED DIRECT TESTIMONY
OF
BRIAN K. KIRKWOOD**

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2 **EXECUTIVE SUMMARY**
3

4 Brian K. Kirkwood is employed by Rhode Island Energy as a Manager of Liquefied Natural
5 Gas (“LNG”) and testifies on its behalf. Mr. Kirkwood oversees LNG operations at 111 Old Mill
6 Lane (the “Property”). His testimony begins with a summary of the current operations at the
7 Property and what will change with the proposed Aquidneck Island Gas Reliability Project (the
8 “Project”).

9 He testifies about the alternatives to keeping the system in standby noting that mobilizing the
10 system from a cold start, i.e., no vaporizing equipment on site, would take approximately two weeks
11 and that there are inherent risks with a cold start that could delay mobilization such as unexpected
12 equipment preparation or maintenance.

13 Mr. Kirkwood describes the differences between running a peak shaving facility and a
14 backup facility. He explains how the Project at Old Mill Lane serves both as a backup supply as a
15 secondary source intended to address capacity vulnerability, and also peak shaving to address the
16 capacity constraint to Aquidneck Island.

17 Mr. Kirkwood explains that the costs for the Company to purchase the equipment necessary
18 for the Project would be less expensive than the costs for the Company to rent the equipment noting
19 that after the sixth year in operation, the Company would be able to provide the same service at a
20 much lower cost to customers. The higher rental costs are due to a spike in rental costs as
21 experienced in the past few years.

22 Mr. Kirkwood also notes that the purchased equipment would be quieter, more efficient, and
23 more reliable than the equipment available for rental. He explains that using Company-owned

1 _____ equipment will also eliminate delivery delays and eliminate the risk that necessary equipment might
2 be damaged upon delivery. Owning the equipment will also mean that the equipment is available
3 during an unforeseen emergency occurring outside of the typical heating season.

4 Mr. Kirkwood also testifies that while the proposed Company-owned equipment and new
5 layout would be substantially quieter, the Project will periodically still exceed Portsmouth's noise
6 ordinance during venting but that such events only occur during the initial cooldown and when LNG
7 transport trailers vent before leaving the site. Mr. Kirkwood goes on to describe how the new
8 proposed layout of the project site will increase safety and operation efficiency while also
9 decreasing noise. Finally, he describes how the 750 MSCFH (thousand standard cubic feet per
10 hour) vaporizer will occupy the same space as the current vaporizers and yet will benefit system
11 reliability by providing backup service to more existing customers than the vaporizers that are rented
12 by the Company.

1 I. **Introduction**

2 Q. **Please state your name and business address.**

3 A. My name is Brian Kirkwood. My business address is 280 Melrose Street, Providence,
4 Rhode Island 02907.

5

6 Q. **By whom are you employed and in what position?**

7 A. I am employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the
8 “Company”) as the Manager of LNG.

9

10 Q. **What are your responsibilities as the Manager of LNG?**

11 A. In my role as the Manager of LNG, I oversee Liquefied Natural Gas (“LNG”) Operations at
12 the Company’s facilities in Cumberland, Exeter, and Portsmouth.

13

14 Q. **Please describe your education, training, and experience.**

15 A. I hold a bachelor’s degree in Marine Transportation from Massachusetts Maritime Academy
16 and master’s degree in Construction Project Management from Worcester Polytechnic
17 Institute. My LNG career began in 2009 when I began working on LNG tanker ships as a
18 deck department trainee (*cadet*). From 2010 through 2016, I worked on LNG tanker ships as
19 a navigation officer while at sea and cargo operator when conducting terminal LNG loading
20 or unloading operations. During my shipping career, I performed various LNG evolutions
21 including ambient cargo tank cool down, LNG loading, and LNG unloading operations. In
22 2016, I began working at National Grid as a Commercial Point LNG supervisor in

1 Dorchester, Massachusetts to support a plant modernization project. In 2019, I transferred to
2 Rhode Island to become the Cumberland LNG site supervisor and provided additional
3 support to Portsmouth LNG. In 2021, I moved into a position with Pipeline Safety as a Lead
4 Project Manager with National Grid until May 25, 2022, when PPL Rhode Island Holdings,
5 LLC, a wholly owned indirect subsidiary of PPL, acquired 100 percent of the outstanding
6 shares of common stock of the Company from National Grid USA, at which time I began
7 working in my current position.

8
9 **Q. Are you familiar with the Aquidneck Island Gas Reliability Project (the “Project”)?**

10 A. Yes. In my LNG related roles, I participated in mobilizing and supervising the Old Mill
11 Lane Portable LNG site.

12
13 **Q. Are you familiar with Application and Siting Report dated April 2022 (“Siting
14 Report”) that were submitted to the Rhode Island Energy Facility Siting Board (the
15 “Siting Board”)?**

16 A. Yes. I supported preparation of the Siting Report, particularly regarding Section 3, which
17 describes the Project.

18
19 **II. Purpose of Testimony**

20 **Q. What is the purpose of your testimony in this proceeding?**

21 A. In my testimony, I provide an overview of the LNG operations at the Old Mill Lane site, the
22 proposed site and equipment changes for the Project, alternatives to the planned

1 mobilization, cost justification for purchasing new equipment, and the benefits of purchased
2 equipment

3
4 **Q. How is your testimony structured?**

5 A. Section I is the Introduction. Section II presents the purpose and structure of my testimony.
6 Section III presents an overview of LNG operations at the Old Mill Lane site. Section IV
7 presents additional operations details and benefits of the Project. Section V is the
8 Conclusion.

9
10 **III. Overview of LNG Operations**

11 **Q. Please describe the Company's LNG operations at the Old Mill Lane site.**

12 A. The Company seasonally mobilizes LNG mobile storage and vaporization equipment to
13 support Aquidneck Island as a backup or peak shaving portable LNG site. The backup
14 function of the Project addresses the vulnerability of the gas supply infrastructure supplying
15 natural gas to Aquidneck Island. The peak shaving function of the site addresses the
16 potential gap between the supply and demand for natural gas on Aquidneck Island during
17 cold weather. For the winter heating season, the site is mobilized in November to be
18 operational for December 1 of each year and is typically demobilized in April after the
19 conclusion of the heating season. Mobilization has occurred outside the heating season to
20 address capacity vulnerability during pipeline maintenance activities; the mobilization and
21 demobilization process is similar to the winter season process.

22

1 Since the first seasonal mobilization in 2019, the equipment has consisted of five LNG
2 storage trailers, a high-pressure LNG pump trailer, a primary glycol vaporizer, a backup
3 vaporizer, an odorant trailer, an emergency generator, and an office trailer. The vaporizers
4 convert the LNG from a liquid to gaseous state for injection into the Aquidneck Island gas
5 distribution system. The glycol vaporizer is a heater which transfers heat from the heated
6 glycol water mixture to the cold LNG until a phase change occurs and LNG becomes gas.
7 The glycol mixture is comprised of water and glycol to have optimal heat transfer properties
8 while maintaining appropriate freeze temperature protection when compared to water alone.
9 The operation only uses one vaporizer, leaving the second as a redundant backup.

10
11 For the seasonal operation, the equipment is delivered, setup, and connected to the existing
12 gas manifold. Once the equipment is connected, a third-party vendor delivers LNG to the
13 site by truck and transfers it into the LNG storage trailers. While the equipment is in
14 “standby”, the vaporizer periodically cycles on to maintain the glycol water mixture
15 temperature at the desired setpoint. This ensures that the vaporizer is ready to be used during
16 an outage without having to wait for the vaporizer to reach the required temperature. In
17 addition, the storage trailers must occasionally be vented to maintain proper pressure.
18 Trailers are vented via the boil-off gas (“BOG”) manifold that requires a warm vaporizer to
19 heat the cold BOG before being injected into the distribution system.

20
21 During the vaporization process LNG flows from storage tanks to a high-pressure LNG
22 pump trailer where it is sent to a glycol vaporizer for vaporization. The vaporizer heats the

1 LNG until it becomes a gas and it is then injected into the gas manifold. The gas manifold
2 regulates and odorizes the vaporized gas before it is sent into the natural gas distribution
3 system.

4
5 After the initial filling of the LNG storage vessels, additional LNG will be delivered onsite
6 as needed to maintain onsite storage levels to be prepared for capacity vulnerability issues.
7 A security guard is staffed continuously whenever LNG process equipment is onsite and
8 makes routine security rounds. Anytime LNG is onsite a Company operator is on shift to
9 make routine checks of the equipment, monitor LNG inventory, and maintain readiness to
10 vaporize as required.

11
12 **Q. Is the proposed Project the same as the prior winter mobilizations?**

13 **A.** No, the operation is the same but the Project includes significant site improvements and
14 equipment improvements to address reliability and to mitigate the visual and noise impacts.
15 The Project calls for an expansion of the site to provide additional space for the equipment to
16 be located away from Old Mill Lane. The additional space will also allow for the installation
17 of a sound wall that will reduce the operational noise from the vaporizer. The Company also
18 believes that the new layout is more efficient and safer because it allows for equipment to be
19 removed and replaced without taking the facility offline and it will reduce the length of pipes
20 required to connect the mobile equipment together. Once the equipment is setup and fueled,
21 the site will be maintained in standby. Maintaining the equipment in standby helps to ensure

1 that it can immediately respond when necessary to address threats to distribution system
2 reliability.

3
4 **Q. Can the LNG be stored without the equipment being in standby?**

5 A. Yes, but with the following operational limitations:

6 1. LNG can only be stored in specific equipment that is designed to contain LNG.

7 While being stored, LNG will boil at approximately -258° Fahrenheit at atmospheric pressure
8 and generate BOG. Storage vessels' maximum working pressures vary, but all will require
9 operator intervention to relieve BOG before the fixed pressure relief valves operate. To
10 relieve pressure, cold BOG (approximately -220°F) is sent through one of the heated
11 vaporizers to warm the BOG gas to approximately +60°F before being injected into the
12 recovery manifold and distribution piping. The other alternative would be venting directly to
13 the atmosphere. To minimize greenhouse gas emissions, sending BOG through the recovery
14 manifold is the preferred choice. This, however, requires a vaporizer to be warm while
15 BOG is being heated via the vaporizer's glycol. Depending on the storage vessel insulation
16 efficiency, atmospheric pressures, and initial temperature of LNG, relieving BOG is
17 necessary every two to seven days. LNG can be stored without a vaporizer in a standby-like
18 state, but all BOG will be required to be vented to atmosphere, which is not preferred as
19 mentioned above.

