

**BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE
STATE OF RHODE ISLAND**

IN RE:

**THE NARRAGANSETT ELECTRIC
COMPANY d/b/a RHODE ISLAND ENERGY
FY 2025 INFRASTRUCTURE, SAFETY,
AND RELIABILITY PLAN**

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Docket No. 23-49-NG

TESTIMONY OF

DAVID B. BERGER

On behalf of

THE DIVISION OF PUBLIC UTILITIES AND CARRIERS

February 9, 2024

1 **I. INTRODUCTION**

2

3 **Q. PLEASE STATE YOUR NAME AND THE BUSINESS ADDRESS OF YOUR**
4 **EMPLOYER.**

5 A. My name is David B. Berger. I am a principal of David Berger Associates, a sole
6 proprietorship, located at 12707 Rainwashed Loop, Parrish FL 34219.

7

8 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS MATTER?**

9 A. I am testifying as an expert consultant on behalf of the Rhode Island Division of Public
10 Utilities and Carriers.

11

12 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND EXPERIENCE?**

13 A. In 1970, I graduated with a Bachelor of Science in Chemical Engineering from the New
14 York University School of Engineering. I have also completed all of the course work for
15 a Masters in Civil Engineering (Environmental) from the University of Delaware School
16 of Engineering.

17

18 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE?**

19 A. For the last twenty years I have served as an expert consultant to various states
20 (Washington, California, Illinois, District of Columbia, New Jersey, New York, Vermont,
21 Florida, Connecticut, Massachusetts, Maine) and various departments of the United States
22 government regarding gas system and hazardous liquid infrastructure, security, and safety
23 issues. During this time I have been involved in rate cases and have performed audits on

1 many gas operators for safety issues, management, capital expenses, and infrastructure
2 improvements. This work was done both independently and as a subcontractor to larger
3 consulting organizations. I am also an instructor at the U.S. Pipeline and Hazardous
4 Materials Safety Administration's (PHMSA) Technical and Qualifications Division in
5 Oklahoma City where PHMSA's training facility for state and federal pipeline inspectors
6 is located.

7
8 Prior to becoming a consultant, I spent more than 15 years with KeySpan Energy ("KSE")
9 and its predecessor companies overseeing gas operations and gas engineering functions,
10 including environmental engineering aspects. My experience at KSE in the gas business
11 area consisted of being the manager of Gas Asset Management which maintained
12 responsibility over the corrosion control group, the gas transmission integrity group, the
13 system integrity group (forerunner to distribution integrity) and at other times gas
14 regulation, gas metering and gas gate stations. Prior to joining KSE's gas business area, I
15 was a section leader in the environmental engineering group handling gas matters and
16 hazardous liquid and chemical storage at company facilities.

17
18 Before joining a KSE predecessor company, I spent almost 20 years in the chemicals and
19 aerospace businesses as a Plant Manager and a Director of Production of a supplier to the
20 aerospace industry for ICI Americas and Russel Plastic Division of BTR.

21
22 **Q. ARE YOU A MEMBER OF ANY PROFESSIONAL SOCIETIES?**

1 A. I am currently a member of the American Institute of Chemical Engineers and of AMPP
2 (formally known as the National Association of Corrosion Engineers, International) and
3 have been for many years. At one time, I was also a member of the Air Pollution Control
4 Association, AWWA and the Texas Chemical Council. A copy of my *Curriculum Vitae*
5 is attached to my testimony.

6

7 **Q. HAVE YOU PREVIOUSLY TESTIFIED AS AN EXPERT BEFORE THE RHODE**
8 **ISLAND PUBLIC UTILITIES COMMISSION?**

9 A. No, I have not.

10

11 **Q. HAVE YOU PREVIOUSLY TESTIFIED AS AN EXPERT IN OTHER**
12 **JURISDICTIONS?**

13 A. Yes, I have provided expert testimony in a number of other jurisdictions throughout the
14 country. A sampling of my testimony includes the following. In 2023, I provided rebuttal
15 testimony on behalf of the Staff of the Illinois Commerce Commission before the Illinois
16 Commerce Commission in *Petition Pursuant to Rider QIP of Schedule of Rates for Gas*
17 *Service to Initiate a Proceeding to Determine the Accuracy and Prudence of Qualifying*
18 *Infrastructure Investment*. In 2016, I provided direct testimony as part of a Gas
19 Infrastructure Panel on behalf of the City of New York before the New York State Public
20 Service Commission in Case 16-G-0058, *Proceedings on Motion of the Commission as to*
21 *the Rates, Charges, Rules and Regulations of KeySpan Gas East Corp., d/b/a Brooklyn*
22 *Union of L.I. Gas Service* and Case 16-G-0059, *Proceedings on Motion of the Commission*

