The Narragansett Electric Company
d/b/a National Grid

Gas Infrastructure, Safety, and Reliability Plan FY 2022 Proposal

Book 1 of 2

December 18, 2020

Docket No. 5099

Submitted to:
Rhode Island Public Utilities Commission

Submitted by:

nationalgrid

Filing Letter & Motion

Raquel J. Webster
Senior Counsel

December 18, 2020

BY HAND DELIVERY & ELECTRONIC MAIL

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

RE: National Grid's Proposed FY 2022 Gas Infrastructure, Safety, and Reliability Plan Docket No. 5099

Dear Ms. Massaro:

In compliance with R.I. Gen. Laws § 39-1-27.7.1, I have enclosed 10 copies of National Grid's[1] proposed Gas Infrastructure, Safety, and Reliability ("ISR") Plan ("Gas ISR Plan" or "Plan") for fiscal year ("FY") 2022. The Gas ISR Plan is designed to enhance the safety and reliability of National Grid's natural gas distribution system. As required by law, National Grid submitted the proposed Plan to the Division of Public Utilities and Carriers (Division) for review. The Division undertook a comprehensive review of the initial plan, which included issuing numerous informal and formal discovery requests to the Company, review of responses to those requests, discussions with Company representatives, and outside consultant review. After further discussions with the Company, the Division and the Company were able to mutually agree on the budget for the Plan. Based on its review of the initial Plan and discussions with the Company, the Division supports the Plan's budget and has indicated its general concurrence with the Plan, including the programs and projects outlined in the Plan. Consistent with prior Gas ISR filings, the Division will continue to review the Plan and its costs after filing.

The Gas ISR Plan is designed to protect and improve the gas delivery system through proactively replacing leak-prone pipe; upgrading the system's custody transfer stations, pressure regulating facilities, and peak shaving plants; responding to emergency leak situations; and addressing infrastructure conflicts that arise out of state, municipal, and third-party construction projects. The Plan is intended to achieve these safety and reliability goals through a cost-effective, coordinated work plan. The level of work that the Plan provides will sustain and enhance the safety and reliability of the Rhode Island gas distribution infrastructure and directly benefit all Rhode Island gas customers.

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

40 Sylvan Road, Waltham, MA 02451
T: 781-907-2121 ■ raquel.webster@nationalgrid.com ■ www.nationalgrid.com

The Plan includes a description of the categories of work National Grid proposes to perform in FY 2022 and the proposed targeted spending levels for each work category. In addition to the Plan, this filing includes the pre-filed direct testimony of five witnesses. Amy S. Smith and Nathan Kocon introduce the Plan document and describes the program components of the Plan; Melissa A. Little describes the revenue requirement for the Plan; and Tomi A. Uyehara describes the calculation of the Gas ISR factors proposed in the Plan and provides the bill impacts from the proposed rate changes.

For the average residential heating customer using 845 therms annually, implementation of the proposed ISR factors for the period of April 1, 2020 through March 31, 2021 will result in an annual increase of $49.12, or 3.7 percent.

For the PUC's convenience, the Company has also included copies of its responses to Division Data Requests Set 1. In connection with the Data Requests, this filing contains a Motion for Protective Treatment of Confidential Information in accordance with 810-RICR-00-00-1-1.3(H)(3) (Rule 1.3(H)) of the PUC's Rules of Practice and Procedure and R.I. Gen. Laws § 38-2-2(4)(B). National Grid seeks protection from public disclosure of certain confidential and privileged information in Attachment DIV 1-3. In compliance with Rule 1.3(H), National Grid has provided the PUC with one complete, unredacted copy of Attachment DIV 1-3 in an envelope marked, **"HIGHLY CONFIDENTIAL INFORMATION - DO NOT RELEASE!."**

The Gas ISR Plan presents an opportunity to facilitate and encourage investment in National Grid's gas utility infrastructure and enhance National Grid's ability to provide safe, reliable, and efficient gas service to customers.

Thank you for your attention to this matter. If you have any questions, please contact me at 781-907-2121.

Very truly yours,

Raquel J. Webster

Enclosures

cc: Leo Wold, Esq.
Al Mancini, Division
John Bell, Division
Rod Walker, Division

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RHODE ISLAND PUBLIC UTILITIES COMMISSION

Fiscal Year 2022 Gas Infrastructure, Safety, and Reliability Plan	)	Docket No. 5099

NATIONAL GRID'S MOTION FOR PROTECTIVE TREATMENT OF CONFIDENTIAL INFORMATION

National Grid[1] hereby requests that the Rhode Island Public Utilities Commission (PUC) grant protection from public disclosure certain confidential, competitively sensitive, and proprietary information submitted in this proceeding, as permitted by PUC Rule 810-RICR-00-00-1-1.3(H)(3) (Rule 1.3(H)) and R.I. Gen. Laws § 38-2-2(4)(B). National Grid also requests that, pending entry of that finding, the PUC preliminarily grant National Grid's request for confidential treatment pursuant to Rule 1.3(H)(2).

I. BACKGROUND

On December 18, 2020, National Grid submitted its Proposed Fiscal Year 2022 Gas Infrastructure, Safety, and Reliability Plan (Gas ISR or the Plan) with the PUC. For the PUC's convenience, the Company also included its responses to the Rhode Island Division of Public Utilities and Carriers' First Set of Data Requests regarding the Plan. In Data Request Division 1-3, the Division requested that the Company explain the Model's risk ranking algorithm and how the Company believed the proactive main replacement program would address the riskiest mains and services collectively. The request further requested that the Company overlay the main and service risk in GIS for system areas being considered for

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

replacement in the 2022 Gas ISR program. In responding to Data Request Division 1-3, National Grid included a confidential risk ranking map for the Company's FY 2022 proactive main replacement program as Attachment DIV 1-3. The Company seeks confidential treatment of Attachment DIV 1-3 because it includes highly confidential and sensitive critical infrastructure energy information ("CEII").

For the reasons described below, the Company requests that, pursuant to R.I. Gen. Laws § 38-2-2(4)(B) and Rule 1.3(H), the PUC afford confidential treatment to the confidential and proprietary information included in confidential Attachment Division 1-3.

II. LEGAL STANDARD

Rule 1.3(H) of the PUC's Rules of Practice and Procedure provides that access to public records shall be granted in accordance with the Access to Public Records Act (APRA), R.I. Gen. Laws § 38-2-1, *et seq.* Under APRA, all documents and materials submitted in connection with the transaction of official business by an agency is deemed to be a "public record," unless the information contained in such documents and materials falls within one of the exceptions specifically identified in R.I. Gen. Laws § 38-2-2(4). To the extent that information provided to the PUC falls within one of the designated exceptions to the public records law, the PUC has the authority under the terms of APRA to deem such information as confidential and to protect that information from public disclosure.

In that regard, R.I. Gen. Laws § 38-2-2(4)(B) provides that the following types of records shall not be deemed public:

> Trade secrets and commercial or financial information obtained from a person, firm, or corporation which is of a privileged or confidential nature.

The Rhode Island Supreme Court has held that this confidential information exemption applies where the disclosure of information would be likely either (1) to impair the government's ability to obtain necessary information in the future; or (2) to cause substantial harm to the competitive position of the person from whom the information was obtained. *Providence Journal Company v. Convention Center Authority*, 774 A.2d 40 (R.I. 2001).

The first prong of the test is satisfied when information is voluntarily provided to the governmental agency and that information is of a kind that would customarily not be released to the public by the person from whom it was obtained. *Providence Journal*, 774 A.2d at 47. National Grid meets the first and second prongs of this test, which apply here.

III. BASIS FOR CONFIDENTIALITY

The risk ranking map in Attachment DIV 1-3 is commercially sensitive and contains highly confidential information of the type that National Grid would not ordinarily make public. As such, the information should be protected from public disclosure. Public disclosure of such critical infrastructure information could cause serious harm to National Grid and compromise the safety and security of its infrastructure. Accordingly, National Grid respectfully requests that the PUC provide confidential treatment to the information contained in confidential Attachment DIV 1-3.

IV. CONCLUSION

For the foregoing reasons, National Grid respectfully requests that the PUC grant its Motion for Protective Treatment of Confidential Information.

[Signature Page following]

Respectfully submitted,

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID
By its attorney,

_____

Raquel J. Webster, Esq. (#9064)
National Grid
40 Sylvan Road
Waltham, MA 02451
781-907-2121

Dated: December 18, 2020

Joint Testimony of
Smith & Kocon

THE NARRAGANSETT ELECTRIC COMPANY
d/b/a NATIONAL GRID
RIPUC DOCKET NO. 5099
RE: FY 2022 GAS INFRASTRUCTURE,
SAFETY, AND RELIABILITY PLAN
WITNESSES: AMY SMITH & NATHAN KOCON

DIRECT JOINT TESTIMONY

OF

AMY SMITH

AND

NATHAN KOCON

December 18, 2020

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I. INTRODUCTION AND QUALIFICATIONS

Amy Smith

Q. Mrs. Smith, please state your name and business address.

A. My name is Amy Smith. My business address is 40 Sylvan Road, Waltham, MA 02451.

Q. Mrs. Smith, by whom are you employed and in what capacity?

A. I am employed by National Grid USA Service Company, Inc. ("Service Company") as the Director, New England Jurisdiction. I am the New England state jurisdictional lead for all gas system issues, including those related to the capital investment strategies for Narragansett Electric Company, d/b/a National Grid ("National Grid" or the "Company"). In my role, I work closely with the Rhode Island Jurisdictional President and Jurisdiction staff on all local gas issues related to the Rhode Island gas system in the Rhode Island service territory. My responsibilities include working with regulators on issues related to the gas system, developing strategies to support Company objectives regarding investment in the gas system, and providing testimony regarding capital investments in National Grid's gas system during state regulatory proceedings.

Q. Mrs. Smith, please describe your educational background and professional experience.

A. In 1982, I graduated from Simmons College with a Bachelor of Arts in Economics and

Mathematics. In 1991, I joined Boston Gas Company (now National Grid) as an analyst in Gas Supply Planning. Since that time, I have held a variety of positions in Rates and Regulation, Performance Measurement, Credit and Collections, Customer Regulatory Relations, Emergency Dispatch, Gas Resource Planning, Network Strategy, Construction, Gas Pipeline Safety and Compliance and Gas Investment, Resource and Rate Case Planning. I assumed my current position on April 1, 2019. In addition, from 1984 to 1989, I worked for the Massachusetts Department of Public Utilities (the "Department").

Q. Mrs. Smith, have you previously testified before the Rhode Island Public Utilities Commission ("PUC")?

A. Yes. In 2020, I testified before the PUC in support of the Company's 2020 Distribution Adjustment Clause filing in Docket 5040. In 2019 and 2020, I filed testimony with the PUC in support of the Company's Reconciliation of the Fiscal Year ("FY") 2019 Infrastructure, Safety, and Reliability Plan. In 2020, I filed testimony with the PUC in support of the Company's FY 2021 Infrastructure, Safety, and Reliability Plan Proposal. In 2011 and 2012, I testified at the PUC in support of the Company's Gas Infrastructure, Safety, and Reliability Plans. In 2011, I testified at a technical session in support of the Company's first Gas ISR Plan and presented the Company's five-year capital plan along with an explanation of how the existing Accelerated Replacement Program ("ARP") would be closed out and transitioned to the new Gas ISR Plan (Docket 4219). In 2012, I

also testified at a technical session in support of the Company's Gas ISR Plan for FY 2013 and addressed regulatory reporting requirements. (Docket 4306).

In Massachusetts, before the Department, and on behalf of Boston Gas Company ("Boston Gas") and Colonial Gas Company ("Colonial Gas"), each d/b/a National Grid (collectively National Grid or the MA Companies), I have filed testimony and related exhibits in support of capital investment and gas safety and reliability proposals in the MA Companies' last two base rate increase proceedings, dockets D.P.U. 17-170 and D.P.U 10-55, respectively. I also filed testimony in support of the MA Companies' Targeted Infrastructure Replacement Factor filing in docket D.P.U. 11-36. In 2008, I testified at the Department regarding low-income credit and collections practices in docket D.P.U 08-4. In 2005, I testified at a technical session at the Department in support of the MA Companies' service quality performance in docket D.P.U. 04-116. I have also testified before the New Hampshire Public Utilities Commission.

<u>Nathan Kocon</u>

Q. Mr. Kocon, please state your name and business address.

A. My name is Nathan Kocon. My business address is 360 Melrose Street, Providence, RI 02907.

Q. Mr. Kocon, by whom are you employed and in what capacity?

A. I am employed by the Service Company as the Principal Analyst, Rhode Island Jurisdiction. I support the Rhode Island jurisdiction for all gas system issues, with a focus on those related to the capital investment strategies for National Grid. In my role, I work closely with the Rhode Island Jurisdictional President and Jurisdiction staff on all local gas issues related to the Rhode Island gas system in the Rhode Island service territory. My responsibilities include working with regulators on issues related to the gas system, developing strategies to support Company objectives regarding investment in the gas system, and providing testimony regarding capital investments in National Grid's gas system during state regulatory proceedings.