20 2. Keeping LNG onsite with all vaporization equipment off would increase the response
21 time to vaporize as the equipment will require the glycol mixture to heat up and reach
22 operational temperatures. Keeping the vaporization equipment off for any period of time

1 that allows the equipment to cool to ambient temperature jeopardizes the reliability of the
2 vaporization equipment by increasing the likelihood of water permeating into devices and
3 moving parts becoming inoperable or restricted in their normal range of moment.
4

5 **Q. How long would it take to mobilize the system from a cold start?**

6 A. Mobilizing the system and all ancillary equipment would take approximately two weeks
7 from having no equipment onsite, to staging, setting up, cooling down, loading LNG, and
8 testing. Equipment would need to be kept locally to setup and become operational within
9 two weeks. If not kept locally, the mobilization time is subject to availability and
10 transportation risks that make estimating a time to mobilization somewhat speculative.
11

12 **Q. What is the risk of running from a cold start?**

13 A. When equipment is left off for any extended period, there is risk of equipment having issues
14 starting back up. Cold and wet weather can cause valves and regulators to become stuck or
15 restricted in their normal range of motion. Burners and blowers can have ice accumulation
16 during freezing conditions that can delay or inhibit startup. Any additional preparation
17 required to troubleshoot issues before operating the equipment decreases the Company's
18 ability to respond to an emergent issue and increases potential for customer outages. Further
19 delay in becoming operational would occur if the site was staged without any LNG onsite.
20 In that scenario, two to three days in ideal conditions would be required to schedule LNG
21 deliveries, deliver LNG, cooldown the storage units, and test the equipment.
22

- 1 **Q. Please summarize the differences between running a peak shaving facility and a backup**
2 **facility.**
- 3 A. Both operations inject vaporized gas from LNG when system demands necessitate additional
4 gas that is not available from the pipeline. A backup supply facility is intended to meet
5 existing gas customer needs during a pipeline outage or when pipeline capacity is reduced
6 and will necessitate the most amount of LNG gas supply. For the Project’s requirements,
7 backup conditions require the largest vaporizer, 750 MSCFH, to meet customer demand in
8 colder weather conditions. Depending on the heating degree day “HDD” all customer
9 demand on Aquidneck Island may not be satisfied based on the vaporization capacity and
10 actual HDD. At, approximately 35 HDD¹ or warmer, a 750 MSCFH vaporizer can meet all
11 of the forecasted Aquidneck Island customer gas demands. A 500 MSCFH can only supply
12 all customer gas demands at approximately 20 HDD or warmer. A peak shaver facility is
13 generally designed to meet a peak in gas demand when other sources of supply are
14 insufficient. On days when gas needs cannot be fulfilled from existing pipeline supply, peak
15 shavers will operate to meet the difference of available pipeline gas supply and actual gas
16 customer needs. For the Project, peak shaving requirements do not require a 750 MSCFH
17 vaporizer. On February 4, 2023, one of the coldest days in recent history, peak shaving
18 requirements were approximately 500 MSCFH. As Ms. Porcaro describes in her testimony,
19 the actual total customer gas consumption is not known until after the gas day. Gas Control
20 will use discretion and prudent judgement to call upon the Project to maintain sufficient
21 pressure in the Company’s distribution system based upon forecasted demand under certain

¹ A heating degree day is the numerical difference between the mean temperature over a 24 hour period and 65° Fahrenheit. 35 HDD is equivalent to a 24 hour period with a mean temperature of 30° Fahrenheit.

1 conditions and thereby will fulfill customer demand as required. As experienced on
2 February 4, 2023, this may result in higher than calculated peak shaving vaporization rates
3 for the given HDD or effective degree day “EDD”. The Project at Old Mill Lane is intended
4 to serve both purposes: a backup supply as a secondary source intended to address capacity
5 vulnerability, and also peak shaving to address the capacity constraint to Aquidneck Island.
6

7 **IV. Additional Operational Details and Benefits of the Project**

8 **Q. How long would it take to mobilize the Project under the following scenarios?**

9 **a. During the offseason with contracted equipment and personnel for pipeline**
10 **maintenance.**

11 **b. During the winter heating season with contracted equipment and personnel for**
12 **peak shaving purposes.**

13 **c. During the offseason for pipeline maintenance with Rhode Island Energy**
14 **equipment and personnel.**

15 **d. During the winter heating season with Rhode Island Energy equipment and**
16 **personnel for peak shaving purposes.**

17 **A. a.** In the offseason it would likely take two (2) to four (4) weeks to mobilize equipment and
18 arrange for contractor personnel. This is completely dependent on the availability of
19 equipment and personnel. Outside the current contracted winter operation season, our
20 contractor has made commitments with other customers across the United States and Mexico
21 and the leased equipment is transported back from these commitments which adds to the
22 mobilization time frame. Once all equipment is onsite at the Project, setup takes about one

1 (1) week. Within this one week period, glycol transportation needs to be arranged for the
2 650 MSCFH glycol vaporizer as it cannot be transported full of glycol. Unlike the 650
3 MSCFH vaporizer, the 500 MSCFH vaporizer can be transported with glycol in the unit.
4 Generally, glycol vaporizers over 500 MSCFH require the glycol to be removed for transit to
5 meet weight regulations. Additional items that are required include the odorization system
6 setup, sandbag berm installation, electrical cable installation, emergency generator setup,
7 office trailer setup, and restroom facility setup. After all equipment is setup, it will take
8 approximately 2 days to cooldown the equipment and fill with LNG. Equipment cooldown
9 and LNG filling can be completed in less time but will require LNG delivery trucks and the
10 operation to continue throughout the night. If this occurred on the weekend it would be
11 difficult to arranged for LNG delivery trailers, especially after normal business hours.

12
13 b. Mobilizing the site with contracted equipment and personnel during the winter
14 heating season would take approximately 7-10 days, but a contract would need to be
15 executed to store the equipment in a local storage yard. The contractor would still require
16 leasing fees to retain the equipment locally and prevent it from being used by another
17 customer. If the equipment was stored in Rhode Island, it would take approximately 7-10
18 days to arrange for contracting personnel, mobilization of the equipment onsite, and the
19 setup of the equipment for operation. This is assuming that no delays occur with
20 transportation services to move the portable equipment (LNG units, generator, and office
21 trailer), electrical services to setup power cabling, and the additional required contracted
22 services for the glycol transfer. It is not practical to accurately forecast the weather and

1 customer demand with enough notice to mobilize the site for peak shaving purposes. To
2 peak shave, the equipment would be required to be mobilized onsite, fully setup, and tested.
3 Depending on the peak shaving forecast, LNG deliveries would likely occur over two days to
4 accommodate cooldown but could be completed in less time if LNG delivery trailers were
5 available throughout the night and operations continued after normal business hours. To
6 reduce setup time, the delivery of equipment and setup of the equipment would extend
7 outside of normal business hours to prepare the site in short order. Delays can be expected
8 due to poor weather, weekends, or holidays. This scenario is not capable of providing
9 reliability services to the single feed pipeline unless LNG is stored onsite with personnel
10 immediately available to operate.

11
12 c. If the Company owned the proposed LNG portable equipment and needed to mobilize
13 during the offseason for pipeline maintenance, the response time would be approximately
14 one (1) week to have the equipment mobilized, setup, and available for use. The critical
15 path would be securing a contractor to move and deliver the glycol needed for the portable
16 vaporizers. The proposed purchased vaporizers (750 MSCFH) cannot be transported with
17 glycol in the units. Historically, it takes at least three to four days to reserve availability with
18 the glycol transportation company. Glycol is reused and taken from the stored vaporizers
19 and transported in separate trailers. Once the vaporizer is delivered in the final position,
20 glycol is transferred from the transport trailer. The tanker trailers used must be cleaned prior
21 to the glycol transfer to prevent contamination. As with the contracted operation, additional
22 items that are required include the odorization system setup, sandbag berm installation,

1 electrical cable installation, emergency generator setup, office trailer setup, and restroom
2 facility setup. After all equipment is setup, it will take approximately two days to cooldown
3 the equipment and fill with LNG. As with the previous scenarios this period can be reduced
4 if the operation and delivery trailers extended outside normal business hours. Using
5 Company employees to operate the equipment would ensure that the available staffing is
6 required as there is no certainty with the availability of contracting personnel unless a
7 contract is in place to reserve labor availability.

8
9 Response times and risks for the Company to mobilize owned equipment from offsite during
10 the winter heating season would be the same as response c. The required time would still be
11 greater than the ability to accurately forecast the weather and customer demand for peak
12 shaving purposes. To peak shave effectively, the equipment would need to be mobilized
13 onsite, fully setup, and tested. This scenario is not capable of providing reliability services to
14 the single feed pipeline unless LNG is stored onsite with personnel immediately available to
15 operate.

16
17 **Q. Can you provide a detailed analysis of the financial justification for purchasing**
18 **equipment, including a summary of the estimated rental costs and how those changed,**
19 **if at all, over the past few years?**

20 A. The Company has experienced rental costs that have increased over 60 percent when
21 compared with the previous rental contract rates. Equipment with higher vaporizations rates
22 is not readily available and the Company is subject to demand pricing for the required

1 equipment that is needed to serve our customers. The Company performed a cost analysis to
2 assess the viability of purchasing similar equipment and operating with Company employees
3 instead of contracted employees. The Company's revised cost analysis is set forth in
4 Attachment BKK-1 and includes the most recent known figures for equipment purchase and
5 rental costs. The analysis concluded that it would take approximately six (6) years to recover
6 the initial cost of purchasing similar equipment before the total operating costs (equipment
7 and labor) would be significantly lower. When the scheduled offseason outages to support
8 pipeline transmission projects are factored in, it will only take approximately four (4) years
9 to recover the initial purchase costs. Current operating costs are recovered through the
10 Company's Gas Cost Recovery Factor and the Company would propose to recover the cost
11 of purchased equipment through the Infrastructure, Safety and Reliability plan. After year
12 six (6) and during subsequent years, the Company would be providing its customers with the
13 same services at a much lower cost.

14
15 Additionally, the purchased equipment will have additional benefits for customers over the
16 current contracted equipment. Vaporizers will be of higher vaporization rates (two 750
17 MSCFH vaporizers instead of one 500 MSCFH and one 650 MSCFH vaporizer), have
18 redundant glycol circulation pumps, quieter due to foam insulation and VFD blower motors,
19 more efficient in operation, and utilize ultra-low NOx burners (an advantage over the current
20 650 MSCFH and 500 MSCFH vaporizer). Storage units will have increased reliability with
21 each unit having a vaporization pump and unit transfer pump, will be able to operate at
22 higher pressure, and the same number of storage vessels will hold more LNG to reduce

1 needed delivery trucks during design conditions. All units will be new and feature the latest
2 electronics and safety features, including process logic controllers, software, ladder logic
3 programming, and sensors.

4
5 **Q. Please break down the most recent cost estimation for purchasing the proposed two**
6 **portable LNG vaporizers of 750 MSCFH capacity and six LNG storage queens.**

7 A. The cost for the recently purchased equipment for Cumberland LNG that consists of the
8 same size vaporizers and storage queens was used for the initial cost estimation of the
9 Project's equipment. In August, a revised estimate was prepared by the manufacturer that
10 reflected price increases due to the cost of materials and labor rates for manufacturing. The
11 Company, in order to diligently reduce noise, increase efficiency, and increase reliability
12 requested some improvements to the equipment purchased for Cumberland. Chief
13 improvements for the vaporizers include additional sound reducing features, auxiliary glycol
14 circuit to boost storage queen pressure building on the coldest days, and enhancements to the
15 operating screen and location of operator controls. Major improvements for the storage
16 queens include a silencer on the vent stack, flow meters for emission tracking, and glycol
17 heated pressure builder to enhance pressure building capacity on near zero degree days.
18 While these improvements add a slight cost to the equipment, the Company believes the
19 incremental cost of these enhancements provide significant value to our customers. In
20 discussions with the manufacturer, the cost of these additions was incremental when
21 compared to the cost of materials and labor. The August quotation has increased from the

1 original estimate of \$9.15 million with 25 percent overheads, to \$12.5 million with 12.5
2 percent contingency for the final equipment specifications.