1 *as to the Rates, Charges, Rules and Regulations of the Brooklyn Union Gas Company,*
2 *d/b/a National Grid NY for Gas Service.* In 2016, I also provided expert testimony before
3 the California Public Utilities Commission in *Order Instituting Investigation and Order to*
4 *Show Cause on the Commission’s Own Motion into the Operations and Practices of Pacific*
5 *Gas and Electric Company with Respect to Facilities Records for its Natural Gas*
6 *Distribution System Pipelines.* In 2013, I provided Direct Testimony on behalf of the
7 Vermont Department of Public Service before the Vermont Public Service Board in Dkt.
8 7970, *Petition of Vermont Gas Systems, Inc., Requesting a Certificate of Public Good*
9 *Pursuant to 30 V.S.A. §, Authorizing the Construction of the "Addison Natural Gas*
10 *Project" Consisting of Approximately 43 Miles of New Natural Gas Transmission Pipeline*
11 *in Chittenden and Addison Counties, Approximately 5 Miles of New Distribution Mainlines*
12 *in Addison County, Together with Three New Gate Stations in Williston, New Haven, and*
13 *Middlebury, Vermont.*

14
15 **II. PURPOSE OF TESTIMONY AND REVIEW**

16
17 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

18 A. The purpose of my testimony is to provide the Commission with my opinion regarding
19 whether the Company’s Leak Prone Pipe (LPP) Replacement Program is reasonable and
20 necessary “to maintain safe and reliable distribution service over . . . the long term.”¹ In

¹ R.I. Gen. Laws § 39-1-27.7.1(d)(4).

1 forming my opinion, I was also asked to consider if my opinion would in any way be
2 modified by the Rhode Island mandate imposed on “the state . . . to reduce its statewide
3 greenhouse gas emissions to the targets set forth in § 42-6.2-2(a)(2)(i),” *i.e.*, the 2021 Act
4 on Climate.

5
6 **Q. WHAT DID YOU REVIEW IN ORDER TO FORM YOUR OPINION?**

7 A. I reviewed the Company’s filing, the first and second sets of data requests that the Company
8 provided to the Division and the Company’s responses to the Commission’s data requests
9 in the pending docket. In addition, I reviewed Commission Order No. 24802 in Dkt. No.
10 23-54-NG, Order No. 21779 in Dkt. No. 4474 and Order No. 22046 in Dkt. 4540. I also
11 reviewed R.I. Gen. Laws 39-1-27.7.1 entitled “Revenue decoupling” and Title 42, Ch.
12 62.1, the 2021 Act on Climate.

13
14 **Q. WERE THERE ANY OTHER DOCUMENTS THAT YOU REVIEWED TO HELP**
15 **WITH YOUR OPINION?**

16 A. Starting in 1991, the regulatory agency charged with pipeline safety, currently US DOT
17 PHMSA (previously RSPA), has issued several advisory announcements² concerning the
18 failures on cast iron (CI) gas mains and that state regulators and gas operators should plan
19 on replacing these failure prone mains (LPP) at an accelerated rate. After additional
20 incidents in the early 2000’s, PHMSA issued an additional advisory in 2012³ reiterating

² See Advisory RSPA 91-12,

³ PHMSA Advisory 2012-0039 published on March 23, 2012

1 that the replacement of CI should be a priority for gas operators. On the PHMSA website
2 there is a listing of the major CI failures which resulted in injuries, fatalities, and or property
3 damage⁴.