Q. Mr. Kocon, please describe your educational background and professional experience.

A. In 2005, I graduated from Northeastern University with a Bachelor of Science in Business Administration with a dual concentration in Finance and Marketing. In 2013, I joined National Grid as a Lead Analyst in the Process and Performance group within the Customer Organization. Since that time, I completed the Company's Performance Excellence Practitioner, Senior Practitioner, and Coach Practitioner Trainings and led several process and performance improvement initiatives. I assumed my current position in February 2019. In addition, from 2010 to 2013, I worked for Ernst & Young in the Financial Investigations

and Dispute Services – Government Contract Services group. I am also a Certified Fraud Examiner.

Q. Mr. Kocon, have you previously testified before the PUC?

A. No.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your joint testimony?

A. The purpose of our testimony is to describe the Company's proposed FY 2022 Gas ISR Plan ("Gas ISR Plan" or "Plan").[1] Through our testimony, we present the Company's Gas ISR Plan, which details the work the Company expects to complete under the Plan and the anticipated capital investments associated with that work. Company Witness Melissa A. Little is providing testimony on the calculation of the revenue requirement associated with the Company's Plan, and Company Witness Tomi Uyehara is providing testimony relative to (1) how the Company calculated the rate design for the ISR mechanism; (2) the calculation of the ISR factors; and (3) the customer bill impacts of the proposed ISR factors.

[1] The Company is required by statute to annually file an infrastructure, safety, and reliability spending plan with the PUC for review and approval. *See* R.I. Gen. Laws § 39-1-27.7.1(d). In addition to budgeted spending, the annual Gas ISR Plan must contain a reconcilable allowance for the Company's anticipated capital investments and other spending for the upcoming fiscal year. *See* R.I. Gen. Laws § 39-1-27.7.1(c)(2). For FY 2022, the Company's fiscal year is for the period of April 1, 2021 through March 31, 2022, so the Plan would be effective April 1, 2021.

III. OVERVIEW

Q. How did the Company prepare the Gas ISR Plan?

A. The Company prepared the Gas ISR Plan and submitted it to the Rhode Island Division of Public Utilities and Carriers ("Division") for review on October 6, 2012 (Sections 1&2) and October 9, 2020 (Sections 1, 2, 3, & 4).[2] On October 26, 2012 and October 27, 2020, the Company met with the Division regarding the Plan and subsequently responded to informal discovery requests from the Division about various components of the Plan. The Company and the Division continued to collaborate regarding the proposed Plan on several occasions, including subsequent meetings on November 23, December 2, and December 9, 2020. The Company also responded to a set of formal and several informal supplemental data requests from the Division. The Division has indicated general concurrence with the proposed Gas ISR Plan, including the programs and projects outlined in the Plan, and will continue to review the Plan and its costs after filing, consistent with prior Gas ISR Plan filings. Overall, the Gas ISR Plan will allow the Company to meet state and federal safety and reliability requirements, maintain its gas

[2] R.I. Gen. Laws § 39-1-27.7.1(d) requires that the Company and the Division work together over the course of 60 days in an attempt to reach an agreement on a proposed plan, which is then submitted to the PUC for review and approval within 90 days.

distribution system in a safe and reliable condition, and examine potential infrastructure solutions specific to Aquidneck Island to ensure that, in the near-term and long-term, customers on the island have access to the energy they need to heat their homes and run their businesses. The Plan has been developed to improve the safety and reliability of the Company's gas system for the immediate and long-term benefit of Rhode Island's natural gas customers.

Q. What is the Gas ISR Plan designed to accomplish?

A. The Gas ISR Plan is designed to establish a spending plan, together with a reconcilable allowance for the anticipated capital investments and other spending needed to maintain and upgrade the Company's gas delivery system, such as proactively replacing leak-prone gas mains; upgrading the system's plant, pressure regulating systems, and piping; responding to emergency leak situations; and addressing conflicts that arise out of public works projects. The Plan attempts to attain the Company's safety and reliability goals through a cost-effective, coordinated work plan. The level of work that the Plan provides will sustain and enhance the safety and reliability of the Rhode Island gas pipeline infrastructure and directly benefit Rhode Island gas customers. The Company now

submits the Plan to the PUC for review and approval in accordance with Rhode Island law.[3]

Q. Are you sponsoring any exhibits through your testimony?

A. Yes. The proposed Gas ISR Plan is attached as Exhibit 1 to our joint testimony. The Plan is organized as follows:

Section 1 – Introduction and Summary
Section 2 – Gas Capital Investment Plan (including major categories of work)
Section 3 – Revenue Requirement Calculation
Section 4 – Rate Design and Bill Impacts
Schedule 1 – 2019 System Integrity Report

Our testimony focuses on Sections 1 and 2 of the Plan. As noted earlier, Ms. Little is sponsoring the revenue requirement calculation included in Section 3 of the Plan; and Mr. Uyehara is sponsoring the rate design and bill impacts included in Section 4 of the Plan.

[3] *See* R.I. Gen. Laws § 39-1-27.7.1(d).

Q. What types of infrastructure, safety, and reliability work does the Gas ISR Plan include?

A. The Gas ISR Plan seeks not only to maintain the Company's distribution system, but also to proactively upgrade the system's condition to address problems before they arise. A safe and reliable gas delivery system in Rhode Island is essential to the health, safety, and well-being of its citizens, and for maintaining a healthy economy and continuing to attract new residents and businesses to Rhode Island. In 2008, the PUC embarked on a course of addressing Rhode Island's aging gas infrastructure with the establishment of the Accelerated Replacement Plan. The Company filed its first Gas ISR Plan on December 20, 2010 for FY 2012. In addition to the type of infrastructure, safety, and reliability work performed under the Accelerated Replacement Plan, the Gas ISR Plan contains spending related to safety and reliability for Public Works, Mandated programs, and Reliability programs, including Gas Expansion. Included in the Plan document is a description of the Company's proposed budget for capital investment for FY 2022 and a capital forecast for FY 2023 through FY 2026. As agreed with the Division in the FY 2020 ISR Plan, given the magnitude of the scope and cost for the Southern Rhode Island Gas Expansion Project ("Southern RI Gas Expansion"), the Company will continue to manage any deviations from the FY 2022 Southern RI Gas Expansion Project budget separately from the overall Discretionary budget under the Plan. If deviations do occur with the Southern RI Gas Expansion Project, the Company will neither advance nor delay

other Discretionary work to compensate for those changes in FY 2022 costs. This year's Plan also includes a section describing the history and effectiveness of the Gas ISR Plan and a copy of the most recent System Integrity Report, as ordered by the PUC in Docket No. 4781.

IV. CAPITAL INVESTMENT PLAN

Q. What levels of spending are proposed in the Gas ISR Plan?

A. For FY 2022, the Company proposes to invest a total of $180.15 million, including $40.83 million for Non-Discretionary capital expenditures; $135.47 million for Discretionary capital expenditures, which includes $19.44 million for the Southern RI Gas Expansion Project; and $3.84 million for incremental curb to curb paving costs estimated in accordance with the RI paving law. Beginning in FY 2022, the incremental cost of $1.52 million for PE Stamps is allocated amongst the applicable ISR categories and is no longer a stand-alone line item. The Plan is broken down into categories of Non-Discretionary, Discretionary, and Incremental Paving Costs, each of which contain programs designed to maintain the safety and reliability of the Company's gas delivery infrastructure. Non-Discretionary programs include work required by legal, regulatory code, and/or agreement, or a result of damage or failure, with limited exceptions. Discretionary programs are not required by legal, regulatory code, and/or agreement, with limited exceptions. The Incremental Paving Costs are broken out separately for

tracking purposes, but they support work in both the Non-Discretionary and Discretionary categories.

Q. What levels of spending is the Company proposing for Non-Discretionary programs?

A. For each Non-Discretionary program category in the Gas ISR Plan, the Company proposes the following levels of spending:

- $19.20 million net investment for Public Works programs, including $20.61 million in capital spend and $1.41 million in reimbursements;
- $21.38 million for Mandated Programs (i.e., Corrosion, Purchase Meter Replacements, Reactive Leaks (Cast Iron Joint Encapsulation/Service Replacement), Service Replacement (Reactive) – Non-Leak/Other, Main Replacement (Reactive) – Maintenance (including Water Intrusion), Low Pressure System Elimination (Proactive), Transmission Station Integrity; and
- $0.25 million for Damage/Failure programs.

Q. What levels of spending is the Company proposing for Discretionary programs?

A. For each Discretionary program category in the Gas ISR Plan, the Company proposes the following levels of spending:

- $75.03 million for the Proactive Main Replacement program (i.e., Proactive Main Replacement, Large Diameter, and Atwells Avenue project);
- $0.35 million for the Proactive Service Replacement program;

- $40.66 million for Gas System Reliability, including work relative to System Automation, Heater Installation Program, Pressure Regulating Facilities, Allens Avenue Multi Station Rebuild, Take Station Refurbishment, Valve Installation/Replacement, Gas System Reliability Enhancement, Instrumentation and Regulation – Reactive, Distribution Station Over Pressure Protection, Liquefied Natural Gas (LNG) facilities, Aquidneck Island Long Term Capacity Options, Replace Pipe on Bridges, Access Protection Remediation, and Tools and Equipment; and
- $19.44 million for the Southern Rhode Island Gas Expansion Project (Southern RI Gas Expansion).

Q. What level of spending is the Company proposing for the Operation and Maintenance ("O&M") Expenses category?

A. The Company does not propose any O&M Expenses in the Gas ISR Plan for FY 2022.

Q. What levels of spending is the Company proposing for the Incremental Costs category?

A. For the Incremental Costs category in the Gas ISR Plan, the Company proposes the following levels of spending:

- $3.84 million for Incremental Curb to Curb Paving Costs for all ISR Work, excluding Atwells Avenue, Allens Avenue Multi Station, and Southern RI Gas Expansion which have any anticipated incremental paving costs included directly in the project budgets.

  Note: For FY 2022, the budgeted costs of $1.52 million for Professional Engineering Stamps have been allocated the applicable ISR categories rather than a stand-alone line item.

The Company will continue to file quarterly reports with the Division and PUC detailing the progress of its Gas ISR Plan programs for FY 2022.

Q. Explain why the company has included incremental curb to curb paving costs in this plan.

A. In the Summer of 2019, the Governor signed the Rhode Island Utility Fair Share Roadway Repair Act into law. The Act requires public utilities or utility facilities to repave and repair roadways that they alter or excavate from curb to curb or as required in accordance with state or municipal utility permit requirements. Historically, the Company's typical area of pavement restoration for work in roadways has been isolated to the side of the street where the work occurred, an approximately 8-11 feet width off the curb and the length of the trench. The Company estimates that the paving law will result in $3.84 million in incremental paving costs for FY 2022 versus the historical standard paving. The 3.84 million is the estimate for Incremental Curb to Curb Paving Costs for all ISR Work, excluding Atwells Avenue, Allens Avenue Multi Station, and Southern RI Gas Expansion which have any anticipated incremental paving costs included directly in the project budgets.

Q. The Company has included $3.84 million for incremental curb to curb paving costs for all ISR Work (excluding Atwells Avenue, Allens Avenue Multi Station, and Southern RI Gas Expansion). Please explain how this cost was estimated.

A. The incremental curb to curb paving cost estimate of $3.84 million is comprised of two cost categories: Main Installation for $3.02 million and Patches for $0.82 million. A summary of the total estimate for the FY 2022 Gas ISR Incremental Curb to Curb Paving Costs is presented in the table below. For the Main Installation incremental cost estimate, the Company estimated the current final restoration paving width to be 10.28 feet or 6,033 square yards of paving per mile, and the average curb to curb restoration will be 26 feet or 15,253 square yards per mile. Based on a cost per square yard of $14.00 for the FY 2022 anticipated average paving, the cost per mile is approximately $0.08 million. When the final restoration width is extended to curb-to-curb, the Company anticipates that additional costs of approximately 20% will be incurred for incremental work such as driveway aprons, line striping, drainage, sewer, intersection sensors and other miscellaneous work. Therefore, the estimated cost per mile for curb to curb restoration is $0.26 million per mile, resulting in an incremental cost per mile of $0.17 million to extend paving to curb to curb. After deducting the estimated miles that are already paved curb to curb and included in the average width of 10.28 feet, the Company estimates that the incremental cost of paving curb to curb will be $3.02 million.

For final restoration patches, the Company estimates that 3,429 ISR patches will be completed in FY 2022. The cost of a standard patch for FY 2022 is estimated to be approximately $1,600. Based on the state and municipal final restoration permit requirements in FY 2021, the Company estimates that for 15% of the patches, the state and municipal permits will require patch areas that are larger than a current standard patch. The Company anticipates those patch widths will be extended to curb to center line and curb to curb and, therefore, the average patch cost is anticipated to be $3,200 per patch, resulting in an incremental cost per patch of $1,600 or $0.82 million for all final restoration patches. Please see following table.