3
4 **Q. How does replacing contracted services, including equipment rental and operating
5 personnel benefit the Company's gas customers?**

6 A. The equipment needed for the Project and the Company's customers is not readily available
7 from leasing firms. To provide reliability services, the Project requires the highest send out
8 capacity vaporizers that are manufactured, and such equipment is not readily available for
9 lease. Current contracted equipment consists of 500 and 650 MSCFH vaporizers, whereas
10 the new purchased equipment would provide two (2) 750 MSCFH vaporizers. Onsite
11 storage would increase from approximately 68,000 gallons to 84,000 gallons using the same
12 footprint which will decrease the number of LNG delivery trailers required to refill the site
13 during design conditions. The equipment that the Company is proposing to purchase is
14 quieter, more efficient, and has multiple levels of redundancy for increased reliability that is
15 unmatched with any equipment available from the Company's contactor. The equipment
16 leasing contractor was recently asked if it could provide higher capacity vaporizers and
17 indicated that the current 650 MSCFH unit is the largest capacity available. This unit is 12
18 years old and was originally designed to operate in a remote industrial setting.
19 Consequently, the design did not incorporate noise reduction and efficiency features that
20 would be desirable when situated at the Project site. For comparison the newer 500 MSCFH
21 unit was built in 2019 and has insulation to increase efficiency and reduce operational noise.

22

1 In addition to these differences in equipment features, equipment that is available from
2 contracting firms must be transported to the Project location resulting in risk during
3 transport, or risk of delay to meet Project deadlines. The current operation has experienced
4 equipment that has arrived with damage and after the specified delivery date. Using
5 Company owned equipment will guarantee that the equipment is immediately available and
6 will reduce transportation risk to the site.

7
8 Having owned equipment will allow the company to dispatch and mobilize the equipment
9 during an unforeseen emergency outside of the typical winter heating season. The current
10 operation only utilizes a contract to supply LNG portable equipment and services within the
11 winter heating season. Outside the winter heating season, the equipment is used at the
12 Contractor's discretion for other customers and provides no guarantee that the required
13 equipment would be available for the Company. Only an amendment to the Company's
14 contract with the equipment lessor could assure equipment availability outside of the heating
15 season. This would increase the equipment rental period from four months to 12 months.
16 Trained and proficient operators are essential for the safe operation of the equipment and
17 using Company personnel will ensure that sufficient personnel are available year-round to
18 operate the portable equipment.

19
20 Finally, the purchase of portable LNG equipment and operating with Company personnel
21 will not only save money for customers but increase the quality of service to best meet
22 customer demand. Using purchased equipment and company personnel will provide

1 operational cost stability versus relying on contracted equipment and labor rates that have
2 shown significant increase over the years.

3
4 **Q. How does newer LNG equipment benefit Project abutters?**

5 A. Newer LNG equipment is more efficient and is quieter when compared to the older leased
6 equipment due to the following features:

- 7 1. Newer vaporizers are insulated, have smaller bath water volumes, utilize variable
8 frequency drive blower motors, use glycol circulation pumps, have lower exhaust
9 stacks, and have ultra-low nitrogen oxide burners. All of these features either reduce
10 the noise levels generated by the vaporizer or increase the efficiency that results in
11 decreased operating times and increased duration between burner cycling. The
12 newer vaporizers only require cycling once every one to three days, whereas the old-
13 style vaporizer required cycling one to six times per day. Cycling frequency is
14 dependent upon several factors including ambient air temperature, wind chill, and
15 BOG operations.
- 16 2. New LNG storage queens have enhanced features and a greater operational pressure
17 that provides greater operating flexibility to reduce emissions and generated noise.
18 The higher operating pressure creates a wider range to pressure transfer LNG
19 between one another and broadens the set of conditions that permit utilization of the
20 BOG recovery manifold. Transfer pumps are equipped on all units that allow LNG
21 transferring to occur without pressure differential. This will reduce instances of
22 venting to atmosphere which will reduce emissions and the undesirable noise.

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Q. Why does the Project still exceed Portsmouth’s noise ordinances?

A. Newer equipment, in conjunction with increased distance from the property line, and targeted sound reducing mitigation has eliminated all exceedances of noise for day and night requirements except for LNG storage queen venting. As described in further detail below, the frequency of venting is minimal in comparison to the duration of the winter heating season. To minimize sound, the BOG recovery manifold is used whenever possible and recovers the majority of venting with the exception of the following conditions:

1. During Initial Cooldown.

Despite newer LNG storage queens having enhanced features and greater operational pressure, venting during cooldown is still required because the initial LNG transport cannot operate at a high enough pressure to make use of the BOG recovery manifold. When the LNG storage queen is warm it cannot use the transfer pump until it has been cooled and filled with LNG. The only option left to conduct the transfer and cooldown is venting to atmosphere. Recapturing technology exists but small-scale LNG applications have complexities that make it unfeasible for the Project. From a noise perspective, additional equipment such as a large mobile air compressor is required to use recapturing apparatuses.

2. When receiving LNG transports.

The simplest method to transfer LNG involves differential pressure transferring. Receiving LNG storage queens using this method requires internal pressure to be lower than the transport trailer. This requires venting as the transport trailer has a

1 maximum working pressure of 60 PSIG² and is too low to use the BOG recovery
2 manifold. However, once cooled down, the transfer pump can be used and, in most
3 cases, will significantly reduce or eliminate venting to atmosphere. The Company
4 plans to use transfer pump unloading whenever possible to reduce venting from
5 LNG deliveries.

6 3. Transport trailers vent before leaving the site.

7 After the transfer is completed LNG transport trailers reduce their pressure via
8 venting to atmosphere. Venting is done slowly to control noise and typically takes
9 10-20 minutes. The BOG recovery manifold cannot be used as the delivery trailer is
10 typically vented down to 20-30 PSIG. This is far below the minimum pressure
11 requirements to use the BOG recovery manifold. Using the transfer pump, when the
12 LNG storage queen are cooled down, will, under most conditions, reduce the
13 required pressure inside the transport trailer to offload LNG. The amount of
14 pressure reduction has not been confirmed with the new equipment, but is expected
15 to be less than is typically used during a pressure transfer. This is expected to
16 reduce the amount of venting that is required.

17 4. Transferring LNG between LNG Storage Queens.

18 At times it may be necessary to reduce the storage queen pressure to below the
19 minimum operating pressure of the BOG recovery manifold. When this occurs the
20 venting to atmosphere is required because there is insufficient pressure to push the
21 BOG through the recovery manifold. The Company does not foresee having to vent

² Pounds per square inch guage.

1 to atmosphere when transferring between storage with the purchased equipment
2 because the new LNG Storage Queens can operate at pressures well above the BOG
3 recovery manifold's minimum operating pressure. In addition, LNG storage queens
4 will be outfitted with transfer pumps that will allow LNG transferring without
5 differential pressure flow. This will not require venting to atmosphere under normal
6 conditions.

7 4. Rare conditions that exceed the volumetric capacity of the BOG recovery manifold.

8 The Project will use an enhanced layout that will allow all the LNG Storage Queens
9 to be connected to the BOG recovery manifold simultaneously. It is possible that
10 under severe low barometric conditions (a storm) the BOG recovery manifold's
11 maximum rate will not reduce the LNG storage queen pressure and will require
12 supplemental venting to atmosphere. This has not occurred to date and is an
13 unlikely scenario. Pressure builds very slowly over hours and days inside the LNG
14 storage queens. However, a compromised vessel's vacuum would increase the rate
15 of BOG generated.

16 5. Limited physical space.

17 Although the Project features a larger footprint, it is still not feasible to construct a
18 sound wall that would be effective to mitigate the venting noise. Equipment is
19 mobilized seasonally and cannot be moved with a larger noise barrier that would
20 restrict mobility.
21

1 Q. **How frequently is it expected that the Project will exceed the Portsmouth noise**
2 **ordinances and during what hours of the day?**

3 A. In general, the instances when the Project is expected to exceed noise ordinances will be
4 correlated to the frequency and duration of any vaporization that is performed during the
5 operating season. LNG levels will be maintained to ensure that adequate quantity is
6 available to provide uninterrupted service to our customers. Using new vaporizers and LNG
7 storage queens the Project is expected to temporarily exceed the Portsmouth noise ordinance
8 under the following scenarios:

- 9 1. During initial cool down of the LNG Storage Queens it is expected that over the
10 course of one to two days and within normal business hours (8:00 A.M. to 5:00 P.M.
11 on weekdays) noise ordinances will be exceeded. Each LNG storage queen
12 requiring cooldown will take approximately two to four hours. Cooldown of
13 multiple units is preformed to limit the duration of noise exceedance.
- 14 2. Whenever LNG transport deliveries are received, approximately 10-20 minutes of
15 venting will be required, under ideal conditions, for each LNG transport delivery.
16 With new equipment it is likely that the venting duration can be reduced by utilizing
17 transfer pumps and the 10-20 minutes is a worst-case scenario.
- 18 3. When transferring LNG between LNG storage queens when the use of the transfer
19 pump is unavailable. This is expected to be infrequent, and the Project will use the
20 transfer pump whenever possible. However, the duration would be approximately
21 20-30 minutes if the transfer pump method is not used. This is expected to be longer
22 than LNG delivery trailer due to the larger capacity of the storage queen. Transfer

1 of LNG is performed during vaporization operations and LNG transport delivery
2 operations. Using the current contracted equipment will require this method to be
3 used primarily for transferring.
4

5 The Operations Team will perform noise exceeding activities during normal business hours
6 (8:00 A.M. to 5:00 P.M. on weekdays) unless there is customer demand that necessitates
7 conducting these operations outside of normal business hours to support the gas system.
8 Such customer demand would be the Company vaporizing to address capacity restraints or,
9 for gas system reliability purposes. The noise levels generated when the LNG is being
10 vaporized for injection to the natural gas system is expected to be below the local nighttime
11 noise limits.
12

13 Using the existing contracted equipment will require the 650 MSCFH vaporizer to be cycled
14 several times per day when the unit is placed in a ready state when the site is forecasting use.
15 Having the unit ready and available for immediate use will provide redundancy for
16 vaporization with the 500 MSCFH vaporizer, or if capacity above 500 MSCFH is required.
17 Cycling will keep the unit warm and ready for operation for immediate use. New vaporizers
18 will be able to maintain temperature for one to three days as the units are more efficient with
19 insulation and design.
20

1 **Q. The portable LNG facility at Old Mill Lane operated successfully and safely for several**
2 **years, why does the Company need to increase the footprint of the site and reconfigure**
3 **the equipment layout?**

4 A. The Old Mill lane portable LNG facility has operated safely in a similar layout and
5 configuration since the 2019 outage and the Company has made continuous improvements
6 over the years to reduce the impact to the neighborhood and abutters without sacrificing the
7 safety, or reliability of the operation. Given the existing site's small footprint, there are no
8 further enhancements that can be made to operate the facility in a more efficient or quieter
9 manner. The use of new equipment will provide additional efficiency and noise reduction,
10 but to fully maximize these efficiencies and noise reductions, a new layout as proposed is
11 required. The development of the site will benefit all customers, not just the abutters and
12 local neighborhood in the following ways:

13 1. Safety.