4
5 **III. REVIEW AND ANALYSIS**

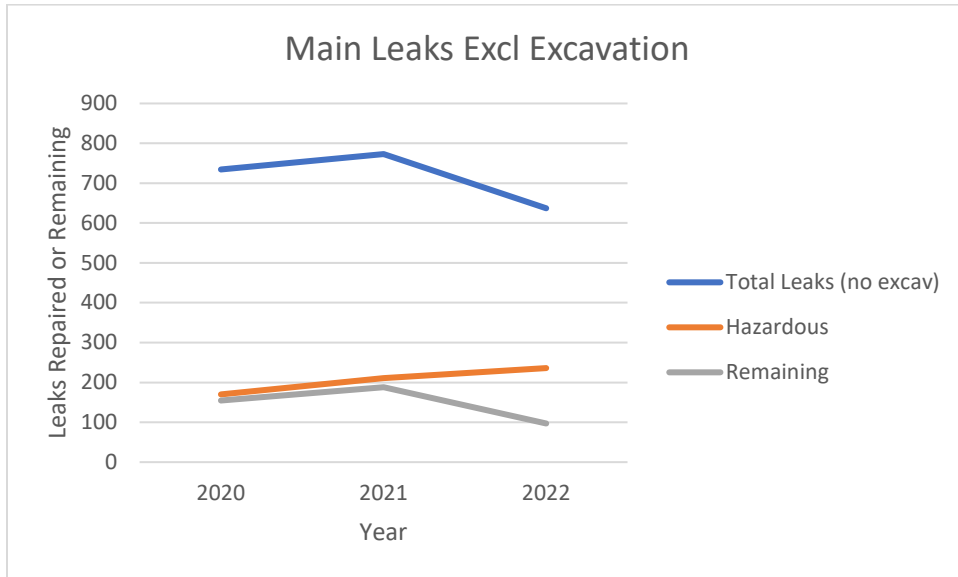
6 **Q. WHAT IS THE PRIMARY GOAL OR OBJECTIVE OF THE LPP**
7 **REPLACEMENT PROGRAM?**

8 A. There are several objectives to the LPP replacement program, but the primary objective is
9 to improve the safety and reliability of the RIE gas system to protect the general public and
10 customers from injury or property damage. A measure of the improvement of the safety
11 of the system is the overall number of main leaks less excavation damage leaks, the latter
12 of which can be random and are covered by a separate program, commonly referred to as
13 the Dig Safe. The below graph, taken from the previously referenced annual PHMSA data,
14 shows some improvement over the last three years. The drop off in the decline of
15 hazardous leaks may be a result of the Covid-19 year when some work, such as retirement
16 of old mains was reduced due to not being able to activate the replacement main. Because
17 the most serious leaks, hazardous leaks, have not declined in the 2021 to 2022 period, the
18 Company should continue to meet its 65 mile abandonment target and may need to increase
19 the abandonment target to 70 miles if hazardous leaks continue to increase. These are the
20 hazardous leaks as presented in the annual DOT/PHMSA Distribution Report⁵. These

⁴ PHMSA Report “Cast and Wrought Iron Inventory”

⁵ From annual US DOT PHMSA Annual Distribution Report (Form F 7100) for 2020 through 2022)

1 leaks are considered to be of significant concern since they can not only cause property
2 damage but also are a safety concern and could cause injuries or fatalities in a worst case.



3
4
5

6 **Q. ARE THERE ANY ADDITIONAL BENEFITS OF REMOVING THE LEAK**
7 **PRONE MAINS AND SERVICES FROM THE GAS SYSTEM?**

8 A. Yes, there are additional benefits because the RIE's plan also includes upgrading the
9 pressure of the replaced mains to either medium or high pressure and to install excess flow
10 valves, which is another important safety feature on the upgraded services. By increasing
11 the pressure of the new mains, where such pressure is available, the reliability of the gas
12 system is improved and thus there should be fewer incidents of low pressure or lack of
13 service when demands are high. Since RIE will be replacing the services on most of the
14 replaced mains, where the new mains have MP or HP pressures, a regulator will be installed

1 on the service line after an excess flow valve, which is designed to shut off gas flow in the
2 event of a service line break or large leak. These are important safety features that come
3 with LPP replacement program.

4 **Q. ARE THERE ANY OTHER BENEFITS FOR REMOVING THE LEAK PRONE**
5 **MAINS AND SERVICES FROM THE GAS SYSTEM?**

6 A. Yes. Another objective is to reduce the amount of methane, a greenhouse gas, that is
7 emitted to the atmosphere which is consistent with the Act on Climate. The Commission
8 also recognized this goal as a legitimate objective of the Company’s Gas ISR plan in Order
9 No. 24802.⁶ In its filing, the Company states that from FY 2012 through FY 2022, the
10 Company reduced emissions from its gas distribution system by 106,967 thousand cubic
11 feet (“MCF”). Over the same period the Company abandoned 671 miles of leak prone
12 pipe.⁷ In addition to GHG reduction mandates in the Act on Climate, the US DOT PHMSA
13 has separately proposed new regulations entitled Gas Pipeline Leak Detection and Repair
14 (LDAR) for gas operators that mandate additional leak detection and repair criteria to
15 reduce the amount of methane escaping into the environment via leaks on gas distribution
16 and transmission systems.