FY 2022
Incremental Curb to Curb Paving Costs
Main Installation and Patches

Planned Main Installation Paving Miles	48.5

*Note the Average of 10.28ft Restoration includes ~14% which is already paved curb to curb

Main Installation Paving	Sq Yards/ Mile	Cost/ Sq Yd	Added Costs %**	Cost/Mile	% Weight	Total Cost for 48.5 Miles	Budget
Average 10.28ft Restoration*	6,033	$ 14.00		$ 84,459	64%	$ 2,608,015	
Curb to Curb 26 ft Restoration	15,253	$ 14.00	20%	$ 256,256	36%	$ 4,502,675	
Minus Average Restoration Costs	6,033	$ 14.00		$ 84,459	36%	$ 1,484,033	
Total Incremental Paving Costs - Main Installation						$ 3,018,642	**$ 3,019,000**

**Added Costs for paving curb to curb such as driveway aprons, striping, drainage, sewer, intersection sensors, etc.

Planned ISR Patches	3,429

Patching Paving Costs	Average Cost/Patch	% Weight	Total Cost for 3,429 Patches	Budget
Standard	$ 1,600	85%	$ 4,663,440	
Total Cost: Mix of curb to curb and curb to center @ 15% adoption rate	$ 3,200	15%	$ 1,615,920	
Minus Standard Patch Restoration Costs	$ 1,600	15%	$ 822,960	
"Curb to Curb" minus Standard = Incremental Cost/Patch			**$ 822,960**	**$ 823,000**

FY 2022 Gas ISR Incremental Paving Costs by Category	Incremental Paving Cost	Budget
Main Installation - 18 miles	$ 3,018,642	$ 3,019,000
Patches - 3,429 @ 15% (mix curb to curb and curb to center)	$ 822,960	$ 823,000
Total FY 2022 ISR Incremental Paving Costs	**$ 3,841,602**	**$3,842,000**

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Q. Please explain why the Company has included $4.90 million in the FY 2022 ISR to examine Aquidneck Island Long Term Capacity Options.

A. As detailed in the September 2020 Aquidneck Island Long-Term Gas Capacity Study prepared and distributed by National Grid4, the Company has identified the need to address gas capacity constraint and vulnerability needs facing Aquidneck Island. In light of the study's findings and the feedback received via extensive stakeholder engagement, the Company has determined that the right solution for Aquidneck Island is a "hybrid" solution that relies on both new infrastructure and non-infrastructure options (i.e., incremental gas energy efficiency, gas demand response, and heat electrification). Notably, the extensive stakeholder feedback received to date favors replacing the current portable LNG site at Old Mill Lane with non- infrastructure options; however, the "hybrid" solution is necessary to enable the Company to end its reliance on the portable LNG operations at Old Mill Lane on a reasonable timescale for addressing the concerns of local residents affected by those operations. The Company is proposing to include only costs associated with pursuing infrastructure options in the FY 2022 ISR. The Company intends to pursue the non-infrastructure component of the "hybrid" solution via the System Reliability Procurement ("SRP") process.

In FY 2022, the Company plans to spend $4.90 million to examine three potential infrastructure solutions specific to Aquidneck Island to ensure that, in the near-term and

Q. Please explain why the Company has included $4.90 million in the FY 2022 ISR to examine Aquidneck Island Long Term Capacity Options.

A. As detailed in the September 2020 Aquidneck Island Long-Term Gas Capacity Study prepared and distributed by National Grid4, the Company has identified the need to address gas capacity constraint and vulnerability needs facing Aquidneck Island. In light of the study's findings and the feedback received via extensive stakeholder engagement, the Company has determined that the right solution for Aquidneck Island is a "hybrid" solution that relies on both new infrastructure and non-infrastructure options (i.e., incremental gas energy efficiency, gas demand response, and heat electrification). Notably, the extensive stakeholder feedback received to date favors replacing the current portable LNG site at Old Mill Lane with non- infrastructure options; however, the "hybrid" solution is necessary to enable the Company to end its reliance on the portable LNG operations at Old Mill Lane on a reasonable timescale for addressing the concerns of local residents affected by those operations. The Company is proposing to include only costs associated with pursuing infrastructure options in the FY 2022 ISR. The Company intends to pursue the non-infrastructure component of the "hybrid" solution via the System Reliability Procurement ("SRP") process.

4 https://www.nationalgridus.com/aquidneck-long-term-gas-capacity-study

advancing multiple options at this early stage will allow the Company to determine with greater certainty the solution that will achieve that objective at the lowest cost to the Company's customers. The Company anticipates that it will complete an assessment regarding which option(s) will remain for the potential future pathway for long term capacity for Aquidneck Island during FY 2022 with the benefit of additional information on the cost and feasibility of the options.

Q. How does the Company plan to treat the replacement of leak-prone pipe in Rhode Island in FY 2022?

A. To continue providing safe and reliable gas service to its Rhode Island customers, the Company's FY 2022 Plan includes the elimination or rehabilitation of a total of approximately 71.40 miles of leak-prone pipe (approximately 55.30 miles of proactive main replacement, 1.10 mile of rehabilitation work, 14 miles of public works replacement, and 1 mile of reinforcement work). The resulting abandonment target of approximately 70.30 miles for FY 2022 is an increase of approximately 9.30 miles compared to the FY 2021 ISR Plan and helps keep pace with the annual targets laid out in the 20-year Proactive Main Replacement program. The Company is proposing FY 2022 spending of $75.03 million for the Proactive Main Replacement program, which includes $3.85 million for the Large Diameter LPCI Program and $4.00 million for the Atwells Avenue project, and $18.80 million for the Public Works program. The value of

and need for targeted spending on the replacement of leak-prone gas main is well-documented and is only increasing in importance as these facilities continue to age. In FY 2022, the Company is increasing the cast iron abandonment percentage to 70 percent of total leak-prone inventory, which is a 9 percent increase from the FY 2021 Plan. Cast iron represents 63 percent of the Company's total leak-prone pipe inventory. As illustrated on page 26 in the attached 2019 System Integrity Report, cast iron represented 86% of main leak repairs in 2019, which was a risk factor that impacted the decision to increase the planned percentage of cast iron to be abandoned. Additionally, with the Company's rollout of new Gas Business Enablement ("GBE") software, the Company was able to run an initial risk analysis on its entire system inventory of leak-prone pipe, which assisted with the development of the FY 2022 workplan. Further, based on recommendations from the Division, and as ordered by PUC in docket number 4996 on August 19, 2020, the Company adjusted the weighting of risk factors to place a greater weighting to leak-prone services and was factored into the development of the FY 2022 workplan. This continues to enable leak-prone services to be addressed primarily through the Proactive Main Replacement program, but now with a greater emphasis.

Q. What is the difference between installation miles and abandonment miles in relation to the replacement of leak-prone pipe?

A. Installation miles represent the units of new main that are required to be connected to the distribution system. Thus, installation miles represent the main driver for unit costs when combined with service relays and tie overs. Abandonment miles represent the total of the old leak-prone pipe that is retired or disconnected from the distribution system. In some instances, the existence of parallel leak-prone main provides the Company with the opportunity to install a single section of new main to abandon two sections of existing leak-prone main; the current FY 2022 workplan contains approximately 6.2 miles of parallel main to be abandoned (the FY 2021 workplan originally contained 3.9 miles of parallel main). This will result in annual leak-prone pipe replacement program targets where total abandonment miles exceed total installation miles.

Q. How do the FY 2022 leak-prone pipe replacement programs compare to the FY 2021 programs?

A.

The Public Works program abandonment and installation miles will each increase by 1 mile, for a FY 2022 total of 14 abandonment and 14 installation miles. The table below provides a comparison of the Main Replacement – Leak Prone Pipe program between FY 2021 and FY 2022, including the estimated cost per mile for installed and abandoned main in urban, suburban, and rural areas. This table excludes the Large Diameter program and the costs for the Atwells Avenue Main Replacement program because the

nature of those programs are not suitable for year-over-year comparison. The average installation cost per mile for work in rural locations is estimated to increase from $0.97 million in FY 2021 to $1.30 million in FY 2022 because of the cost variability in the 13 projects selected for FY 2022. The average installation cost per mile for work in suburban locations is estimated to increase from $1.24 million in FY 2021 to $1.32 million in FY 2022. The average installation cost per mile for work in urban locations is estimated to increase from $1.77 million in FY 2021 to $1.96 million in FY 2022. Cost increases across all categories are primarily driven by contractor price increases.

FY 2021 (Plan as of 12/18/2019)				
	Installation Miles	Abandonment Miles	Installation Cost/Mile	Abandonment Cost/Mile
Rural	4.0	4.6	$0.97M	$0.84M
Suburban	21.9	23.6	$1.24M	$1.15M
Urban	16.4	19.2	$1.77M	$1.51M
Total	42.3	47.4	$1.42M	$1.27M

FY 2022 (Plan as of 11/30/2020)				
	Installation Miles	Abandonment Miles	Installation Cost/Mile	Abandonment Cost/Mile
Rural	5.0	6.7	$1.30M	$0.97M
Suburban	21.8	22.9	$1.32M	$1.26M
Urban	21.7	25.4	$1.96M	$1.67M
Total	48.5	55.1	$1.61M	$1.41M

Q. Have the Company's efforts at replacing leak-prone pipe been effective?

A. Yes. When the ISR program was first implemented in FY 2012, approximately 48 percent of the Company's gas distribution system in Rhode Island was comprised of leak-prone pipe. Through the FY 2020 Gas ISR Plan, the Company has abandoned a total of 507 miles of leak-prone pipe, which has contributed to an estimated reduction of 1,389 gas leaks. To monitor its system performance, the Company prepares an annual System Integrity Report. A copy of the most recent System Integrity Report (2019) is provided in Schedule 1 at the end of the Plan. The System Integrity Report provides historical data on leak receipts, leak repairs, open leaks, and inventory of mains and services. Additional data is provided around material type for each of the listed categories. The Company considers leak receipts to be an important system performance indicator regarding the effectiveness of its leak-prone pipe abandonment program. Since 2010, the Company has seen an overall downward trend on leak receipts, which would indicate that the ISR and ARP programs have contributed to this result. However, as the System Integrity Report shows, there has been a slight increase in leak receipts for the past three years particularly on case iron mains. Notably, variability in year-to-year annual leaks per mile will occur. Contributing factors include weather, public awareness, and overall system deterioration rates. The Company has taken note of the increase in cast iron leak activity and has increased the percentage of cast iron main in FY 2022, which was mentioned above.

Q. Has the Company made any modifications in the Plan related to the replacement of leak-prone pipe?

A. Yes. As mentioned above, the Company has increased the Proactive Main Replacement program cast iron abandonment percentage from 61 percent to 70 percent. Further, based on recommendations from the Division, and as ordered by PUC in docket number 4996 on August 19, 2020, the Company adjusted the weighting of risk factors and was factored into the development of the FY 2022 workplan. This continues to enable leak-prone services to be addressed primarily through the Proactive Main Replacement program, but now with a greater emphasis.

In addition, the FY 2022 Plan continues to include the Atwells Avenue Main Replacement project, which will be year three of a three-year project. In the 2017-2018 winter period, the Company experienced four main breaks on Atwells Avenue in Providence on 12-inch low pressure cast iron main installed in the 1870s. This main is located in one of the busiest streets within Providence, with a heavy concentration of restaurants. Upon completion of an integrity analysis, the initial project scope deemed it necessary to abandon over one mile of cast iron main and replace it with over one mile (5,505 feet) of high-density polyethylene ("HDPE") plastic pipe between FY 2020 and FY 2022. The project is broken into four segments: Segment 1A (forecast abandonment 1,565 feet, actual 2,784 feet); Segment 1B (forecast abandonment 1,565 feet, actual 2,915

feet); Segment 2 (forecast abandonment 965 feet, actual 965 feet); and Segment 3 (forecast abandonment 1,410 feet). In FY 2020, the Company addressed the highest risk segment, Segment 2. Final restoration for Segment 2 was completed in FY 2021. Thus far in FY 2021, the Company has completed the main installation and abandonment of Segments 1A and 1B. The Company forecasts that final restoration for Segments 1A and 1B are will be completed in the early Spring of calendar year 2021, with the costs of approximately $0.40 million being incurred in FY 2022. The main installation and abandonment of the final segment, Segment 3, will be completed in FY 2022 at a cost of $3.60 million. In total, for FY 2022, the Gas ISR Plan contains $4.00 million for the Atwells Avenue Main Replacement project. From FY 2019 through the anticipated close of the project in FY 2022, the total forecasted cost of the Atwells Avenue Main Replacement project is $10.40 million.

Q. The FY 2022 ISR includes $2.50 million for the Allens Avenue Multi Station Rebuild Project, do you anticipate this to be the final year of that multi-year project?

A. Yes. The Allens Avenue Multi Station Rebuild Project began in FY 2017 and is forecasted to be completed in FY 2022. In FY 2022, the Company plans to spend $2.50 million to complete the abandonment of eight pre-existing regulator stations and associated above-ground piping and structures in the central portion of the Allens Avenue

facility. From FY 2015 through the anticipated close of the project in FY 2022, the total forecasted cost of the Allens Avenue Multi Station Rebuild Project is approximately $29.61 million.