14 The new layout will orientate the equipment in a manner that will maximum the design of
15 the equipment. The new layout will reduce the total length of LNG hoses by efficiently
16 using equipment manifolds integrated to each unit. The new layout will also mitigate risk by
17 keeping the LNG connections and ancillary piping to the east side of the site and electrical
18 connections on the West side of the site. This segregation will increase the site's safety and
19 provide clarity for responding first responders to identify components that contain LNG or
20 gas. The new layout will provide enhanced access to each unit for first responders and
21 increase the egress for employees onsite. The layout will also maximize the available
22 distance between equipment and abutters, while minimizing further impact to the wetlands.

1 2. Operation.

2 The new layout will make the operation more efficient using the integral manifolds outfitted
3 on each unit to lineup the available pumps for transferring and vaporizing LNG. This will
4 reduce the instances of venting to atmosphere. The current site configuration, with the
5 equipment at the front of the property, is congested with hoses, and it would be unrealistic to
6 replicate the new layout's flexibility on the existing footprint due to the required hoses to do
7 so.

8
9 The new layout will permit any LNG storage queen to be removed from the site for
10 unexpected maintenance or service. The vaporizers will also be configured to be removed
11 individually, if necessary, but this will require temporary removal of the side sections of the
12 proposed sound wall. In the current configuration, only some of the outermost units can be
13 removed as equipment is centered around the gas risers. Removal of any inner units will
14 require moving several other units to create the needed space to maneuver.

15 3. Noise.

16 The new layout will move the equipment further from Old Mill Lane and will increase the
17 distance from the nearby residences. The configuration of the new equipment will maximize
18 the use of the BOG recovery manifold and reduce the occurrence of sound limit exceedance.
19 The increased footprint and reconfiguration of the equipment creates space to erect a sound
20 wall that greatly reduces the noise levels from the vaporizers and makes their operation
21 compliant with day and night sound ordinances.

22

1 **Q. What is the difference between a 500 MSCFH and 750 MSCFH glycol vaporizer?**

2 A. The primary difference between a 500 MSCFH and 750 MSCFH glycol vaporizer is the
3 ability to vaporize 50 percent more gas per hour. A 500 MSCFH vaporizer can only provide
4 gas to meet the total forecasted demand to all Aquidneck Island customers down to
5 approximately 20 HDD. A 750 MSCFH vaporizer can do the same down to approximately
6 35 HDD. For additional comparison, during a design day of 68 HDD, a 500 MSCFH
7 vaporizer can only supply roughly 40 percent of island customers, while the 750 MSCFH
8 can supply 60 percent of island customers. Both sizes offer the same features, have the same
9 characteristics, and use the same trailer size. The 500 MSCFH does have the advantage of
10 being able to be transported without removing the glycol as it will be under the weight
11 restrictions required to travel over the road. The 750 MSCFH vaporizer, when transiting
12 over the road, must have the glycol removed and shipped in a separate tanker. Given that the
13 footprint and other characteristics are the same, the 750 MSCFH provides additional
14 vulnerability supply when compared to a 500 MSCFH as described above.

15

16 **Q. Are you familiar with the advisory opinion from the Town of Portsmouth's Zoning**
17 **Board of Review?**

18 A. Yes.

19

1 Q. Are you familiar with the concerns raised by the Zoning Board of Review concerning
2 delivery trucks accessing the site via the local roads?

3
4 A. Yes. To date, the Company is not aware of any issues raised by nearby residents or
5 municipal officials regarding LNG delivered to the site. The Company contacted the LNG
6 delivery contractor which provided the letter attached hereto as Attachment BKK-2
7 concerning the contractor's safety record and its review of the access roads to the site.

8
9 In addition to the LNG deliveries, the majority of the LNG equipment is delivered by tractor
10 trailers, and the Company has not been informed of any issues with these deliveries raised by
11 municipal officials, the contractors, or nearby residents. In addition, the new fence was
12 installed with wider sliding gates to help facilitate ingress and egress from the site.

13
14 V. Conclusion

15 Q. Does this complete your testimony?

16 A. Yes, it does.

Attachments of Brian R. Kirkwood

Attachment BKK-1

Revised cost analysis

Attachment BKK-2

Letter from LNG delivery company

OML LNG

Equipment cost: 12.5 Million - (2) 750 MSCFH Vaporizers & (6) Smart Storage Queens, Including 12.5% contingency

Breakeven with 1 extra mobilization

Year	Contractor Service	Cost	Additional RIE Cost to current operation	Cost	Running Cost	Breakeven Cost	Comments
1	Seasonal Service Operation	-1,368,000	Labor (less current costs)	300,000			
	Out of season service Operation	-474,500	O&M	40,000			
	Annual Cost	-1,842,500	Annual Cost	340,000	-1,502,500	10,985,000	
2	Seasonal Service Operation	-1,368,000	Labor (less current costs)	300,000			
	Out of season service Operation	-474,500	O&M	40,000			
	Annual Cost	-1,842,500	Annual Cost	340,000	-3,005,000	9,482,500	
3	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000			Contract cost increase 25%
	Out of season service Operation	-593,125	O&M	40,000			
	Annual Cost	-2,303,125	Annual Cost	340,000	-4,968,125	7,519,375	
4	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000			
	Out of season service Operation	-593,125	O&M	40,000			
	Annual Cost	-2,303,125	Annual Cost	340,000	-6,931,250	5,556,250	
5	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000			
	Out of season service Operation	-593,125	O&M	40,000			
	Annual Cost	-2,303,125	Annual Cost	340,000	-8,894,375	3,593,125	
6	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000			
	Out of season service Operation	-593,125	O&M	40,000			
	Annual Cost	-2,303,125	Annual Cost	340,000	-10,857,500	1,630,000	
7	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000			Contract cost increase 25%
	Out of season service Operation	-593,125	O&M	40,000			
	Annual Cost	-2,303,125	Annual Cost	340,000	-12,820,625	-333,125	

OML LNG

Equipment cost: 12.5 Million - (2) 750 MSCFH Vaporizers & (6) Smart Storage Queens, Including 12.5% contingency

Breakeven with 2 extra mobilization

Year	Contractor Service	Cost	Additional RIE Cost to current operation	Cost	Running Cost	Breakeven Cost	Comments
1	Seasonal Service Operation	-1,368,000	Labor (less current costs)	300,000	-1,977,000	10,510,500	
	Out of season service Operation	-949,000	O&M	40,000			
	Annual Cost	-2,317,000	Annual Cost	340,000			
2	Seasonal Service Operation	-1,368,000	Labor (less current costs)	300,000	-3,954,000	8,533,500	
	Out of season service Operation	-949,000	O&M	40,000			
	Annual Cost	-2,317,000	Annual Cost	340,000			
3	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000	-6,510,250	5,977,250	Contract cost increase 25%
	Out of season service Operation	-1,186,250	O&M	40,000			
	Annual Cost	-2,896,250	Annual Cost	340,000			
4	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000	-9,066,500	3,421,000	
	Out of season service Operation	-1,186,250	O&M	40,000			
	Annual Cost	-2,896,250	Annual Cost	340,000			
5	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000	-11,622,750	864,750	
	Out of season service Operation	-1,186,250	O&M	40,000			
	Annual Cost	-2,896,250	Annual Cost	340,000			
6	Seasonal Service Operation	-1,710,000	Labor (less current costs)	300,000	-14,179,000	-1,691,500	Cost savings to customers
	Out of season service Operation	-1,186,250	O&M	40,000			
	Annual Cost	-2,896,250	Annual Cost	340,000			

L.P. TRANSPORTATION, INC.

SERVING THE NORTHEAST

54 Brookside Avenue, P.O. Box 489, Chester, New York 10918



Tel: 845/469-2188

August 30, 2023

To whom it may concern:

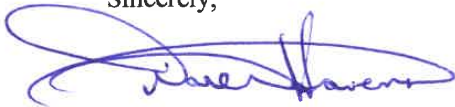
LNG trailers and LNG transportation in the United States have an excellent safety record. The trailers are manufactured in accordance with Federal DOT specifications for MC338 Cargo Tanks. In short, they are very much like a thermos bottle – a tank within a tank and extremely durable. In addition, the trailers must be visually inspected at least annually, and pressure tested every five (5) years. The inspections and tests are documented and kept on file as per Federal DOT Regulations.

L.P. Transportation, Inc. has been transporting LNG for 45 plus years and we also have an excellent safety record, which we strive to maintain. Our tractors are equipped with cab cameras and telematics, which enhance their safe operation. As such, in reviewing the route and location of the Rhode Island Energy site in Portsmouth, RI, there were no issues that would cause us concern. The roadways, including the secondary roads, all have very good sight distance with no sharp or blind corners. Also, the intersections on the secondary roads are fairly wide, allowing the transports to easily navigate. Again, with good sight distance. It should be noted that L.P. Transportation, Inc. has delivered to this site several times over the years without incident.

In the unlikely event of a major transportation incident involving LNG/CNG anywhere in the Northeast, the Northeast Gas Association, which is comprised of most every natural gas utility and transportation company in the Northeast, has in place an Emergency Response Plan. The Plan is reviewed and tested each year through mock drills and training. In short, the nearest local distribution company (LDC) would immediately respond to the scene and provide technical assistance until the issue is resolved.

In summary, L.P. Transportation, Inc. is confident that the transportation and delivery of LNG to the Rhode Island Energy site in Portsmouth, RI has been and can be accomplished safely for everyone involved.

Sincerely,



Daren Havens
Director of Safety & Compliance

DH:amd

**THE NARRAGANSETT ELECTRIC COMPANY
EFSB DOCKET NO. SB-2021-04
RE: AQUIDNECK ISLAND GAS RELIABILITY PROJECT
WITNESS: JULIE M. PORCARO
SEPTEMBER 8, 2023**

PREFILED DIRECT TESTIMONY

OF

JULIE M. PORCARO

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EXECUTIVE SUMMARY

Julie Porcaro is employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the “Company”) as the Director of Gas Network Operations and testifies on its behalf. Ms. Porcaro testifies regarding the purpose and need for the Aquidneck Island Gas Reliability Project (the “Project”), a summary of how the Project operation benefits the natural gas distribution system, and the alternatives the Company considered to the Project. She describes that the Project need is based on both: (1) the Distribution System vulnerability from unexpected upstream disruptions that could limit the flow of natural gas from the interstate pipeline to below levels needed to meet demand; and (2) a planned or unplanned interruption in the supply from the Algonquin Gas Transmission, LLC (“AGT”) transmission pipeline.