⁶ Dkt. 22-54-NG, Order No. 24802 (the replacement of leak-prone “has the benefit of reducing carbon emissions...”).
⁷ PUC Filing at 30.

1 Leaks eliminated and the LPP main retirements for the period 2012 through 2023.⁸

Description	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	Total
Total ISR Abandonment Miles	46	47	53	55	59	63	62	60	62	30	68	66	671
Gas Leaks Eliminated	191	186	140	121	150	103	178	160	160	79	190	215	1,873

2

3

4 **Q. BASED ON YOUR REVIEW AND ANALYSIS, WHAT IS YOUR OPINION**
 5 **REGARDING THE COMPANY’S LPP PROGRAM AND THEIR FY 2025**
 6 **PROPOSED ABANDONMENT TARGET OF 61.2 MILES?**

7 A. Overall, their plan appears reasonable to me, however, I recommend the Commission
 8 require the Company to maintain an abandonment target for leak prone pipe of at least 65
 9 miles per year.

10

11 **Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION TO MAINTAIN AN**
 12 **ABANDONMENT TARGET FOR LEAK PRONE PIPE OF 65 MILES PER YEAR?**

13 A. Public utility commissions typically require removal of all leak-prone pipe within 20
 14 years,⁹ and shorter time-periods have been required if practicable.¹⁰ A 61.2-mile per year
 15 abandonment target will not achieve elimination of the Company’s remaining leak prone

⁸ See 2025 ISR the chart at Bates 29 in the middle of the page.

⁹ See e.g., Massachusetts G.L. c. 164, § 145 (filed gas infrastructure replacement plans to contain a target end date of not more than 20 years from the filing of a gas company's initial plan); *Application Of Yankee Gas Services Company D/B/A Eversource Energy To Amend Its Rate Schedules*, Dkt. 18-05-10 (CT PURA, December 12, 2018) (requiring a 20-year cast iron and bare steel replacement programs for Connecticut’s gas companies); *Order Instituting Proceeding for a Recovery Mechanism to Accelerate the Replacement of Leak Prone Pipe*, Case 15-G-0151 (NY PSC, April 17, 2015) at 6-7 (“Our goal will be to reduce the statewide average replacement timeline to 20 years and is based on reasonable assumptions that gas LDCs will ramp up their removal and replacement programs”).

¹⁰ *Northern Utilities Inc., Proposed Cast Iron Replacement Program*, Dkt. 2008-151, Order Approving Stipulation (ME PUC, July 30, 2010) (approving a 14 to 17 year gas pipe replacement program).

1 pipe until around 2037 or over 25 years from year when the Company's ISR plan was first
2 implemented. By contrast, a 65-mile per year pace will enable the Company to eliminate
3 all its remaining leak-prone main about a year and half earlier.¹¹ While still greater than
4 the 20-year standard, as will be seen, the 65-mile per year rate is preferable to the 61.2 mile
5 rate from a public safety and environmental perspective, consistent with both PHMSA's
6 2012 advisory bulletin and the impending LDAR regulations.

7
8 **Q. WHAT SAFETY CONSIDERATIONS ARE PRESENTED BY THE COMPANY'S**
9 **INVENTORY OF LEAK PRONE PIPE?**

10 A. By the end of 2024, RIE will still have a large inventory of cast iron (~520 miles) and
11 unprotected steel (~250) in the ground.¹² Non-cathodically protected coated steel, as well
12 as bare steel pipe, are prone to corrosion and leaks. Small diameter (less than or equal to
13 8" in diameter cast iron pipe) has lower beam strength than larger diameter cast iron pipe
14 and is more susceptible to breaks and cracking when it loses support (the pipe may become
15 brittle due to the loss of iron called graphitization, which is similar to corrosion). Each
16 joint or pipe connection is more susceptible to gas leakage than the parent pipe and provides
17 an opportunity for gas to leak. Eight-inch and smaller diameter cast iron tends to have
18 more corrosion leaks and cracks. All leak prone materials degrade over time, and with that
19 degradation, the number and severity of the resulting leaks increase. Gas from corroded
20 and/or cracked pipes can escape and migrate into the foundations of homes and/or

¹¹ See e.g., Dkt. 4474, Order No. 21779 at 12-13; Dkt.4540, Order No. 22046 at 16.