Q. What is the Southern Rhode Island Gas Expansion Project?

A. As was detailed in the FY 2020 Gas ISR, the Company has identified a need and has begun to build in increased capacity in the Southern Rhode Island service territory. The more than 30,000 customers in the Company's Southern Rhode Island service territory are served by almost 600 miles of distribution infrastructure, including approximately 77 miles of distribution main operating at pressures of 99 psig and above (the Southern Rhode Island Distribution Mains). As of 2018, growth forecasts indicated the maximum vaporization capacity at the Exeter LNG facility would be exceeded by calendar year 2019. This could have resulted in approximately 3,750 customers with below minimum pressures and them being at risk of losing service. In addition, several regulator station inlet pressures were predicted to fall below the minimum threshold, which would cause problems on the downstream pressure systems if the regulator stations cannot maintain their outlet set pressure. Increasing capacity in Southern Rhode Island mitigates the risk of customers in the region losing service in the event of an outage at the Exeter LNG facility. Moreover, many commercial customers seeking to expand existing and new operations in the Southern Rhode Island region, such as in and around Quonset Point,

cannot be served without this project. Without this project, the Company may have needed to impose a moratorium on all new gas service requests, as well as requests for expansion of existing gas service, to prevent service interruptions to existing customers. To address these capacity issues, in FY 2020, the Company began construction on a project to reinforce the Southern Rhode Island Distribution Mains by installing approximately five miles of new 20-inch steel distribution main parallel to the existing 12-inch distribution main located beneath Route 2 (a Rhode Island Department of Transportation right-of-way) through the towns of Warwick, West Warwick, and East Greenwich. The parallel distribution main is being constructed to be in-line inspected, initially operated at 99 psig, and designed for a maximum allowable operating pressure (MAOP) of 200 psig to meet future demand. The new distribution main will be placed in-service in phases between FY 2020 and FY 2022, with normal operation at 99 psig and the potential to operate at 200 psig after a district regulator station is installed in the future near South Road in East Greenwich. This project will also require work on existing regulator and take stations from FY 2021 through FY 2025. Based on current forecasts, each segment will add immediate growth capacity. Once all the segments are completed, the Company expects that approximately 1,100 dekatherms per hour of additional capacity will be available. The installation of a second distribution main will also improve the reliability of the Company's gas distribution system in the area by decreasing the Company's dependence on pressure support from the Exeter LNG facility

and by introducing redundancy that reduces the risk associated with a distribution main being out of service.

Q. What is the cost and scope of work for the Southern Rhode Island Project?

A. Between FY 2019 and FY 2025, the Southern RI Gas Expansion Project will complete work that is comprised of main installation, regulator station investment, and other upgrades and investments. For the main installation portion of the project, the Company plans to install approximately 5.1 miles of new 20-inche steel distribution main, beginning on Quaker Lane in Warwick, RI and ending at South Road in East Greenwich, RI. Between FY 2019 and FY 2023, the total estimated cost for the main installation work is currently $97.00 million. For FY 2022, the Company expects to spend a total of $14.91 million for the final phase of the main installation work.

In addition to the main installation work, the Gas Expansion project will also complete activities related to regulator stations, other upgrades, and investments at a total cost of $4.53 million. In FY 2022, barring any need for substantial repairs to the gas main, the Company plans to implement the maximum operating pressure ("MOP") increase from 150 psig to 200 psig for 5.2 miles (27,578) of existing main in Cranston and West Warwick. The Company will also continue preparation work, such as planning, engineering, and site planning, for a new regulator station near the existing Cowesett regulator station, along with project development and procurement of materials in preparation for FY 2023 construction related to updates at the existing Cowesett regulator

station. Additionally, in FY 2022 activities will include the final design, procurement of materials, and beginning of construction related to upgrades at the existing Cranston regulator station. Finally, the Company will also continue with project development and planning related to the future installation of a new regulator station, a launcher, and receiver to support in-line inspections of the 200 psig main. Between FY 2019 and FY 2025, the total estimated cost for activities related to regulator stations, other upgrades, and investments is currently $31.98 million. The total estimated cost for the Southern RI Gas Expansion Project from FY 2019 through the anticipated close of the project in FY 2025 is $128.98 million.

Q. Is the Company including any proposed "O&M expense in the FY 2022 Gas ISR Plan, as it has in prior Plans?

A. No.

Q. Does the FY 2022 Gas ISR Plan fulfill the statutory requirements for the safety and reliability of the Company's gas distribution system in Rhode Island?

A. Yes. The FY 2022 Gas ISR Plan establishes the capital investment in Rhode Island that is necessary to meet the needs of the Company's customers, together with a spending and work plan to maintain the overall safety and reliability of the Company's Rhode Island gas distribution system.

V. CONCLUSION

Q. Does this conclude your testimony?

A. Yes.

Exhibit 1
Gas ISR FY2022 Plan

The Narragansett Electric Company
d/b/a National Grid

Gas Infrastructure, Safety, and Reliability Plan FY 2022 Proposal

Book 1 of 2

December 18, 2020

Docket No. 5099

Submitted to:
Rhode Island Public Utilities Commission

Submitted by:

nationalgrid

Section 1

Introduction and Summary
FY 2022 Proposal

Section 1
Introduction

Introduction and Summary
FY 2022 Proposal

In consultation with the Rhode Island Division of Public Utilities and Carriers ("Division"), National Grid[1] has developed the following proposed fiscal year ("FY") 2022[2] gas infrastructure, safety, and reliability ("ISR") plan ("Gas ISR Plan" or "Plan") in compliance with R.I. Gen. Laws § 39-1-27.7.1 ("Revenue Decoupling Law"), which provides for the filing of "[a]n annual gas infrastructure, safety and reliability spending plan for each fiscal year and an annual rate reconciliation mechanism that includes a reconcilable allowance for the anticipated capital investments and other spending pursuant to the annual pre-approved budget."[3] The proposed Gas ISR Plan addresses capital spending on gas infrastructure and other costs related to maintaining the safety and reliability of the Company's gas distribution system. Through the Plan, the Company will maintain and upgrade its gas delivery system by proactively replacing leak-prone pipe; upgrading the gas delivery system's custody transfer stations, pressure regulating facilities, and peak shaving plants; responding to emergency leak situations; and addressing infrastructure conflicts that arise out of state, municipal, and third-party construction projects. Through the Plan, the Company intends to attain these safety and reliability goals through a cost-effective, coordinated work plan. The level of work that the Plan provides will sustain and enhance the safety and reliability of the Rhode Island gas pipeline infrastructure, promote efficiency in the management and operation of the gas distribution system, and directly

[1] The Narragansett Electric Company d/b/a National Grid ("National Grid" or the "Company").

[2] FY 2022 is defined as the 12 months ending March 31, 2022.

[3] R.I. Gen. Laws § 39-1-27.7.1(c)(2).

benefit Rhode Island gas customers. The Company now submits the Plan to the Rhode Island Public Utilities Commission ("PUC") for review and approval.[4]

This Introduction and Summary presents (1) a history of the Gas ISR program in Rhode Island and a statement regarding how the ISR program has contributed to safety and reliability; (2) an overview of the proposed FY 2022 Plan for the statutory categories of costs; (3) the resulting FY 2022 revenue requirement associated with the proposed Plan; and (4) the rate design based upon that revenue requirement and estimated typical bill impacts resulting from the rate design.

The Gas ISR Plan describes the Company's safety and reliability activities and the multi-year plan upon which the FY 2022 Plan is based. The Plan also addresses capital investment in utility infrastructure for the upcoming fiscal year. The Plan itemizes the recommended work activities by general category and provides budgets for capital investment.

As envisioned in the Revenue Decoupling Law, after the end of the fiscal year, the Company will true up the Gas ISR Plan's budgeted levels to its actual investment and expenditures and reconcile the revenue requirement associated with the actual investment and expenditures with the revenue billed from the rate[2] adjustments implemented at the beginning of each fiscal year. The Company will continue to file quarterly reports with the Division and the PUC concerning the progress of its Gas ISR programs. In addition, when the Company makes its reconciliation and rate adjustment filing described below, the Company will file an annual

[4] In accordance with R.I. Gen. Laws § 39-1-27.7.1(d), the Company and the Division must work together over the course of 60 days in an attempt to reach an agreement on a proposed Plan, which must then be submitted to the PUC for review and approval within 90 days.

report on the prior fiscal year's activities. In implementing an ISR plan in any fiscal year, the circumstances encountered during the year may require reasonable deviations from the original ISR plan. In such cases, the Company will include in its quarterly reports an explanation of any significant deviations.

Similar to the Company's FY 2021 ISR Plan, the FY 2022 ISR plan includes incremental paving costs associated with the Rhode Island Utility Fair Share Roadway Repair Act, which was signed into law in 2019. The Act requires public utilities or utility facilities to repave and repair roadways that they alter or excavate from curb to curb or as required in accordance with state or municipal utility permit requirements. Historically, the Company's typical area of pavement restoration for work in roadways has been isolated to the side of the street where the work occurred, an approximately 8-11 feet width off the curb and the length of the trench. National Grid has updated its estimate of incremental paving costs for FY 2022 using actual FY 2021 incremental paving costs incurred to date and projected paving volumes for FY 2022. For FY2022, the Company estimates incremental costs of $3.02 million associated with restoring 18 miles[5] of trenches associated with main work and $0.82 million associated with restoring larger patch areas for 15% of the 3,429 patches associated with other categories of ISR work. Please note that these costs do not include incremental paving costs associated with three large projects included in the FY 2022 ISR plan. Rather, the Company has included incremental paving costs directly into the FY 2022 proposed budgets for the Atwells Avenue project, the Allens Avenue

[5] Approximately 14% of final restoration is already completed as curb to curb and is already included in the average restoration costs. Therefore, the incremental restoration mileage is effectively approximately 18 miles (48.5 miles X ~36%).

Multi Station Rebuild project, and the Southern Rhode Island Gas Expansion Project ("Gas Expansion Project").

Further details of the incremental paving costs are provided in Section 2. The Company will continue to file quarterly reports with the PUC and Division detailing the progress of its Gas ISR Plan program and will highlight spending associated with the continued impact of the RI paving law.

The FY 2022 level of capital spending provided in the Gas ISR Plan to maintain the safety and reliability of the Company's gas delivery infrastructure is $180.15 million. As described in more detail below, this amount includes $19.44 million to continue the Gas Expansion Project, which the Company manages as a distinct spending portfolio, $3.84 million in incremental curb to curb paving costs, $1.52 million to continue meeting statutory requirements to have natural gas infrastructure design plans and specifications approved by a Rhode Island registered Professional Engineer ("PE Stamp") when the work could pose a material risk to public safety[6], $4.90 million to examine gas capacity solutions identified in the Company's Aquidneck Island Long Term Capacity Report, and $151.96 million for the rest of the Plan.

A description of the Company's proposed capital investment plan for FY 2022 is provided in Section 2. The revenue requirement description and calculations are contained in Section 3. A description of the rate design and bill impacts are provided in Section 4.

[6] Incremental PE costs were shown as a separate category in the Company's FY 2021 ISR Plan. The Company has now incorporated projected PE costs in the applicable categories within the ISR and they will no longer be shown as a stand-alone incremental cost category.

History of the ISR Plan

The Rhode Island natural gas distribution system is one of the oldest in the United States and includes a large proportion of leak-prone and deteriorating infrastructure installed, in some instances, more than 100 years ago. The Company, which owns and operates the gas distribution system, has an obligation to provide safe and reliable service to customers in compliance with applicable state and federal pipeline safety statutes and regulations. However, the challenge of meeting this obligation is amplified on the portions of the distribution system containing leak-prone pipe, consisting of unprotected steel, cast iron and wrought iron, and vintage Aldyl-A and Polybutylene plastic pipe.

In accordance with the Revenue Decoupling Law, the Company filed its first Gas ISR plan on December 20, 2010 for FY 2012. The ISR program replaced the Accelerated Replacement Program ("ARP"), which began as part of the Company's 2008 rate case in Docket No. 3943. The ARP targeted the replacement of cast iron and non-cathodically protected steel mains and non-cathodically protected steel inside services. The ISR program expanded on the ARP through inclusion of other capital programs related to safety and reliability for public works, mandated programs, and reliability. From FY 2012 to FY 2020, the Company has invested a total of $815 million through the Gas ISR program. This includes a total of $493 million that targeted the replacement of leak-prone pipe through the Company's Proactive Main Replacement and Public Works programs. When the ISR program was first implemented, approximately 48 percent of the Company's gas distribution system in Rhode Island was comprised of leak-prone pipe. The table below highlights a total of 507 miles of leak-prone pipe

abandoned through the FY 2020 ISR Plan that has contributed to an estimated reduction of 1,389 leaks.