Ms. Porcaro explains that while vulnerabilities exist year-round, the Project is needed during the heating season when a prolonged outage would create a real risk to customers’ health, safety, and property. She further testified that Aquidneck Island has always been serviced by a single transmission line connection with delivered fuels serving as a backup to the supply.

Ms. Porcaro also explains how the capacity constraint presents an immediate challenge to the reliability of the Distribution System and that the Project is designed to address both needs. She testifies that the need for the Project would not be eliminated by a moratorium and reviews when Project would no longer be needed. Mrs. Porcaro reviews the vaporization that occurred on February 4, 2023 and the process of curtailment that would have occurred if the LNG equipment was not operational last winter. Mrs. Porcaro discusses the alternatives that were considered and how the Act on Climate factored into the review of the alternatives.

1 **I. Introduction**

2 **Q. Please state your name and business address.**

3 A. My name is Julie Porcaro. My business address is 280 Melrose Street, Providence,
4 Rhode Island 02907.

5

6 **Q. By whom are you employed and in what position?**

7 A. I am employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the
8 “Company”) as the Director of Gas Network Operations.

9

10 **Q. What are your responsibilities as Director of Gas Network Operations?**

11 A. In my role as Director of Gas Network Operations, I lead an organization comprising
12 Liquefied Natural Gas (“LNG”) Operations, Instrumentation and Regulation (“I&R”),
13 and Gas Control.

14

15 **Q. Please describe your education, training, and experience.**

16 A. I hold a bachelor’s degree in Mechanical Engineering from Worcester Polytechnic
17 Institute. I also hold a master’s degree in Business Administration from Babson College.
18 My career in natural gas began in 2005 at KeySpan Corporation (“KeySpan”) where I
19 held several engineering roles. During my tenure KeySpan was purchased by National
20 Grid USA (“National Grid”). In 2011, I left National Grid to work for CHA Consulting
21 where I was a Project Manager providing natural gas engineering and management

1 consulting services. In 2013, I returned to National Grid as a project engineer, then
2 moved into an engineering role in Gas Control and subsequently became the Chief
3 Control Room Operator. On May 25, 2022, PPL Rhode Island Holdings, LLC, a wholly
4 owned indirect subsidiary of PPL Corporation, acquired 100% of the outstanding shares
5 of common stock of the Company from National Grid, at which time I began working in
6 my current position.

7
8 **Q. Are you familiar with the Aquidneck Island Gas Reliability Project (the “Project”)?**

9 A. Yes. In my roles in Gas Control, I participated in options assessments and mobilization
10 of several operations to support Aquidneck Island prior to the 2019 loss of supply
11 incident and following the 2019 loss of supply incident.

12
13 **Q. Are you familiar with Application and Siting Report dated April 2022 (“Siting
14 Report”) that were submitted to the Rhode Island Energy Facility Siting Board (the
15 “Siting Board”)?**

16 A. Yes. I supported preparation of the Siting Report, particularly regarding Section 2 that
17 explains the need for the Project.

18

1 **II. Purpose of Testimony**

2 **Q. What is the purpose of your testimony in this proceeding?**

3 A. In my testimony, I will review the need for the Project and address alternatives to the
4 Project that the Company considered.

5

6 **Q. How is your testimony structured?**

7 A. Section I is the Introduction. Section II presents the purpose and structure of my
8 testimony. Section III presents a description of the Project. Section IV describes the
9 alternatives to the Project. Section V is the Conclusion.

10

11 **III. Description of Project**

12 **Q. Please describe the Project.**

13 A. The project for which the Company is requesting a license from the Siting Board is the
14 use of portable equipment for the storage and vaporization of LNG at Old Mill Lane in
15 Portsmouth to be used to backup the supply of natural gas to the Company's Aquidneck
16 Island natural gas distribution system (the "Distribution System"). The Project includes a
17 number of site improvements proposed for impact mitigation and operational reasons.

18

19 **Q. Why is the Project needed?**

20 A. The Project is needed to address capacity vulnerability and constraints that pose risks to
21 the reliability of the Distribution System on Aquidneck Island. There are two facets to

1 the capacity vulnerability of the Distribution System. First, the Distribution System faces
2 vulnerability from unexpected upstream disruptions that could limit the flow of natural
3 gas from the interstate pipeline below levels needed to meet demand. Second, capacity
4 vulnerability occurs when Algonquin Gas Transmission, LLC (“AGT”) disrupts service
5 to inspect and maintain the upstream transmission pipeline. The Project is intended to
6 protect the Distribution System against these vulnerabilities. Finally, the Project also
7 addresses the capacity constraint that may occur during each winter season when there
8 exists a gap between the natural gas demand and the available natural gas capacity to
9 Aquidneck Island on extremely cold days.

10
11 **Q. During what time of year is the Project needed?**

12 A. Although the capacity vulnerability exists year-round, an unplanned interruption of
13 service on the transmission system is most critical and most likely to occur during the
14 heating season when customers rely on continuous service to heat their homes and
15 businesses, and a prolonged outage creates a real risk to customers’ health, safety, and
16 property. Therefore, the Company intends to operate the Project on a recurring seasonal
17 (winter) basis with additional operation on an as-needed basis during AGT’s scheduled
18 transmission pipeline service and outages, which are planned and scheduled outside of
19 the heating season.

20

1 **Q. Has the Distribution System on Aquidneck Island always been supplied by a single**
2 **transmission line connection?**

3 A. Yes. The Distribution System is served by the G-2 lateral off the AGT G-system via
4 AGT's single six-inch main crossing the Sakonnet River, which joins the Distribution
5 System at the Company's gate station at Old Mill Lane.

6
7 Secondary forms of supply were provided in prior years by a propane/air facility adjacent
8 to the gate station off AGT's system at the Old Mill Lane site. Regular usage of this
9 facility ended in the early 1990s, and the equipment was decommissioned and removed
10 from the site in 2014. Aquidneck Island also benefited from vaporization facilities
11 located on the Navy Base. That site went into service in 2002. That site has not been
12 used since 2011 and is scheduled for full abandonment and removal in 2023-24.

13
14 **Q. Does the capacity constraint present an immediate challenge to the reliability of the**
15 **Distribution System?**

16 A. Yes. Under AGT's tariff, the calculated hourly flow limits available to the Company at
17 its Old Mill Lane gate station are 1/24th, or six percent, of the Maximum Daily Quantity
18 ("MDQ") – i.e., the maximum quantity of gas that can be delivered to the Company from
19 the pipeline in a 24-hour period. Historically, AGT had not required customers,
20 including the Company, to manage hourly takes to fall within the calculated hourly flow
21 limits so long as the Company did not exceed the MDQ available to it. That meant the

1 Company had the operational flexibility to balance its natural gas deliveries across its
2 multiple take stations on the AGT system so long as the total remained within the MDQ
3 limits. This flexibility allowed the Company to meet the peak demand needs on
4 Aquidneck Island. On January 19, 2019, however, after AGT experienced a period of
5 high hourly demand on its G system, AGT notified the Company (and all AGT customers
6 served by AGT's G lateral) that, during peak periods, it would exercise its authority
7 under its tariff to require local distribution companies, including the Company, to limit
8 their hourly takes to calculated hourly flow limits at each take station. For Aquidneck
9 Island, the limits are 22,089 Dth/day and 1,045 Dth/hour, which are less than the
10 Company historically has experienced in customer demand on Aquidneck Island.
11 Therefore, the Company now makes its planning decisions to prepare for the potential
12 limitation of operational flexibility by AGT.

13
14 **Q. Is the Project sized for a supply vulnerability or peak shaving?**

15 A. The Project is sized for peak shaving to address the supply-demand gap between the
16 contractual limit of 1,045 Dth/hour and actual customer usage on the Island, which can be
17 anticipated by forecasting. The Company also stores LNG on site throughout the winter
18 period and staffs the site continuously to mitigate the impact of a supply vulnerability
19 event. This is related directly to commitments the Company made following the January
20 19, 2019 loss of supply event.

21

1 **Q. Traditionally, will the Company have advance warning of a transmission issue?**

2 A. The Company will receive indications of a transmission issue as soon as it is known;
3 however, there could be limited time to respond, sometimes hours or minutes which is
4 insufficient time for the Company to avoid a service disruption.

5

6 **Q. Is the facility size and output fixed?**

7 A. No. The facility size and output can vary depending on the portable equipment that is
8 staged there. The size and output requested in the Siting Report are based on current
9 known equipment capabilities for vaporization rate and storage size available on the
10 market at the time of the filing.

11

12 **Q. Would a moratorium change the size of the facility?**

13 A. No. The facility is sized for the existing gap in customer demand versus available supply
14 to Aquidneck Island while taking into account the potential for an upstream event that
15 could result in supply disruptions; therefore, a moratorium on new customer services
16 would not change the size of the facility.

17

18 **Q. At what point would a larger facility be required?**

19 A. A larger facility would be required under two general scenarios: (1) if the supply-
20 demand gap exceeds the maximum vaporization rate of the equipment on site; or (2) if
21 conditions changed on the transmission system making disruptions in service more

1 frequent or more likely to occur. The first scenario is unlikely because the supply-
2 demand gap based on the 2022 forecast was approximately 145 Dth/hr, and has increased
3 to 226 Dth/hr based on the 2023 forecast, and would need to exceed 750 Dth/hr in order
4 for a larger facility to be needed. The second scenario is also unlikely as planned
5 disruptions or activity resulting in service limitations are scheduled and generally planned
6 for lower demand periods in the non-heating season.

7
8 **Q. Why is there so much variability in the forecast?**

9 A. There are two types of forecasts the Company develops. One is the annual total company
10 usage forecast which predicts a design day and can indicate a corresponding design hour.
11 The design day is intended as the planning metric for upcoming winters to ensure that the
12 Company procures adequate gas supply to satisfy customer demand and to ensure that the
13 Distribution system is designed to deliver procured gas quantities to all locations on the
14 Distribution system where it is needed.

15 The other is the forecast tool used to predict customer demand on a day to day basis.

16 This tool is generally based on extrapolation of the correlation between historical
17 customer usage and weather. Customer demand is variable depending on numerous
18 factors including but not limited to temperature, wind chill factor, time of day, day of
19 week, cold weather pattern (short term or sustained), among others. The forecast is a
20 target the Company plans to provide for over the course of a gas day, and the more
21 extreme the weather, the higher the forecast demand. In the days leading up to an

1 extreme cold weather day, the weather forecast can change, so the gas demand forecast
2 can change as well. Facilities such as the one at Old Mill Lane serve a specific purpose
3 in delivery of gas to customers as predicted in the annual forecasting process, but also in
4 the day to day and hour to hour changes that can occur on the gas system.