¹² PUC Filing at 107 (2024 figures have been estimated).

1 businesses where it is easily ignited. Leaving these types of leak-prone materials in the
2 ground for any longer than necessary creates a potential safety risk to the public. This safety
3 risk was recognized by PHMSA and many other state jurisdictions that have either
4 encouraged or taken steps to replace leak prone pipes as quickly as economically and
5 logistically practical.

6
7 In Rhode Island what is disconcerting is that the cast iron main break rate exhibited a
8 significant upward trend in the 2020-2022 time-period despite the Company's and the
9 Commission's efforts to address this issue through the ISR program.¹³ As one would
10 expect, the trend is pronounced in cast iron main that is less than 8", and particularly
11 pronounced in cast iron main that is 2-4."¹⁴ These trends suggest that the cast iron main
12 that is in the ground is becoming more brittle, and thus subject to cracking and/or corrosion
13 at a rate faster than the Company has attempted to address the problem through its ISR
14 program thus far.

15
16 The leak rate trend for the 2020-2022 time-period for bare steel and unprotected coated
17 steel services (about 20% of the Company's service inventory)¹⁵ is better but still not what
18 is desirable. Between 2020 and 2022, the leak rate for unprotected steel services
19 experienced a slight overall decline with the rate experiencing an increase between 2020

¹³ *Id.* at 125 & 127.

¹⁴ *Id.* at 128.

¹⁵ *Id.* at 138.

1 and 2021 before declining in the 2021-2022 period.¹⁶ Since the overall service leak rate
2 is driven largely by leaks on bare steel,¹⁷ the overall leak rate follows a similar pattern.¹⁸
3

4 In view of the aforementioned trends and their safety implications, reducing the overall
5 leak-prone pipe abandonment rate from the 65 to 61.2 miles per year, when the former rate
6 itself is below the generally accepted regulatory standard, cannot be viewed as reasonable
7 “to maintain safe and reliable distribution service over the . . . long term.”¹⁹
8

9 **Q. BUT WHAT ABOUT THE 2021 ACT ON CLIMATE MANDATES, DO THEY**
10 **JUSTIFY REDUCING THE ABANDONMENT RATE FROM 65 TO 61.2 MILES**
11 **PER YEAR?**

12 A. No, they do not. Although the 2021 Act on Climate imposes laudable greenhouse gas
13 reduction requirements for the State of Rhode Island, in my opinion they should not
14 override material, long-term risks to public safety presented by leak-prone pipe.
15

16 **Q. WHY IS THAT?**

17 A. At the proposed annual abandonment target of 61.2 miles, the Company will still have
18 approximately 45 miles of leak-prone pipe remaining in the ground at the time the program
19 would have been completed at the 65-mile per year target. This pipe may present a hazard

¹⁶ *Id.* at 147.

¹⁷ *Id.* at 148.

¹⁸ *Id.* at 146.

¹⁹ R.I. Gen. Laws § 39-1-27.7.1(d)(4).

1 to life and property that should not exist at that time. Additionally, the longer the leak
2 prone pipe remains in the ground, the more deterioration occurs, which accelerates the
3 safety risk to the public. The Commission has recognized the importance of ensuring the
4 public's health and safety in assessing the pace of the Company's proactive pipe
5 replacement program.

6
7 **Q. CAN YOU SUMMARIZE YOUR RECOMMENDATIONS FOR THE**
8 **COMMISSION?**

9 A. Yes. The Company should maintain a yearly abandonment target for RIE's leak-prone
10 pipe of 65 miles per year rather than reducing the rate to 61.2 mile per year. The Company
11 has increased the abandonment target rate for cast iron main in its FY 2024 workplan to
12 "closer to ninety percent" and proposes to achieve a 90% rate for FY 2025.²⁰ If the 90%
13 rate does not levelized the increasing cast iron main break trend, and the bare steel service
14 leak rate does not continue its recent downward trend, then the Company should consider
15 increasing the overall leak prone pipe abandonment target to more than 65 miles per year.

16
17 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

18 A. Yes, it does.

²⁰ *Id.* at 30.