Description	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	Total
Total ISR Abandonment Miles	46	47	53	55	59	63	62	60	62	507
Gas Leaks Eliminated	191	186	140	121	150	103	178	160	160	1,389

To monitor its system performance, the Company prepares an annual System Integrity Report. A copy of the most recent System Integrity Report (2019) is provided as Schedule 1 at the end of the Plan. The System Integrity Report provides historical data on leak receipts, leak repairs, open leaks, and inventory of mains and services. Additional data is provided around material type for each of the listed categories. The Company considers leak receipts to be an important system performance indicator regarding the effectiveness of its leak-prone pipe abandonment program. Since 2010, the Company has seen an overall downward trend on leak receipts, which would indicate that the ISR and ARP programs have contributed to this result. However, as the System Integrity Report shows, there has been a slight increase in leak receipts for the past three years particularly on cast iron mains. Notably, variability in year-to-year annual leaks per mile will occur. Contributing factors include weather, public awareness, and overall system deterioration rates. The Company has taken note of the increase in cast iron leak activity and has increased the percentage of cast iron main in FY 2022 workplan, which is detailed below.

Section 2: Gas Capital Investment Plan

The Company's proposed gas capital investment plan set forth in Section 2 summarizes the Company's planned capital investments for Incremental Curb to Curb Paving and for the following key Discretionary[7] and Non-Discretionary[8] categories.

Incremental Costs:

A. Curb to Curb Paving – All ISR Work (excluding Atwells Avenue, Allens Avenue Multi-Station, and Southern RI Gas Expansion)

Non-Discretionary:

A. Public Works
B. Mandated Programs
C. Damage/Failure

Discretionary:

A. Proactive Main Replacement
B. Proactive Service Replacement
C. Gas System Reliability
D. Southern RI Gas Expansion

Section 2 itemizes the proposed activities by sub-categories and provides budgets for each sub-category. The Company has included its capital budget, identified the relevant projects that would be part of the Gas ISR Plan, and provided its rationale for the need for and benefit of performing such work to provide safe and reliable service to its customers. The Company has also provided a five-year capital plan to provide a longer-term approach to infrastructure, safety, and reliability and to demonstrate how the FY 2022 Plan would be incorporated into that longer-term planning approach.

[7] Discretionary programs are not required by legal, regulatory code, or agreement, or a result of damage or failure, with limited exceptions.

[8] Non-Discretionary programs include projects that are required by legal, regulatory code, and/or agreement, or which are the result of damage or failure, with limited exceptions.

The Company's FY 2022 Plan includes the elimination or rehabilitation of a total of approximately 71.40 miles of leak-prone pipe (approximately 55.30 miles of proactive main replacement, 1.10 mile of rehabilitation work, 14 miles of public works replacement, and 1 mile of reinforcement work). This resulting abandonment target of approximately 70.30 miles for FY 2022 is an increase of approximately 9.30 miles compared to the FY 2021 ISR Plan and helps keep pace with the annual targets laid out in the 20-year Proactive Main Replacement program. The Company has increased the Proactive Main Replacement program cast iron abandonment percentage from 61 percent to 70 percent. Cast iron represents 63 percent of the Company's total leak-prone pipe inventory. Additionally, with the Company's rollout of new Gas Business Enablement ("GBE") software, the Company was able to run an initial risk analysis on its entire system inventory of leak-prone pipe, which assisted with the development of the FY 2022 workplan. Further, based on recommendations from the Division, and as ordered by PUC in docket number 4996 on August 19, 2020, the Company adjusted the weighting of risk factors to place a greater weighting to leak-prone services and was factored into the development of the FY 2022 workplan. This continues to enable leak-prone services to be addressed primarily through the Proactive Main Replacement program, but now with a greater emphasis.

The FY 2022 Gas ISR Plan also continues to include a category for Gas Expansion, namely, to reinforce the distribution mains in Southern Rhode Island (the "Southern RI Gas Expansion Project"). As noted in the FY 2021 Gas ISR Plan, the Gas Expansion Project presents unique challenges for the Company with managing the Plan due to its size, cost, and complexity. As part of the execution of the Gas Expansion Project, the forecasted spend in FY 2022, and in

future fiscal years, may change as risks occur and/or cost savings are achieved. If the Gas Expansion Project is managed with the overall Discretionary portfolio, any changes may result in the need to advance or delay several projects, especially if the variance is significant. Instead, the Company will continue to manage the Gas Expansion Project as a distinct portfolio of spend and not advance or delay other projects if over- or under-spend occurs on the Gas Expansion Project.

Section 3: Revenue Requirement

The Company has provided a calculation of the cumulative revenue requirement resulting from the proposed FY 2022 capital investment plan. Section 3 of the Plan contains a description of the revenue requirement model for FY 2022 and an illustrative calculation for FY 2023. This calculation would form the basis for the Plan rate adjustment, which would become effective April 1, 2021 upon PUC approval. As provided in Section 3 of the Plan, in accordance with the Company's gas tariff, RIPUC NG-GAS No. 101, Section 3, Schedule A, Item No. 3.3, the Company will reconcile this rate adjustment as part of its annual Distribution Adjustment Charge filing. The pre-tax rate of return on rate base is the rate of return approved by the PUC in the Amended Settlement Agreement in the Company's most recent general rate case, Docket No. 4770. In the future, the pre-tax rate of return would change to reflect changes to the rate of return approved by the PUC in future rate case proceedings. Any change in the rate of return would be applicable on a prospective basis, effective at the time of the change.

Section 4: Rate Design

For purposes of rate design, the revenue requirement associated with the capital investment is allocated to rate classes based upon the most recent rate base allocator approved in the Amended Settlement Agreement in Docket No. 4770. For each rate class, the allocated revenue requirement is divided by the applicable fiscal year forecasted therm deliveries to arrive at a per-therm factor unique to each rate class.

The estimated typical bill impacts associated with the rate design and bill impacts are provided in Section 4. Including the incremental $3.84 million cost associated with RI curb to curb paving law, the bill impact of the Gas ISR Plan for the average Residential Heating customer for the period April 1, 2021 through March 31, 2022 would be an annual increase of $49.12, or 3.7%, from last year's bills.

Section 2
Gas Investment Plan

Section 2

Gas Capital Investment Plan
FY 2022 Proposal

Gas Capital Investment Plan
FY 2022 Proposal

Background

The Company developed its proposed capital investment plan to meet its obligation to provide safe, reliable, and efficient gas distribution service for customers at reasonable costs.[9] The Gas ISR Plan includes capital investment spending needed to meet state and federal regulatory requirements applicable to the Company's gas system and to maintain its distribution infrastructure in a safe and reliable condition. To address the replacement of leak-prone pipe, the Plan includes infrastructure, safety, and reliability work for cast-iron and non-cathodically protected steel mains. The Plan also contains capital spending related to safety and reliability for public works projects, mandated programs, and gas reliability, including the Gas Expansion project.

Consistent with the goals of the Revenue Decoupling Law, to continue providing provide safe and reliable gas delivery service to Rhode Island customers, it is critical that the Company remain vigilant with respect to investing in its infrastructure and have appropriate and timely cost recovery. To that end, the Company's proposed Plan identifies the capital spending investment that it expects to complete during FY 2022. At the end of this section, Table 1 contains a description of the proposed budget for the FY 2022 Plan; and Table 2 contains a proposed five-year spending forecast for FY 2022 through FY 2026; and Table 3 contains actual spending

[9] The Company delivers natural gas to approximately 272,000 Rhode Island residential and commercial and industrial customers in 32 cities and towns in Rhode Island. To provide this service, the Company owns and maintains approximately 3,200 miles of gas mains and approximately 195,000 gas services.

based on the prior five-year period, FY 2016 through FY 2020. In FY 2022, the Company proposes to invest a total of $180.15 million of ISR investments[10] to be included in the FY 2022 Gas ISR recovery mechanism, including $40.83 million for Non-Discretionary capital expenditures; $135.47 million for Discretionary capital expenditures, which includes $19.44 million for the Southern RI Gas Expansion Project, and $4.90 million to examine potential Aquidneck Island Long Term Capacity Options. Additionally, the Plan contains incremental capital expenditures of $3.84 million for incremental curb to curb paving costs estimated in accordance with the RI paving law. Beginning in FY 2022, the incremental cost of $1.52 million for PE Stamps is incorporated in the applicable ISR categories, and is no longer a stand-alone incremental cost line item. PE costs are now considered to be part of the standard cost of engineering associated with ISR work. Therefore, annual costs may be accurately estimated based on the work volumes included in the ISR.

As set forth in Table 1 at the end of this section, the Company proposes the following levels of spending for each category of programs contained in the $180.15 million that the Company proposes for its FY 2022 Gas ISR Plan spending:

Incremental Costs:

- $3.84 million for Incremental Curb to Curb Paving Costs for all ISR Work, excluding Atwells Avenue, Allens Avenue Multi Station, and Southern RI Gas Expansion which have any anticipated incremental paving costs included directly in the project budgets.

[10] For FY 2022, the Company plans to spend $226.70 million of total capital investment. Of that total amount, $40.55 million is associated with projected growth and other non-ISR spending, which is not included for recovery in the FY 2022 Gas ISR Plan.

Non-Discretionary:

- $19.20 million net investment for Public Works programs, including $20.61 million in capital spend and $1.41 million in reimbursements;
- $21.38 million for Mandated Programs (i.e., Corrosion, Purchase Meter Replacement, Reactive Leaks (Cast Iron Joint Encapsulation/Service Replacement), Service Replacement (Reactive) – Non-Leak/Other, Main Replacement (Reactive) – Maintenance (including Water Intrusion)), Low Pressure System Elimination (Proactive), Transmission Station Integrity; and
- $0.25 million for Damage/Failure programs.

Discretionary:

- $75.03 million for the Proactive Main Replacement program (i.e., Proactive Main Replacement, Large Diameter, and Atwells Avenue project);
- $0.35 million for the Proactive Service Replacement program;
- $40.66 million for Gas System Reliability, including work relative to System Automation, Heater Program, Pressure Regulating Facilities, Allens Avenue Multi Station Rebuild, Take Station Refurbishment, Valve Installation Replacement, Gas System Reliability Enhancement, Instrumentation and Regulation – Reactive, Distribution Station Over Pressure Protection, Liquefied Natural Gas (LNG) facilities, Aquidneck Island Long Term Capacity Options, Replace Pipe on Bridges, Access Protection Remediation, and Tools and Equipment; and
- $19.44 million for the Southern Rhode Island Gas Expansion Project (Gas Expansion Project).

Incremental Costs: Curb to Curb Paving

As noted in last year's FY 2021 ISR Proposal, the Rhode Island Utility Fair Share Roadway Repair Act (the "Act") was enacted into state law on July 15, 2019. The Act requires

public utilities or utility facilities to repave and repair roadways which have been altered or excavated by the Utility from curb line to curb line or as required in accordance with the state or municipal utility permit requirements. The new law was immediately applicable to all work on state roadways, and within municipalities as they see fit to adopt within their permits. To date, 14 of 38 municipalities in Rhode Island[11] have adopted curb to curb restoration requirements. The Company believes that adoption of the Act's requirements will continue to increase and anticipates that additional municipalities will adopt the requirements before the start of the Company's FY 2022 construction season, which begins in April 2021. The Company believes that this trend will continue, with adoption steadily increasing in FY 2023 and beyond. The new curb to curb paving restoration requirement significantly impacts the costs of gas capital construction projects and gas maintenance work in RI.

Using FY 2021 incremental paving costs incurred to date and incorporating forecasted paving volume increases for FY 2022, the Company estimated the cost of complying with the law for all FY 2022 ISR Plan work. The Company has included two categories for incremental paving costs for (1) Main Installation and (2) Patches for all ISR work other than the Atwells Avenue project, the Allens Avenue Multi Station Rebuild project, and the Southern RI Gas Expansion project. Incremental paving costs associated with complying with the law have been incorporated into the total estimated costs for these three projects. National Grid used the following assumptions to calculate the FY 2022 incremental paving budgets: incremental paving will be required for 50 percent of miles installed and for 15 percent of patch restorations

[11] Thirty two municipalities in Rhode Island have gas services.

associated with ISR work. After subtracting out the average cost of prior historical paving requirements, the Company estimates incremental costs of $3.02 million associated with restoring approximately 18 miles[12] of trenches following main work and $0.82 million associated with restoring larger patch areas for 15 percent of the 3,429 patches associated with other categories of ISR work. As noted in Section 1 above, the Company will continue to file quarterly reports with the PUC and Division detailing the progress of its Gas ISR Plan programs and will highlight spending associated with the impact of the RI paving law.

A summary of the total estimate for the FY 2022 Gas ISR Incremental Curb to Curb Paving Costs is presented in the table below.

[12] Approximately 14% of final restoration is already completed as curb to curb and is already included in the average restoration costs, so the incremental restoration mileage is effectively approximately 18 miles (48.5 miles X ~36%).