5 **Q. At what point would a load reduction result in less equipment?**

6 A. A load reduction in any amount would not result in less equipment. The need is driven
7 by providing essential service to customers heating their homes and businesses during
8 winter months. The Company could consider reducing equipment or rescoping the
9 Project if there were no longer customers on Aquidneck Island using natural gas for
10 safety-critical heating service.

11
12 **Q. Will there be a time when the Project is no longer needed to operate during the**
13 **winter?**

14 A. Yes. The capacity constraint would need to be addressed to eliminate the gap in
15 available supply and customer demand. This can be done by reducing customer demand
16 through a reduction in meter count, demand response and energy efficiency programs, or
17 increasing supply by pipeline. All of these options, or any combination of them, will take
18 several years to design and implement, during which time the Project will be needed.
19 However, as long as the natural gas distribution system is in operation the capacity
20 vulnerability would still exist and can only be addressed by having a secondary source of

1 supply in place, e.g. parallel pipeline to Aquidneck Island or an on system source of
2 supply such as the proposed LNG facility.

3
4 **Q. To be clear, is it the Company's position that some version of the Project will be**
5 **required as long as the Distribution System is operational?**

6 A. No, but some form of secondary supply is needed. The Project- addresses the capacity
7 constraint and eliminates the gap between pipeline supply and customer demand, but also
8 serves as a secondary source of supply to Aquidneck Island. Without it, the Island and its
9 customers are vulnerable to future episodes of loss of supply during critical winter
10 months. One of the main benefits of the Project is its scalability. By using portable
11 equipment on Company property at the ideal location on the distribution system for
12 hydraulic reasons, the Company has the ability to deploy the operation as needed to
13 address system needs while managing cost, and maintaining a similar level of reliability
14 as exists on other parts of the Distribution System.

15
16 **Q. How often has the facility been needed to provide additional supply to the natural**
17 **gas distribution system?**

18 A. The facility was used on two occasions during the 2022-2023 winter period. December
19 24-25, 2022 and February 4, 2023.

20

1 **Q. How many customers were in jeopardy of losing service on February 4, 2023?**

2 A. Because of the equipment staged at Old Mill Lane, no customers were in jeopardy of
3 losing service on February 4, 2023. However, if the equipment was not there, the
4 Company would have had to curtail customers in advance of the cold weather event to
5 ensure continuous service to remaining customers. Following the 2019 event, the
6 Company was ordered to develop isolation areas to minimize the number of affected
7 customers in the event of a need for an outage. In order for the Company to reduce
8 expected demand on Aquidneck Island to match available supply, more than 1,300
9 customers would have lost service for the duration of the cold weather event to maintain
10 system stability. The Company estimates that 1,300 affected customers would have been
11 without service for days during extremely cold weather.

12
13 **Q. Please summarize the process for curtailing customers and for restoring service to**
14 **customers?**

15 A. Curtailing service to customers must be done by isolating each service to each customer
16 meter individually for the duration of the curtailment period. Once service is restored to
17 an area through a controlled and planned process, service is then individually restored to
18 each service and each customer meter by physically visiting each location. When
19 necessary to gain access to affected customers' premises, Company personnel are
20 accompanied by police and locksmiths.

21

1 **Q. Can customers in a curtailment zone opt out of being curtailed?**

2 A. No, a curtailment zone completely isolates that particular area from the distribution
3 system so there is no way to maintain service to select customers that may wish to opt out
4 of an outage caused by isolating a curtailment zone.

5

6 **IV. Alternatives**

7 **Q. What alternatives did the Company consider?**

8 A. The alternatives the Company considered include the proposed Project, Seasonal Portable
9 LNG Operation at a New Navy Site, Permanent LNG at a New Navy Site, an LNG Barge
10 anchored off the coast of Aquidneck Island, Reinforcement of the Algonquin
11 Transmission Line, and Non-Infrastructure Solutions. All of the alternatives were more
12 expensive than the Project, did not provide the operational advantages of being located
13 next to the take station where the distribution system can accept and effectively distribute
14 the vaporized LNG being injected into it, or would take several years to implement
15 during which time the proposed Project would be needed.

16

17 **Q. Would resolving the capacity constraint remove the need for the seasonal operation
18 of the facility?**

19 A. No. Even with the capacity constraint resolved, capacity vulnerability would still exist
20 and pose a risk to safe, reliable, and continuous service to customers on Aquidneck Island
21 thus jeopardizing customers' health, safety, and property during cold periods.

1

2 **Q. Is there another alternative that would solve for capacity vulnerability?**

3 A. Yes, a pipeline solution, parallel “loop” pipe of the existing single line of the AGT G-2
4 lateral to Aquidneck Island would solve the capacity vulnerability because it would
5 provide the redundant source of supply that the Company proposes to provide through the
6 operation of the Project.

7

8 **Q. Would a “loop” pipeline solve for capacity constraint?**

9 A. No, additional facilities in the form of upstream pipeline improvements on the AGT
10 system would be required to make incremental capacity available to any location on the
11 AGT G System, including Aquidneck Island when done in conjunction with a “loop”
12 pipeline project of the G-2 lateral. Such a solution is more costly than the Project and
13 would require time to implement during which the Project would be needed.

14

15 **V. Act on Climate Considerations**

16 **Q. Did the Company consider the Act on Climate in its evaluation of alternatives to the**
17 **Project?**

18 A. Not initially as the Project predates the passage of the Act on Climate. However, the
19 greenhouse gas impacts from the Project were considered in the alternative analysis
20 detailed in the Siting Report and in the Public Utilities Commission’s (“PUC”) advisory
21 opinion issued in Docket No. 22-42-NG. The Company’s assessment indicates that a

1 moratorium on new natural gas connections would result in additional greenhouse gas
2 emissions as customers might opt for heating fuels that result in emissions that are greater
3 than those produced by the burning of natural gas.

4
5 The need for the Project is driven by existing capacity shortfall when compared to
6 customer demand and the need to protect against transmission line vulnerabilities. Future
7 reductions in gas demand, including those spurred by incentives intended to reduce
8 reliance on fossil fuels for heating, would help to address some of the reasons for the
9 Company's proposal to construct and operate the Project. However, as found by the
10 PUC, the time in which these measures would reduce natural gas demand to the point that
11 the Project is not needed for reliability purposes is unknown. For this reason, the PUC
12 suggested that the need or the Project should be periodically reviewed. The Company
13 believes that this is a well-reasoned approach to assessing whether the reliability benefits
14 of the Project have been addressed while remaining cognizant of the mandates of the Act
15 on Climate.

16
17 **VI. Conclusion**

18 **Q. Does this complete your testimony?**

19 **A.** Yes, it does.

**THE NARRAGANSETT ELECTRIC COMPANY
EFSB DOCKET NO. SB-2021-04
RE: AQUIDNECK ISLAND GAS RELIABILITY PROJECT
WITNESS: JACQUES R. AFONSO
SEPTEMBER 8, 2023**

**PRE-FILED DIRECT TESTIMONY OF
JACQUES R. AFONSO**

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EXECUTIVE SUMMARY

Jacques Afonso is employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the “Company”) as a Strategic Communications Manager and testifies regarding his communication of updates concerning the Aquidneck Island Gas Reliability Project (the “Project”) to municipal, police and fire officials, and host community residents and abutters. Mr. Afonso provides an overview of the outreach done by the Company relating to the Project and responds to certain aspects of the Town Council of the Town of Portsmouth advisory opinion. He describes concerns raised about the Project including the noise associated with the operation as well as the visual appearance of the Project. Mr. Afonso describes the mitigation measures employed by the Company in response to complaints regarding noise and visual impacts.

Mr. Afonso also explains that the Company has no objection to providing Project and winter operation updates to Town Officials as has been the Company’s practice (and was suggested by the Town in its advisory opinion); he believes providing certain specific liquefied natural gas (“LNG”) delivery information to the general public, however, poses a potential security risk that the Company does not support.

1 **I. Introduction**

2 **Q. Please state your name and business address.**

3 A. My name is Jacques Afonso. My business address is 280 Melrose Street, Providence,
4 Rhode Island.

5

6 **Q. By whom are you employed and what is your position?**

7 A. I am employed by The Narragansett Electric Company d/b/a Rhode Island Energy (the
8 “Company”) as a Strategic Communications Manager.

9

10 **Q. What are your responsibilities as Strategic Communications Manager?**

11 A. My current duties include acting as the liaison and account manager for the
12 Municipalities of East Providence, Barrington, Warren, Bristol, Tiverton, Little Compton,
13 Jamestown, Portsmouth, Middletown and Newport. I am also the liaison and account
14 manager for large customers including Lifespan, Narragansett Bay Commission, Roger
15 Williams University, Rhode Island School of Design, Raytheon, and Naval Station
16 Newport. As a liaison and account manager, I am the primary point of contact for any
17 inquiries or requests related to Rhode Island Energy electric or gas, including projects,
18 emergencies, and miscellaneous matters.

19

20 **Q. Please describe your education, training and work experience.**

21 A. In 2002 I received an Associate’s Degree in Computer Technology and Network
22 Administration from New England Tech. I received a Bachelor of Science in Electrical

1 Engineering from the University of Rhode Island in 2006. In 2009, I graduated from
2 Worcester Polytechnic Institute with a Master of Science in Electrical and Computer
3 Engineering. I received an Executive Master of Business Administration from Suffolk
4 University in 2012 and a Graduate Certificate in the Business of Energy from Clarkson
5 University in 2016.

6
7 I began working for National Grid in 2006 and during my tenure held positions of
8 increasing responsibility including Electric Design Engineer, Electric Asset Strategy
9 Engineer, Network Strategy Executive Advisor, Manager of Investment Management and
10 Principal Program Manager in Community & Customer Management. I began my role in
11 Community & Customer Management in 2015 and remained in that role until 2022. On
12 May 25, 2022, PPL Rhode Island Holdings, LLC, a wholly owned indirect subsidiary of
13 PPL Corporation, acquired 100% of the outstanding shares of common stock of the
14 Company from National Grid (the “Acquisition”), at which time I began working for the
15 Company in the same role but a different title, that I held prior to the Acquisition.

16
17 **Q. Are you familiar with the Aquidneck Island Gas Reliability Project (the “Project”)?**

18 A. Yes.

19
20 **Q. Please summarize your role on the Project.**

21 A. I communicate with, and provide updates to, municipal, police and fire officials, and host
22 conversations with community residents and abutters regarding the Project. I also assist

1 in responding to any inquiries regarding the Project.

2
3 **Q. Are you familiar with Application and Siting Report dated April 2022 (“Siting**
4 **Report”) that were submitted to the Rhode Island Energy Facility Siting Board (the**
5 **“Siting Board” or “EFSB”)?**

6 A. Yes. I assisted in the preparation of the Siting Report. Specifically, I provided the
7 information related to municipal, community and abutter interactions, questions,
8 concerns, and recommendations regarding the Project as contained in the Siting Report.