FY 2022
Incremental Curb to Curb Paving Costs
Main Installation and Patches

Planned Main Installation Paving Miles	48.5

*Note the Average of 10.28ft Restoration includes ~14% which is already paved curb to curb

Main Installation Paving	Sq Yards/ Mile	Cost/ Sq Yd	Added Costs %**	Cost/Mile	% Weight	Total Cost for 48.5 Miles	Budget
Average 10.28ft Restoration*	6,033	$ 14.00		$ 84,459	64%	$ 2,608,015	
Curb to Curb 26 ft Restoration	15,253	$ 14.00	20%	$ 256,256	36%	$ 4,502,675	
Minus Average Restoration Costs	6,033	$ 14.00		$ 84,459	36%	$ 1,484,033	
Total Incremental Paving Costs - Main Installation						$ 3,018,642	**$ 3,019,000**

**Added Costs for paving curb to curb such as driveway aprons, striping, drainage, sewer, intersection sensors, etc.

Planned ISR Patches	3,429

Patching Paving Costs	Average Cost/Patch	% Weight	Total Cost for 3,429 Patches	Budget
Standard	$ 1,600	85%	$ 4,663,440	
Total Cost: Mix of curb to curb and curb to center @ 15% adoption rate	$ 3,200	15%	$ 1,645,920	
Minus Standard Patch Restoration Costs	$ 1,600	15%	$ 822,960	
"Curb to Curb" minus Standard = Incremental Cost/Patch			$ 822,960	**$ 823,000**

FY 2022 Gas ISR Incremental Paving Costs by Category	Incremental Paving Cost	Budget
Main Installation - 18 miles	$ 3,018,642	$ 3,019,000
Patches - 3,429 @ 15% (mix curb to curb and curb to center)	$ 822,960	$ 823,000
Total FY 2022 ISR Incremental Paving Costs	**$ 3,841,602**	**$ 3,842,000**

Description of Programs and Projects

The Non-Discretionary and Discretionary programs are described in detail below.

Non-Discretionary Work:

A. Public Works

The purpose of the Public Works program is to address existing gas infrastructure conflicts, as appropriate, and to improve the safety and reliability of the Company's natural gas distribution system in conjunction with municipal reconstruction and water and sewer projects, which provide significant incremental benefits to customers and communities. Municipal and water and sewer work affords the Company an opportunity to replace additional leak-prone pipe and reduce paving costs by coordinating the Company's gas main replacement work with planned third-party construction projects, while also benefitting customers and communities by improving service delivery and minimizing construction impacts and inconvenience. The Company has an ongoing plan to replace targeted gas mains on a risk-based approach. Coordinating the Company's Integrity programs with planned municipal and water and sewer projects has yielded increased system reliability, system integrity, and optimized capital spending. Although one of the primary purposes of Public Works spending is to address direct conflicts between planned third-party projects and existing gas infrastructure, Public Works spending provides the additional opportunity to coordinate other system improvement work, such as the replacement of leak-prone pipe, system reliability upgrades, elimination of redundant main, and regulator station upgrades.

The Company will manage multiple projects to address the dynamic nature of the Public Works process through effective liaison activity. Although municipal schedules and plans

change largely due to funding, other factors also contribute to the scheduling of these projects (e.g., political demand and maintenance). Changes in municipal projects can and do create additional work in developing and coordinating the Company's planning and budgeting processes. Using the Company's five-year work planning process, the Company can provide some flexibility in scheduling, coordinating, and engineering projects in concert with municipal public works initiatives. For FY 2022, the Plan incorporates $19.20 million in spending under the Public Works category, which includes $20.61 million in capital spend and $1.41 million that is anticipated to be reimbursed under agreements with third parties. Overall, the Public Works budget provides for the installation of 14 miles of gas main, mainly resulting from the replacement and abandonment of 14 miles of leak-prone gas main, consisting of cast iron and unprotected steel main. Please note that the costs in this category do not include any incremental cost associated with complying with the RI paving law. The Company's calculation of estimated incremental paving costs excludes public works miles since the municipality or the state is typically responsible for final paving restoration when the Company completes its work in conjunction with public works projects. Additionally, the costs in this category now include the estimated incremental cost of $0.40 million associated with complying with the PE Stamp statutory requirements.

B. Mandated Programs

Spending for Mandated Programs falls into the following seven categories: (1) Corrosion, (2) Purchase Meter Replacement, (3) Reactive Leaks, (4) Reactive Service Replacement - Non-

leaks/Other, (5) Reactive Main Replacement-Maintenance, (6) Proactive Low Pressure System Elimination, and (7) Transmission Station Integrity.

1. **Corrosion** – Cathodic protection effectively extends the service life of buried steel facilities (as compared to unprotected buried steel facilities) and can prolong replacement by 20 years or more. In 1971, the Code of Federal Regulations, Part 192, was amended to require the cathodic protection of all new buried steel gas facilities. Protection is accomplished in part through ensuring proper coating by establishing proper conditions on pipe segments through installation of rectifiers, anodes, insulators, and test stations. In addition, the Corrosion program includes control line work at existing regulator stations and cathodic protection upgrades. For FY 2022, the Company proposes to spend $1.25 million on this program. Please note that the costs in this category now include the estimated incremental cost of $0.04 million associated with complying with the PE Stamp statutory requirements.

2. **Purchase Meter Replacement** – Capital costs for the Purchase Meter Replacement program are required for the procurement of replacement meters. For FY 2022, the Company will require approximately 18,600 meters. The meter replacements are part of a multi-year plan and 18,600 meters represents approximately 6.6 percent of the existing meter population in Rhode Island. The Company is pursuing an opportunity to purchase approximately 9,000 FY 2022 meters in FY 2021, before a supplier price increase take effect in FY 2022. In FY 2022, the Company forecasts that it will spend $2.88 million on the Purchase Meter Replacement program for FY 2022.

3. **Reactive Leaks** – This category provides funding for the leak sealing of cast iron bell joints that are discovered during proactive leak surveys, public odor calls, or other activities. In addition, it provides funding for remediating leaking gas services through insertion, replacement, and/or abandonment of the services. For FY 2022, the Company proposes to spend $11.97 million for this work.

4. **Reactive Service Replacement - Non-leak/Other** – This program contains the capital costs for service relocations, meter protection, service abandonments, and the installation of curb valves. For FY 2022, the Company proposes to spend $1.91 million for this program.

5. **Reactive Main Replacement - Maintenance** – This category of work consists of emergency main replacements or modifications because of leaks or other unplanned events where main conditions dictate immediate replacement and/or gas facilities are subject to water intrusion or exposure and require remedy. Utilizing the FY 2021 forecast as a basis, the Company proposes to spend $1.13 million in this area in FY 2022.

6. **Proactive Low Pressure System Elimination** – This will be the first year of this new ISR program, which is being implemented to begin to systematically replace low pressure ("LP") gas systems with high pressure ("HP") gas systems to enhance gas system safety. National Grid has implemented this program in response to recommendations from Federal and State government agencies following the

Columbia Gas incident in Massachusetts in 2018. The Proactive LP System Elimination will systematically retire entire LP systems by transferring customers to HP systems. This program will transfer all Customers on the selected LP systems to a nearby HP system by installing new distribution mains, services, and service regulators. The new HP services will be installed to current standards with excess flow valves and service regulators at each Customer premise providing enhanced over pressure protection. The Company is proposing to replace approximately one system per year. For FY 2022, the Company proposes to spend $0.50 million for this program.

7. **Transmission Station Integrity** – This will be the second year that Transmission Station Integrity will be included as an ISR program. This program is a continuation of a rate base funded program that began several years ago and primarily consisted of in-depth compliance records and documentation reviews of pressure regulating facilities. The primary purpose of the Transmission Station Integrity program is to meet the newly implemented United States Department of Transportation PHSMA code requirements, pursuant to 49 CFR §§ 192.624, which require operators of steel gas transmission pipeline segments to reconfirm the maximum allowable operating pressure ("MAOP") of segments with documentation, including material property records. Where the records that substantiate the MAOP are not traceable, verifiable, and complete ("TVC"), the equipment will be re-tested, non-destructively examined, or replaced to ensure the pipelines, including those associated with transmission

stations, are safe, reliable, and fit for service. The next stage of this multi-year program consists of retesting, and, where necessary, replacing equipment, prioritized by a standard risk based evaluation, that will not meet the incoming PHSMA documentation requirements. Of the 24 Transmission Stations on the Company's system, 12 are in scope for re-testing and/or replacing equipment. The FY 2022 budget proposal also includes $0.75 million related to the Transmission Station Integrity work for Scott Road Take Station; in prior years, the funding for work at the Scott Road Take Station was listed Gas System Reliability. In total for FY 2022, the Company proposes to spend $1.74 million in this overall category, and the activities primarily consist of project development, engineering, and procurement of long lead materials for the identified capital replacement projects. The Company expects that construction will begin in FY 2022.

The costs in these categories do not include the estimated incremental cost associated with complying with the RI paving law, where applicable. Those costs, explained above, will be budgeted as a separate line item. In total, the Gas ISR Plan for FY 2022 contains $21.38 million for all categories of Mandated work.

C. Damage/Failure Program

The Company proposes to include funding for safety and reliability projects associated with remediation of damage or failure occurrences. Damage or failure projects are initiated in response to events outside the Company's control that require immediate action. The Company proposes a FY 2022 budget of $0.25 million for such work.

In total, for FY 2022, the Gas ISR Plan contains $40.83 million for Non-Discretionary work.

Discretionary Work:

A. Proactive Main Replacement Program

The value of and need for targeted spending on the replacement of leak-prone gas main is well-documented and has been acknowledged by the PUC and Division. For FY 2022, the Company forecasts spending $75.03 million on its Proactive Main Replacement and Rehabilitation programs, which will address approximately 56 miles of leak-prone gas main and approximately 3,872 service relays, inserts, or tie-ins.

1. Proactive Main Replacement (<16-inch)

The Proactive Main Replacement (<16-inch) program consists of the installation of 48.5 miles and the abandonment of approximately 55.0 miles of cast iron and unprotected steel main with a diameter of less than 16 inches, and the renewal, abandonment, or tie-over of existing services. Proactive Main Replacement program costs have continued to increase over the past several years and an increase in contractor pricing has been incorporated in the FY 2022 proposed budget. Other cost increases in the past several years are due, in part to the proportion of cast iron gas mains that the Company is replacing has increased. Moreover, the costs for replacement of cast iron main is typically greater than unprotected bare steel due to several key factors, including the following: (1) cast iron is predominant on low and intermediate pressure systems consisting of larger diameter mains; and (2) cast iron

facilities are typically centralized in urban areas where costs are driven by higher customer density, greater underground congestion (e.g., excavation), and increased restoration and traffic control. In FY 2022, the Company is increasing the cast iron abandonment percentage to 70 percent of total leak-prone pipe inventory, which is a 9 percent increase from the FY 2021 Plan. Cast iron represents 63 percent of the Company's total leak-prone main inventory in Rhode Island. As illustrated on page 26 in the attached 2019 System Integrity Report, cast iron represented 86% of main leak repairs in 2019, which was a risk factor that impacted the decision to increase the planned percentage of cast iron to be abandoned. Additionally, with the Company's rollout of new GBE software, the Company was able to run an initial risk analysis on its entire system inventory of leak-prone pipe, which assisted with the development of the FY 2022 workplan. Further, based on recommendations from the Division, the Division's Consultant, and as ordered by the PUC in Docket No. 4996 on August 19, 2020, the Company adjusted the weighting of risk factors to place a greater weighting to leak-prone services, and this was factored into the development of the FY 2022 workplan. This continues to enable leak-prone services to be addressed most efficiently and primarily through the Proactive Main Replacement program, but now with a greater emphasis. The Company will monitor the replacement of the high risk services through the main replacement program and will report on progress in the Quarterly filings to the Division. To the extent that higher risk leak-prone services replaced through the main replacement programs are lower than forecast, the Company will continue to work with the Division and its Consultant to make the

appropriate adjustments to the Proactive Main Replacement program and/or to the Proactive Service Replacement program, to ensure that highest risk services are being eliminated at the appropriate pace.

The Company has analyzed historic costs and has developed budget projections based on project specific main replacement candidates identified for completion in the program. For FY 2022, the Company proposes to spend $67.18 million on the Proactive Main Replacement (<16-inch) program.

Please note that the costs in this category do not include the estimated incremental cost associated with complying with the RI paving law. Those costs, explained above, will be budgeted and tracked as a separate line item for FY 2022.

2. <u>Proactive Large Diameter Program (>=16-inch)</u>

The Company operates approximately 37 miles of large diameter (greater than or equal to 16-inches) leak-prone gas mains. The Proactive Large Diameter Program consists of rehabilitating large diameter leak-prone pipe through the implementation of a sealing and lining program. For FY 2022, the Company proposes to spend a total of $3.85 million on this program to address approximately one mile of large diameter leak-prone pipe. This includes lining 1,500 feet of cast iron main of 16-inches or more. In addition, the Company will seal approximately 4,300 feet of 16-inch cast iron main. Lining and sealing are cost-effective alternatives for remediating large diameter leak-prone pipe. Additional benefits of this program include minimization

of impact to customers and communities, a shortened construction period, and use of existing space in areas with significant underground utility congestion. This work will be in Providence, Newport and Cranston.

3. Proactive - Atwells Avenue Main Replacement

In the 2017-18 winter period, the Company experienced four main breaks on Atwells Avenue in Providence on 12-inch low pressure cast iron main installed in the 1870s. This main is located in one of the busiest streets within Providence, with a heavy concentration of restaurants. Upon completion of an integrity analysis, the initial project scope deemed it necessary to abandon over one mile of cast iron main and replace it with over 1 mile (5,505 feet) of high-density polyethylene ("HDPE") plastic pipe between FY 2020 and FY 2022. The project is broken into 4 segments; Segment 1A (forecast abandonment 1,565 feet, actual 2,784 feet); Segment 1B (forecast abandonment 1,565 feet, actual 2,915 feet); Segment 2 (forecast abandonment 965 feet, actual 965 feet); and Segment 3 (forecast abandonment 1,410 feet). In FY 2020, the Company addressed the highest risk segment, Segment 2. Final restoration for Segment 2 was completed in FY 2021. So far, in FY 2021, the Company has completed the main installation and abandonment of Segments 1A and 1B. The final restoration for Segments 1A and 1B are forecast to be completed in the early Spring of calendar year 2021, with the costs of approximately $0.40 million being incurred in FY 2022. The main installation and abandonment of the final segment, Segment 3, will be completed in FY 2022 at a cost of $3.60 million. In total, for FY 2022, the

Gas ISR Plan contains $4.00 million for the Atwells Avenue Main Replacement project. From FY 2019 through the anticipated close of the project in FY 2022, the total forecasted cost of the Atwells Avenue Main Replacement project is approximately $10.40 million.

The Table below shows the total historical and forecast spending for this project:

Category	FY 19 Actual	FY 20 Actual	FY 21 Forecast	FY 22 Proposed Budget	Total Forecast
Atwells Avenue	$0.08	$0.91	$5.42	$4.00	**$10.40**

B. Proactive Service Replacement Program

FY 2022 will be the second year of the Proactive Service Replacement Program. As of the start of FY 2021, there were 181 copper services that needed to be replaced as part of this program (separate from the list of 701 isolated leak-prone services). The FY 2021 budget and workplan calls for replacing approximately 90 copper and 10 isolated services, however service work was delayed due to the COVID-19 pandemic but was able to start in August 2020. Through mid-December 2020, 57 services have been replaced proactively as part of this program. Any planned work not completed in FY 2021 will be deferred to future years of this program.

Additionally, the Company conducted further data analysis on the separate list of 701 isolated leak-prone services and concluded that 438 of 701 services should be removed from the Proactive Service Replacement Program list. Below is the detail of the analysis:

- 234 out of 701 services are still bare steel services that are not on leak-prone pipe gas main and will remain on the Proactive Service Replacement Program list;
- 29 out of 701 services require a field check to verify service status (abandoned, relayed, inserted, existing copper service). The remaining field checks require entry into the premise and thus subject to Covid-19 work restrictions. These services will remain on the Proactive Service Replacement Program list until verification can be completed;
- 295 out of 701 services are still bare steel services but are on leak-prone pipe gas main and have been removed from the Proactive Service Replacement Program list and returned to the Proactive Main Replacement program to be replaced in conjunction with the main replacement.
- 143 out of 701 services have been removed from the Proactive Service Replacement Program list for various reasons, such as service was already fully relayed, inserted, or abandoned, or the service was a duplicate address.

In summary, as of the end of July 2021 there were 181 copper Service and 275 isolated leak-prone services to be replaced as part Proactive Service Replacement Program and it will be reduced by the number of services that are replaced in FY 2021. Additionally, as noted above in the Proactive Main Replacement program section, the Company and the Division are continuing to collaborate on solutions to address the mutually agreed on highest risk leak-prone services on the gas system. In FY 2022, the Company will replace 100 leak-prone services at a total budget cost of $0.35 million.

The Company notes that its primary responsibility is to reduce risk on its system, along with its obligation to ensure that the risk is reduced as cost effectively as possible. Continuing to prioritize reduction of the highest risk services in coordination with the Proactive Main Replacement program assures that National Grid meets its obligation to reduce risk as efficiently as possible. The Company will continue to monitor its progress with reducing the highest risk services in coordination with the Division to ensure that these obligations are met, and to make any necessary adjustments to ISR programs, if necessary.

D. Reliability

Reliability spending includes 14 programs to address the following: system automation, heater installations, pressure regulation, take stations, valve installation/replacement, gas system reliability, instrumentation and regulation, distribution station over pressure protection, LNG facilities, Aquidneck Island Long Term Capacity Options, replacement pipe on bridges, access protection remediation, and capital tools and equipment. The FY 2022 Gas ISR Plan contains $40.66 million in spending for Gas System Reliability.

1. System Automation

The primary purpose of the System Automation program is to meet the United States Department of Transportation code requirements under 49 C.F.R. Part 192, Docket ID PHMSA 2007-27954, which were issued on December 3, 2009. These code provisions contain the following pipeline safety requirements: (a) control room management/human factors, (b) modernization of the Company's system data and telemetry recording, and (c) increasing the level of system automation and control. The overall System Automation

program will increase the safety, reliability, and efficiency of the gas system and, by extension, the level of service the Company provides to its customers.

The Company's ability to provide safe and reliable service is governed to a large extent by the Company's ability to maintain adequate pressure in its gas mains. To accomplish this task, the Company has approximately 196 gas pressure regulator stations disbursed throughout its Rhode Island gas service territory. Although a portion of these regulator stations have full system telemetry and control capability, additional stations require the installation of new telemetry equipment, and FY 2022 will be a continuation of the process to equip more stations. In addition to monitoring and controlling the regulator stations, the Company must also monitor system end points to ensure that adequate system pressures are being maintained in remote areas under a variety of operating conditions. For FY 2022, the Company is proposing spending of $1.32 million for its System Automation program. The Company's FY 2022 work will provide alternating current power, telemetry, and/or remote control to approximately 25 locations.

2. Heater Installation Program

The Heater installation program provides for the installation and replacement of gas system heaters, which are operated to ensure proper conditioning and control of gas temperatures at key Company facilities. In FY 2021, the Company is completing construction of new heaters at the Company's Cranston gate station and performing engineering work for the Dey Street gate station in East Providence. In FY 2022, the Company will prepare for the installation of new heaters at the Dey Street gate station, engineering work for a gate stations

in Smithfield, Wampanoag Trail in East Providence, and Tiverton at a total cost of $3.56 million.

3. <u>Pressure Regulating Facilities</u>

The Company's pressure regulating facilities have been designed to reliably control gas distribution system pressures and maintain continuity of supply during normal and critical gas demand periods. Each regulator station has specific requirements for flows and pressures based on the anticipated needs of the station. A facility includes both pressure-regulating piping and equipment and control lines, but it may also include a heater or a scrubber. The Company has instituted a program that provides for condition-based assessments of all regulator stations. Accepted engineering guidelines provide for design, planning, and operation of these gas distribution facilities. Applicable state and federal codes are followed to help ensure safe and continuous supply of natural gas to the Company's customers and the communities it serves. The FY 2022 Plan includes enhancements in response to regulator station work prioritized through condition-based assessments, which include, in part, station accessibility, pipe condition (i.e., corrosion), water intrusion, redundancy, station isolation, and common mode failure. In FY 2022, work is planned at eleven regulator stations, which includes locations in East Providence, East Greenwich, Johnston, Providence, Cranston, Newport, Pawtucket, Warwick, West Warwick, Bristol, and Warren. Additionally, work will be done to install a second bypass valve at nine stations to prevent a failure of a single bypass valve resulting in over pressurization. Seven of these stations are located in East Providence, Johnston, Newport,

Middletown, North Kingstown, Smithfield, Warwick, and two are to-be-determined. The Company plans to spend $7.46 million for this category in FY 2022.

4. Allens Avenue Multi Station Rebuild Project

The Allens Avenue Multi Station Rebuild project is a multi-year project designed to replace or retire eight existing pressure regulating facilities at the Company's major gas interchange in Providence. Four of the existing regulator stations that feed the 99 pounds per square inch gauge ("psig") distribution system are being replaced by, and consolidated into, a single new station, with that portion of work having begun in FY 2018 and installation forecasted to be completed by end of FY 2021, with the abandonment planned for FY 2022. In FY 2021, the Company began work at an additional three regulator stations feeding various distribution systems at other pressures which are being relocated off-property, which will help enable abandonment of additional leak-prone pipe. An eighth station will be retired by integrating the downstream system with an existing distribution network during the project. The new facilities on the site are designed with storm hardening protections to ensure safe and continued operation in the event of adverse weather impacts and flooding. In FY 2022, the Company plans to spend $2.50 million to complete the abandonment of the eight pre-existing regulator stations and associated above-grade piping and structures in the central portion of the Allens Avenue facility. The FY 2022 budget includes the increase in anticipated final restoration costs associated with complying with the curb to curb paving law. From FY 2015 through the anticipated close of the project in FY 2022, the total

forecasted cost of the Allens Avenue Multi Station Rebuild Project is approximately $29.61 million.

The Table below shows the total historical and forecast spending for this project:

Category	FY 15 Actual	FY 16 Actual	FY 17 Actual	FY 18 Actual	FY 19 Actual	FY 20 Actual	FY 21 Forecast	FY 22 Proposed Budget	Total Forecast
Allens Ave Multi Station Rebuild	$0.14	$1.00	$2.20	$5.43	$1.61	$8.31	$8.42	$2.50	**$29.61**

5. Take Station Refurbishment

The Take Station Refurbishment program will address required modifications to the Company's custody transfer stations. Projects include installation of third layer of over pressure protection with remote operation capability at multiple stations, design costs for future station construction, and control line replacement work. The remote operated valves will be installed at high pressure connection points and will support the ability to shorten response time in the event of a major gas release. The Company plans to spend $1.30 million for this program during FY 2022.

6. Valve Installation / Replacement

Valves are used to sectionalize portions of the gas network to support both planned and unplanned field activities. Replacement of inoperable valves is necessary to ensure the Company's continued ability to effectively isolate portions of the distribution system. New valve installations are also occasionally needed to provide the capability to reduce the size of an isolation area where existing valves would result in broader shutdown than desired.

For FY 2022, the Company has budgeted $1.23 million for valve work, with approximately $1.04 million for valves in Newport and Middletown.

7. Gas System Reliability – Gas Planning Program

The Gas Planning program identifies projects that support system reliability through standardization and simplification of system operations (e.g., system up-ratings and de-ratings and regulator elimination), integration of systems (e.g., tie-ins), and new supply sources (e.g., take stations). The FY 2022 budget includes continued funding for ongoing multi-year projects designed to eliminate single-feed systems. Beginning in FY 2022, costs to address enhancements to the Cumberland Take Station on Scott Road will be funded through the Mandated – Transmission Station Integrity category instead of the Gas System Reliability – Gas Planning Program category, as the project is moving from the engineering phase to the construction phase. For FY 2022, the Company proposes to spend approximately $3.07 million for this program.

8. Instrumentation and Regulation (I&R) Reactive Program

The I&R Reactive program is established to address capital project requirements over and above the Pressure Regulation capital budget. Projects range from instrumentation replacement due to failure; replacement of obsolete/unreliable equipment, such as regulators, pilots, boilers, heat exchangers, odorant equipment, and station valves; and replacement of building roofs or doors due to deterioration. For FY 2022, the Company proposes to spend $1.35 million for this program.

9. Distribution Station Over Pressure Protection

This will be the second year that Distribution Station Over Pressure Protection will be included as an ISR program. FY 2021, spending in this category is being impacted by the COVID-19 pandemic as work was initially delayed in the Spring of 2020 and will likely be underspent for the fiscal year. This program is in place to address risks for over pressurization incidents at pressure regulating facilities throughout the system. Actions planned for this program include work to relocate and provide additional protections for regulator sensing and control lines to protect from third-party damage and the installation of additional control equipment to ensure safe and reliable regulator operation in the event of control line damage. The program will be used to install three sensing headers in Cranston, Woonsocket, and Pawtucket, along with 14 override pilots in Warwick, Cranston, Providence, North Providence, Lincoln, Woonsocket, and Pawtucket, and installation of 6 new relief valves on the system in the towns of Middletown, Pawtucket, Providence, and Woonsocket to ensure that potential abnormal operating conditions at regulator stations do not result in over pressurization scenarios. For FY 2022, the Company proposes to spend $3.30 million for this program.

10. LNG

The LNG program is established to address specific and blanket capital project requirements to support the Company's LNG operations. FY 2021, spending in this category is being impacted by the COVID-19 pandemic and will likely be underspent for the fiscal year, which will likely result in some work being deferred from FY 2021 into FY 2022 and FY

2022 into FY 2023. This program includes $7.74 million of funding, which incorporates the FY 2021 deferrals, for specific projects associated with the Exeter LNG facility, including the installation of two new boil-off compressors which will replace two compressors that were originally commissioned in the early 1970's, installation of an automated emergency shutdown system, installation of a high expansion foam system, and the purchase of critical spares for items that aren't readily available (i.e. long lead times). Additional funding of $0.59 million is associated with the blanket program for the Exeter and Cumberland LNG plants, which is aligned with recent historical experience for these facilities. Funding also includes $0.10 million for demolition planning of the former LNG transfer station at the Navy base. Finally, funding also includes $2.00 million for project development, engineering, and site planning for the Cumberland Tank Replacement project, which is forecast to enter the construction phase in FY 2024. For FY 2022, the Company plans to spend $7.74 million for the overall LNG program.