9
10 **II. Purpose of Testimony**

11 **Q. What is the purpose of your testimony in this proceeding?**

12 A. In my testimony, I will provide an overview of the outreach to the direct abutters to the
13 Project and will address certain contents of the advisory opinion issued to the Siting
14 Board by the Town Council of the Town of Portsmouth, Rhode Island.

15
16 **III. Outreach**

17 **Q. Please summarize your outreach efforts to municipal officials and residents with**
18 **respect to the Project.**

19 A. During each seasonal deployment of portable liquefied natural gas (“LNG”) storage and
20 vaporization equipment at 111 Old Mill Lane (the “Property”), I provide information and
21 Project updates to municipal officials, coordinate site visits with fire officials, send

1 notices to abutters and residents, attend Town Council meetings, attend open houses, and
2 respond to abutter and resident questions.

3
4 **Q. Have you met with the direct abutters to the Project?**

5 A. Yes. I have met with direct abutters to the Project on several occasions along with other
6 representatives of the Company as appropriate.

7
8 **Q. Please summarize any concerns expressed to you by abutters to the Project.**

9 A. The Company received complaints concerning: (1) noise emanating from the Project; (2)
10 dislike of the visual appearance of the Project including the portable toilet; (3) light from
11 the Project; and (4) site security and safety.

12
13 **Q. Please describe the Company's past efforts to address concerns expressed by
14 abutters to the Property.**

15 A. To address the concerns raised by Project abutters and other nearby residents, the
16 Company implemented the following measures:

- 17
- To address abutter concerns regarding the level of noise emitted at night, the
18 Company was able to reduce the frequency of cycling of the vaporizer during the
19 evening hours of operation by adjusting the temperature settings. At times, the
20 vaporizer was turned off altogether during the evening and nighttime hours. The
21 ability to take those actions, however, is dependent on the ambient conditions,
22 particularly the outdoor temperature and wind, as the vaporizer temperature must be

1 maintained at a certain level in order for the system to be readily available in the
2 event of an outage. The Company also discussed adding a vapor recovery system,
3 which was under development, to reduce the noise from venting storage tanks. The
4 system was completed at the end of the winter 2020-2021 and was put to use
5 beginning with the 2021-2022 winter operations.

- 6 • To address concerns about the visual appearance of the Project expressed in summer
7 2021, I engaged with abutters to review plans for a solid fence that the Company was
8 planning to install along Old Mill Lane. This fence was ultimately installed in
9 summer 2022.
- 10 • To address the light concerns, the Company installed light shades and turned off
11 certain lights during the night.
- 12 • No changes were required to the security protocols that were in place but the
13 Company explained the security and safety procedures to the abutters.

14
15 **Q. Are you aware of any formal complaints by abutters regarding the Project?**

16 A. Yes. While I have been in communication with abutters about their complaints to the
17 Company, the Company is aware that similar complaints regarding the Project have been
18 made to the Rhode Island Division of Public Utilities and Carriers (“Division”). I
19 received notice of a complaint that had been submitted to the Division on December 10,
20 2020 from an abutter regarding a noise and light at the Property. There was another noise
21 complaint filed with the Division, by the same abutter, on January 27, 2022. The
22 Company has worked to address these complaints through the measures described above.

1 To proactively address potential complaints, I also provide updates regarding expected
2 noise coming from standby modes during expected cold weather, winter operation setups
3 and demobilization efforts to those abutters that have communicated their concerns to the
4 Division or the Company.

5
6 **Q. Do you have any other concerns with the suggested outreach noted in the Advisory**
7 **Opinion?**

8 A. I do not have any concerns with providing Project and winter operation updates to public
9 safety and other officials of the Town of Portsmouth as this has been occurring regularly
10 since 2018. Updates regarding winter operation setup and demobilization, testing,
11 standby modes during expected cold weather, training sessions, site visits, emergency
12 procedures, and project and site improvements occur throughout the year during
13 Company winter operations and during operations supporting Enbridge's work on its
14 natural gas transmission system. Following an update to the Portsmouth Town Council
15 on October 24, 2022, the Company has also coordinated directly with the Portsmouth
16 Police on opportunities for the Police to record any noise coming from the site as a result
17 of standby modes and deliveries. I also do not have any concerns with providing similar
18 information to abutters as I have also been doing this consistently over the past several
19 years.

20
21 The Company does not agree that it should be obligated to provide information to the
22 general public regarding LNG deliveries as this would pose a potential security risk. The

1 Company does not have similar concerns about providing delivery information to
2 municipal officials, as this has been done in the past, and these officials are tasked with
3 ensuring public safety.

4

5 **IV. Conclusion**

6 **Q. Does that complete your testimony.**

7 **A. Yes, it does.**

**THE NARRAGANSETT ELECTRIC COMPANY
EFSB DOCKET NO. SB-2021-04
RE: AQUIDNECK ISLAND GAS RELIABILITY PROJECT
WITNESS: TIM CASEY
SEPTEMBER 8, 2023**

PRE-FILED DIRECT TESTIMONY

OF

TIM CASEY

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EXECUTIVE SUMMARY

The Narragansett Electric Company (“Company”) witness and Senior Environmental Scientist and Acoustics Program Manager at HDR Engineering, Inc., Tim Casey, provides an overview of the noise study and recommended mitigation options for the Portable LNG Vaporization Operation at Old Mill Lane in Portsmouth, Rhode Island (the “Project”) in his prefiled testimony. Mr. Casey explains that HDR has developed a 3-D noise model to estimate project-related noise levels off-site, and that the results suggest LNG facility-related noise has the potential to exceed the maximum allowable noise levels at some locations beyond the LNG facility property lines. Mr. Casey opines on various available noise mitigation measures including: (1) using quieter equipment; (2) rearranging the physical layout of the equipment on-site so that the loudest noise sources are furthest away from the abutters; and/or (3) installing a noise barrier close enough to the equipment to break the line of sight between noise sources and abutters; and (4) making improvements to butting residential buildings. Mr. Casey also notes the challenges of implementing each measure. Finally, Mr. Casey opines on the effectiveness of the new fence proposed along the front of the property.

1 **I. Introduction**

2 **Q. Please state your name, employer, and business address.**

3 A. My name is Tim Casey. I am employed by HDR Engineering, Inc. (“HDR”), a global
4 employee-owned technical consulting firm. My business address is 1601 Utica Avenue
5 South, Suite 600, St. Louis Park, Minnesota.

6
7 **Q. What is your position at HDR?**

8 A. I am a Senior Environmental Scientist, a Principal Professional Associate, and the
9 founder and leader of HDR’s acoustics program.

10

11 **Q. Please describe your education, training, and experience.**

12 A. I earned a BS in biology in 1988, and completed graduate courses in environmental
13 engineering at Illinois Institute of Technology in Chicago, and also in environmental
14 health at University of Minnesota in Minneapolis. I started working for HDR in Chicago
15 in 1989 and have over three decades of experience in the field of environmental
16 acoustics. While with HDR in Chicago I learned how to use a sound level meter and
17 traffic noise modeling software. I also researched train noise modeling algorithms at
18 Northwestern University’s Transportation Engineering Library and wrote my first train
19 noise model for a railroad grade separation project.

20

21 Around 1991 I moved to Minneapolis to join HDR’s environmental group, where I
22 continued to do traffic noise analyses, environmental noise measurements, began to

1 perform spreadsheet-based modeling of indoor and outdoor noise sources, to perform 24-
2 hour noise measurements, to process spectral sound pressure level measurement results,
3 etc. I subsequently created HDR's Acoustics Program in response to the demand for that
4 specialty service. This led to me performing noise measurements and modeling across
5 the United States on a wide variety of surface transportation, industrial and infrastructure
6 projects including in the power, mining, and oil and gas sectors.

7
8 HDR's Acoustics Program now consists of several degreed acousticians including
9 scientists and engineers with BS and MS degrees in acoustics, engineering, physics, and
10 more. We work on acoustics, noise, and vibration analyses on a wide variety of projects
11 throughout the nation and beyond.

12
13 My notable career achievements include:

- 14 • Co-leading the analysis of freight train noise on 44,000 miles of track in every state
15 east of the Mississippi River (Conrail Acquisition EIS).
- 16 • Being recognized by FHWA as the first consultant to develop a user-defined vehicle
17 to model engine compression noise as a component of a traffic noise analysis using an
18 FHWA-approved traffic noise model (I-35 expansion project in Duluth MN).
- 19 • Conceiving and leading one of the most extensive measurement and modeling studies
20 of the Arctic summer and winter soundscape (Point Thomson EIS).

- 1 • Leading the development of the nation’s first FAA-approved rocket launch noise
2 model written in 3D GIS.
- 3 • Performing a 4-year detailed noise study (measurements and modeling) in the
4 Northern Cascades National Park (Skagit Hydropower Relicensing) using National
5 Park Service methods.
- 6 • Winning Project of the Year Award from INCE-USA.
- 7 • Providing expert witness testimony to the United States Surface Transportation Board
8 in Washington DC.
- 9 • Winning a national award for developing an innovative method for measuring tire-
10 pavement noise on interstate highway traffic.
- 11 • Being the Principal Investigator for a \$500k tire-pavement noise research project
12 funded by the National Academy of Science.
- 13 • Being selected to serve on the oversight committee for a transportation noise research
14 project funded by the National Academy of Science.
- 15 • Making a presentation about wind turbine noise at a conference in Aalborg, Denmark.
- 16 • Providing expert witness testimony on environmental noise issues in numerous states
17 throughout the nation.
- 18 • Being one of four national consultants selected by WashDOT to evaluate and make
19 mitigation recommendations to reduce tire-pavement noise on a double-decker bridge
20 in Seattle. Two of the three outcome recommendations were mine.

- 1 • Performing architectural acoustics measurements inside a new military headquarters
2 building at the US joint military base in Djibouti, on the Horn of Africa.
- 3 Providing substantive revisions to an international acoustical standard, ASTM E-1686
4 Standard Guide for Applying Environmental Noise Measurement Methods and Criteria.

5

6 **Q. What are your responsibilities as Acoustics Program Manager?**

7 A. I lead a national team of consulting scientists and engineers who work in the field of
8 acoustics, I recruit and hire staff, serve as senior technical lead and technical consultant
9 on a wide variety of HDR projects, and am the driver for growth and technical excellence
10 for HDR’s acoustics consulting practice. I manage the team of acousticians in
11 Minneapolis (HDR’s primary acoustics group) and have direct supervisory
12 responsibilities over acousticians in Dallas, Texas and Vienna, Virginia. I write
13 proposals and budgets for our work, manage projects, work directly with clients and
14 HDR project managers, and contribute to local and national proposals and strategic
15 planning efforts. I perform noise and vibration analyses on a variety of project types in
16 locations throughout the nation. Occasionally I provide expert witness testimony on
17 topics related to my work in environmental acoustics.

18

19 **Q. Are you familiar with The Narragansett Electric Company’s (“Company”)**
20 **Aquidneck Island Reliability Project at Old Mill Lane in Portsmouth, Rhode Island**
21 **(the “Project”)?**

22 A. Yes.

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II. Scope of Testimony

Q. What is the scope of your testimony in this proceeding?

A. In my testimony, I will provide an overview of the sound study of the Project performed by HDR and summarize the recommended mitigation options for the Project.

III. Testimony

Q. Please summarize the sound study you performed on the system.

A. HDR performed an unattended measurement of the ambient soundscape at the Company's portable LNG facility in Portsmouth, RI. This means that a sound level meter was set up on a residential neighbor's parcel near the property line and it stored measurement results for a continuous 18-hour period when the Facility was operating, and without an HDR acoustician present to observe things that made noise during the entire measurement duration. The sound level meter was locked inside a Pelican case, which prevented anyone from tampering with it. HDR also measured the physical dimensions, and performed spectral measurements of noise emissions from equipment at the Facility. HDR developed a 3-dimensional noise model to evaluate project-related sound propagation off-site, and also identified potential noise mitigation options to reduce portable LNG noise levels off-site. The equipment length, width, and height measurements, and noise emission measurements were incorporated into that noise model.

1 **Q. Please summarize your findings.**

2 A. The Portsmouth noise ordinance limits maximum allowable noise levels at residential
3 receiving lands to 65 dBA during daytime (7:00 am to 10:00 pm) and 55 dBA during
4 nighttime (10:00 pm to 7:00 am). The municipal noise limit does not specify a duration
5 for the maximum allowable noise level, therefore HDR evaluated instantaneous
6 maximum noise level measurement results.

7
8 HDR performed an unattended noise measurement on a residential parcel across the street
9 from the portable LNG facility in January 2022, from approximately 3:00 pm to 10:00
10 am the next morning. Equipment at the Facility operated overnight during this 18-hour
11 noise measurement. Measurement results were stored every second and summarized
12 every 30 minutes inside the sound level meter. Periods of high winds were removed from
13 the measurement dataset. A review of data stored every 30 minutes shows that the
14 loudest periods occurred between 3:00 pm and 6:00 pm. During this period the 30-minute
15 maximum sound pressure level (Lmax) measured by HDR was approximately 52 dBA.
16 The quietest periods occurred between 4:30 am and 6:00 am and during this period the
17 30-minute minimum sound pressure level (Lmin) was approximately 48 dBA. I reviewed
18 measurement results stored every second and found the following results.

19

Metric	Leq (dBA)	Lmax (dBA)	Lmin (dBA)
Maximum	82.5	83.5	78.2
Minimum	50.0	51.0	48.7
Average	54.1	55.4	53.2

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These results show that the average (Leq) noise levels stored every second had an overall range of 82.5 to 50 dBA, with an average value of 54.1. The maximum noise levels stored every second had an overall range of 83.5 to 51.0 dBA with an average value of 55.4. The minimum noise levels stored every second had an overall range of 78.2 to 48.7 dBA, with an average value of 53.2.

There were substantial clusters of elevated 1-second measurement results, or spikes, in the measurement results. One substantial cluster occurred between 5:00 pm and 9:30 pm, and another substantial cluster of spikes occurred between 6:00 am and 9:00 am. It is conceivable that noise from vehicle pass-byes caused some of these spikes in the average and maximum measured noise levels during this period. It is also conceivable that insects and animals (birds) could cause some of these spikes. Based on the estimated time of facility operations and the very short duration of the measured noise level spikes, HDR concluded that noise from the Facility did not dominate the noise measurement results, and did not contribute to the spikes in the measurement results. The measured Lmin and Lmax values are dominated by traffic noise on Old Mill Lane, insect and animal noise, and ambient background noise.

1 HDR also developed a three-dimensional noise model using CadnaA software, to
2 propagate project-related noise from Facility operations including storage tank venting
3 off-site, and calculate Project-related noise levels at nearby property lines. At the
4 beginning of each winter season, LNG will be trucked in and transferred into the storage
5 tanks, this operation requires venting of the storage tanks which is a loud activity. HDR
6 performed on-site measurements of this storage tank venting operation, and those
7 measurement results were used to model venting noise in the CadnaA noise model. The
8 modeling results produced a noise contour figure that was overlaid upon a digital aerial
9 photograph. Modeling results indicate that Project-related noise levels are projected to
10 exceed Portsmouth's maximum allowable noise limits at the nearest property lines.

11 HDR also evaluated measured noise emissions from the glycol vaporizer and those
12 results indicated that noise emissions from the glycol vaporizer exhibited pure-tone noise
13 (noise that is dominant in a certain frequency or range of frequencies such that it is
14 perceived as having a tonal characteristic). The Portsmouth Rhode Island noise ordinance
15 penalizes pure-tone noise by subtracting 5 dBA from the maximum allowable noise
16 limits, reducing noise ordinance limits to 50 dBA in the nighttime, and 60 dBA in the
17 daytime. Noise modeling results show that with the appropriate mitigation (noise wall,
18 acoustical noise control quilt/blanket, moving equipment south), the Company's Old Mill
19 Lane site can comply with the 50 dBA pure-tone, nighttime Portsmouth, Rhode Island
20 noise ordinance limit. Therefore HDR and the project team developed noise mitigation
21 measures that include rearrangement of the site equipment, installation of a noise barrier

1 around the dominant noise source (glycol vaporizer), and also draping an acoustical noise
2 control quilt/blanket over the glycol vaporizer.

3
4 **Q. What options are available for sound mitigation?**

5 A. First you have to understand a few things about sound perception. It is highly subjective
6 because every person's ability to hear sounds throughout the frequency spectrum (low to
7 high frequencies) is different from everyone else's. It is generally accepted that a young
8 person with average undamaged hearing can generally perceive a three-decibel change
9 (increase/decrease) of noise under ideal listening conditions – like wearing headphones in
10 an audiology booth. A five-decibel change is considered clearly perceivable, and a ten-
11 decibel change would be perceived by that same person as a doubling or halving of noise
12 levels under the same conditions. So noise mitigation measures must provide at least 5
13 decibels of noise reduction to be noticeable.

14
15 HDR identified three potential noise mitigation measures for the Project site. First, noise
16 emissions could be reduced by using quieter equipment if it was available. Second, some
17 noise mitigation could be achieved by rearranging the physical layout of equipment on-
18 site, so the loudest noise sources are not closest to the residences and to use some of the
19 equipment to block the sound propagation path of the noisier equipment. Finally, noise
20 mitigation measures, described below, could be installed in the pathway that sound
21 travels. The feasibility of each option would depend on site constraints, operational and
22 safety concerns, and wind loading.

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One potential option for noise control measures in the pathway would be the use of industrial noise control blankets, which are a weather-resistant quilted product with a layer of mass-loaded vinyl inside of it. The mass-loaded vinyl blocks noise and the quilting absorbs noise. This option would require wrapping some of the major noise sources with custom-made industrial noise control quilts/blankets, holding them in place by securing them to the equipment itself. This option would also require a fair amount of site-specific design to block noise emissions yet allow air to flow in and out of the vaporizers and other intake and exhaust points.

Another option is the installation of a noise wall, which has the potential of reducing project-related noise off-site by blocking the path in which sound travels. Sound travels in waves, and if you break the line of sight between a noise source and a noise receiver you also break the path of travel of the sound waves. When sound waves reach the top of a noise wall they continue traveling in all directions and also refract downwards behind the wall. In this manner, noise walls can create acoustical shadow zones behind them where noise levels are quieter than on the front of the wall that faces the noise source. The noise reduction provided by the wall is highest in portions of that shadow zone that are closest to the wall itself.

Assuming the wall is near the noise source, the taller the wall the more noise reduction it provides to areas farther away from the receiver side of the wall. To be effective, noise

1 walls have to be close to the equipment, and the top of the noise wall has to be higher
2 than the point at which it breaks the direct line of sight between the noise sources and
3 residences across the street.

4
5 Under ideal conditions – which means the wall is close to the noise source, and the
6 elevation of the ground at the source, wall and receiver is flat - breaking the direct line of
7 sight between a noise source and a noise receiver reduces noise levels by approximately
8 three decibels at the receiver. There is an old rule of thumb that says once a noise wall
9 blocks the line of sight between source and receiver, with each two feet of additional
10 elevation of the top of the wall provides approximately one additional decibel of noise
11 reduction. So to achieve a noticeable noise reduction, which is a minimum of five
12 decibels, the top of the wall must be at a height that is four feet above the direct line of
13 sight between the noise sources and noise receivers.

14
15 If the elevation of the noise receiver is higher than the noise source, the wall height must
16 be increased to achieve the same noise reduction that would occur on flat terrain. That
17 taller wall will experience additional wind loading, which creates additional engineering
18 challenges for the design of the wall footings and foundation. There may not be enough
19 room to install a noise wall of sufficient height, with sufficient structural footings, which
20 can also withstand wind loads on the site given the current configuration of equipment
21 and existing size of the site.

1 HDR modeled Project-related noise, the model included a rearrangement of the
2 equipment locations and noise walls, and an industrial noise control quilt/blanket draped
3 over the principal noise source (glycol vaporizer). These modeling results indicate that
4 the project-related noise levels are projected to comply with Portsmouth's maximum
5 allowable daytime and nighttime noise limits at all nearby residential property lines.
6 Analysis results indicate that Project-related noise levels are projected to be below 40
7 dBA at the nearest homes across Old Mill Lane, and between 40-45 dBA at the nearest
8 home east of the project site.

9
10 **Q. Are there improvements that could be made to adjacent homes to help mitigate the**
11 **sound?**

12 A. Potentially, in the form of upgraded, acoustically designed windows and storm doors with
13 higher noise reduction ratings than standard windows and storm doors. These require
14 architectural evaluations of individual homes, extensive acoustical measurements indoors
15 and outdoors, and also assume that doors and windows are the only acoustically weak
16 spots in the building exterior.

17
18 In reality, however, noise reduction is not one of the primary design goals in residential
19 building design and construction. So, while modern acoustically designed windows and
20 storm doors can provide more noise reduction than older standard windows and doors,
21 the rest of the exterior may not block enough sound. Also, even high-performing
22 acoustically designed windows provided limited noise reduction in the lowest frequency

1 bands (i.e. 31.5 Hz), and often the exteriors of homes also do not block much sound
2 power in those lowest frequency bands. As a result, installing new windows and doors
3 may not reduce indoor noise levels as effectively as applying noise mitigation measures
4 at the source or in the pathway on-site.

5
6 **Q. Are you familiar with the new fence that is proposed for the front of the property?**

7 A. Yes, The Company provided me with some information from the manufacturer showing
8 an example of the type of product being considered. It is an eight-foot-tall product called
9 “Allegheny” manufactured by CertainTeed, a building material company that also makes
10 acoustical building products.

11
12 **Q. Although it is not a noise wall, would you expect the solid fence to provide some
13 sound mitigation?**

14 A. The proposed “Allegheny” noise wall is primarily a visual screen, and the noise reduction
15 it provides is generally limited to the areas immediately behind (north of) that wall.

16
17 **IV. Conclusion**

18 **Q. Does that complete your testimony?**

19 A. Yes.