11. <u>Aquidneck Island Long Term Capacity Options</u>

As detailed in the September 2020 Aquidneck Island Long-Term Gas Capacity Study prepared and distributed by National Grid[13], the Company has identified the need to address gas capacity constraint and vulnerability needs facing Aquidneck Island. In light of the study's findings and the feedback received via extensive stakeholder engagement, the Company has determined that the right solution for Aquidneck Island is a "hybrid" solution

[13] https://www.nationalgridus.com/aquidneck-long-term-gas-capacity-study

that relies on both new infrastructure and non-infrastructure options (i.e., incremental gas energy efficiency, gas demand response, and heat electrification. Notably, extensive stakeholder feedback received to date favors replacing the current portable LNG site at Old Mill Lane with non- infrastructure options; however, the "hybrid" solution is necessary to enable the Company to end its reliance on the portable LNG operations at Old Mill Lane on a reasonable timescale for addressing the concerns of local residents affected by those operations. The Company is proposing to include only costs associated with pursuing infrastructure options in the FY 2022 ISR. The Company intends to pursue the non-infrastructure component of the "hybrid" solution via the System Reliability Procurement ("SRP") process.

In FY 2022, the Company plans to spend $4.90 million to examine three potential infrastructure solutions specific to Aquidneck Island to ensure that in the near-term and long-term, customers on the island have access to the energy they need to heat their homes and run their businesses. The money allocated in the ISR will focus on site assessments, preparation for a main extension, and other project development activities related to three LNG options:- (1) Portable LNG at a new site on Navy-owned property; (2) Permanent LNG Storage at a new site on Navy-owned property; and (3) use of an LNG barge for offshore storage and vaporization. Each of these solutions meet the criteria to be funded by the ISR because they require capital investment in the Company's gas system. The Company anticipates selecting the final infrastructure solution that is part of the hybrid option during FY 2022. National Grid's decision will be based on the technical assessment

contained in the Aquidneck Island Long Term Capacity Report, the site review work conducted during FY2022, and the input of numerous stakeholders who have provided feedback on the proposed options. National Grid believes it is prudent to begin the site review for all three infrastructure options at this time to ensure that the Company has alternatives if our site review work determines that one or more of the potential infrastructure solutions cannot not move forward due to circumstances such as failure to receive all required permits, or difficulties identifying an acceptable route for the necessary main extension. Moreover, since the Company's decision must balance stakeholder feedback that includes local residents' concerns regarding continued operation of the portable LNG at the Old Mill Lane location with the results of our technical and financial assessments of the alternatives, advancing multiple options at this early stage will allow the Company to determine with greater certainty the solution that will achieve that objective at the lowest cost to the Company's customers. The Company anticipates that it will complete an assessment regarding which option(s) will remain for the potential future pathway for long term capacity for Aquidneck Island during FY 2022 with the benefit of additional information on the cost and feasibility of the options.

12. <u>Replace Pipe on Bridges</u>

For FY 2022, the planned activities for the Replace Pipe on Bridges program include project development for the replacement of main on the Glenbridge Avenue bridge in Providence. The 36-inch cast iron main on the bridge will be abandoned and replaced by relocating a 16-inch, 99 psig steel main. Program activities will also include the development of other

bridge projects in the portfolio and reactive work on gas main on bridges, as those needs arise. In FY 2022, the Company expects to spend $2.01 million for the Replace Pipe on Bridges program.

13. Access Protection Remediation

The Access Protection Remediation program is designed to reduce the risk of public injury by restricting and/or deterring public access to the Company's elevated gas facilities. In FY 2022, the Company expects to spend $0.31 million for the identification and execution of projects for this program.

14. Capital Tools and Equipment

This category includes tools and equipment required to support the performance of work contained in the Gas ISR Plan and to provide for the safety and reliability of the gas distribution system. The Company will have $0.61 million to spend on capital tools and equipment during FY 2022.

Please note that the costs in this category do not include the estimated incremental cost associated with complying with the RI paving law. Those costs, explained above, will be budgeted and tracked as a separate line item.

E. Gas Expansion – Southern Rhode Island Project

As was detailed in the FY 2020 Gas ISR, the Company has identified a need and has begun to build in increased capacity in the Southern Rhode Island service territory. The more than 30,000 customers in the Company's Southern Rhode Island service territory are served by

almost 600 miles of distribution infrastructure, including approximately 77 miles of distribution main operating at pressures of 99 psig and above (the Southern Rhode Island Distribution Mains). As of 2018, growth forecasts indicated the maximum vaporization capacity at the Exeter LNG facility would be exceeded by calendar year 2019. This could have resulted in approximately 3,750 customers with below minimum pressures and them being at risk of losing service. In addition, several regulator station inlet pressures were predicted to fall below the minimum threshold, which would cause problems on the downstream pressure systems if the regulator stations cannot maintain their outlet set pressure. Increasing capacity in Southern Rhode Island mitigates the risk of customers in the region losing service in the event of an outage at the Exeter LNG facility. Moreover, many commercial customers seeking to expand existing and new operations in the Southern Rhode Island region, such as in and around Quonset Point, cannot be served without this project. Without this project, the Company may have needed to impose a moratorium on all new gas service requests, as well as requests for expansion of existing gas service, to prevent service interruptions to existing customers.

To address these capacity issues, in FY 2020, the Company began construction on a project to reinforce the Southern Rhode Island Distribution Mains by installing approximately five miles of new 20-inch steel distribution main parallel to the existing 12-inch distribution main located beneath Route 2 (a Rhode Island Department of Transportation right-of-way) through the towns of Warwick, West Warwick, and East Greenwich. The parallel distribution main is being constructed to be in-line inspected, initially operated at 99 psig, and designed for a maximum allowable operating pressure ("MAOP") of 200 psig to meet future demand. The new

distribution main will be placed in-service in phases between FY 2020 and FY 2022, with normal operation at 99 psig and the potential to operate at 200 psig after a district regulator station is installed in the future near South Road in East Greenwich. This project will also require work on existing regulator and take stations from FY 2021 through FY 2025. Based on current forecasts, each segment will add immediate growth capacity. Once all the segments are completed, the Company expects that approximately 1,100 dekatherms per hour of additional capacity will be available. The installation of a second distribution main will also improve the reliability of the Company's gas distribution system in the area by decreasing the Company's dependence on pressure support from the Exeter LNG facility and by introducing redundancy that reduces the risk associated with a distribution main being out of service.

Between FY 2020 and FY 2025, the Southern RI Gas Expansion Project will complete work that is comprised of main installation, regulator station investment, and other upgrades and investments. For the main installation portion of the project, the Company plans to install approximately 5.1 miles of new 20-inch steel distribution main, beginning on Quaker Lane in Warwick, RI and ending at South Road in East Greenwich, RI. Between FY 2020 and FY 2023, the total estimated cost for the main installation work is currently $97.00 million. For FY 2022, the Company expects to spend a total of $14.91 million for the final phase of the main installation work.

In addition to the main installation work, the Gas Expansion project will also complete activities related to regulator stations, other upgrades, and investments at a total cost of $4.53 million. In FY 2022, barring any need for substantial repairs to the gas main, the Company plans to implement the maximum operating pressure ("MOP") increase from 150 psig to 200 psig for 5.2 miles (27,578 feet) of existing main in Cranston and West Warwick. The Company will also

continue preparation work, such as planning, engineering, and site planning, for a new regulator station near the existing Cowesett regulator station, along with project development and procurement of materials in preparation for FY 2023 construction related to updates at the existing Cowesett regulator station. Additionally, FY 2022 activities will include the final design, procurement of materials, and beginning of construction related to upgrades at the existing Cranston regulator station. Finally, the Company will also continue with project development and planning related to the future installation of a new regulator station, a launcher, and receiver to support in-line inspections of the 200 psig main.

For FY 2022, the Company estimates that it will spend a total of $19.44 million for the Southern RI Gas Expansion project. This includes $14.91 million for main installation and $4.53 million for activities related to regulator stations, other upgrades, and investments. From FY 2019 through the anticipated close of the project in FY 2025, the total forecasted cost of the Southern RI Gas Expansion Project is approximately $128.98 million.

The Table below shows the total historical and forecast spending for this project:

Category	FY 19 Actual	FY 20 Actual	FY 21 Forecast	FY 22 Proposed Budget	FY 23 Forecast	FY 24 Forecast	FY 25 Forecast	Total Forecast
Southern RI Gas Expansion	$2.39	$42.73	$40.65	$19.44	$7.35	$15.97	$0.45	**$128.98**

Excluding the Gas Expansion category and any incremental costs, the proposed Gas ISR Plan contains $116.03 million in base spending for Discretionary work in FY 2022. Including the Gas Expansion category, the proposed plan contains a total of $135.47 million in spending for Discretionary work.

Table 1
Narragansett Gas - FY 2022
($000)

Categories	Budget	Leak-Prone Pipe Abandonment Miles	Main Replacement Installation Miles
NON-DISCRETIONARY			
Public Works			
CSC/Public Works - Non-Reimbursable	$19,152		
CSC/Public Works - Reimbursable	$1,455		
CSC/Public Works - Reimbursements	($1,405)		
Public Works Total	**$19,202**	**14.00**	**14.00**
Mandated Programs			
Corrosion	$1,250		
Purchase Meter (Replacement)	$2,880		
Reactive Leaks (CI Joint Encapsulation/Service Replacement)	$11,973		
Service Replacement (Reactive) - Non-Leaks/Other	$1,911		
Main Replacement (Reactive) - Maintenance (incl Water Intrusion)	$1,126		
Low Pressure System Elimination (Proactive)	$500		
Transmission Station Integrity	$1,740		
Mandated Total	**$21,380**		
Damage / Failure (Reactive)			
Damage / Failure (Reactive)	**$250**		
NON-DISCRETIONARY TOTAL	**$40,832**		
DISCRETIONARY			
Proactive Main Replacement			
Main Replacement (Proactive) - Leak Prone Pipe	$67,176	55.04	48.45
Main Replacement (Proactive) - Large Diameter LPCI Program	$3,852		
Atwells Avenue	$4,000	0.26	0.26
Proactive Main Replacement Total	**$75,028**	**55.30**	**48.71**
Proactive Service Replacement			
Proactive Service Replacement Total	**$350**		
Reliability			
System Automation	$1,321		
Heater Installation Program	$3,557		
Pressure Regulating Facilities	$7,462		
Allens Ave Multi Station Rebuild	$2,500		
Take Station Refurbishment	$1,300		
Valve Installation/Replacement (incl Storm Hardening & Middletown/Newport)	$1,233		
Gas System Reliability	$3,068		
I&R - Reactive	$1,348		
Distribution Station Over Pressure Protection	$3,301		
LNG	$7,738		
Aquidneck Island Long Term Capacity Options	$4,900		
Replace Pipe on Bridges	$2,006		
Access Protection Remediation	$310		
Tools & Equipment	$612		
Reliability Total	**$40,656**		
SUBTOTAL DISCRETIONARY (Without Gas Expansion)	**$116,034**		
Southern RI Gas Expansion Project	$19,438		
DISCRETIONARY TOTAL (With Gas Expansion)	**$135,472**		
CAPITAL ISR TOTAL (Base Capital - Without Gas Expansion)	**$156,866**		
CAPITAL ISR TOTAL (With Gas Expansion) Amount does not include incremental costs associated with the RI Paving Law	**$176,304**		
Incremental Costs			
Incremental Paving - Main Installation	$3,019		
Incremental Paving - Patches	$823		
Incremental Costs Total	**$3,842**		
CAPITAL ISR TOTAL (with Gas Expansion and Incremental Paving)	**$180,146**	**69.30**	**62.71**

*Total miles of abandonment will be 70.30 miles. 1 mile will come from Reinforcement work.

Table 2
RI Gas ISR Spending Forecast
($000)

Investment Categories	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
NON-DISCRETIONARY					
Public Works	$19,202	$19,180	$19,564	$19,954	$20,354
Mandated Programs	$21,381	$48,091	$50,095	$49,471	$46,022
Damage / Failure (Reactive)	$250	$255	$260	$287	$293
Special Projects	$0	$0	$0	$0	$0
NON-DISCRETIONARY TOTAL	**$40,833**	**$67,526**	**$69,919**	**$69,712**	**$66,669**
DISCRETIONARY					
Proactive Main Replacement	$75,028	$76,280	$97,580	$105,507	$108,506
Proactive Service Replacement	$350	$357	$364	$371	$379
Reliability	$40,655	$52,033	$114,388	$85,898	$81,419
SUBTOTAL DISCRETIONARY (Without Gas Expansion)	**$116,033**	**$128,671**	**$212,332**	**$191,776**	**$190,304**
Southern RI Gas Expansion Project	$19,438	$7,349	$15,972	$450	$0
DISCRETIONARY TOTAL (With Gas Expansion)	**$135,471**	**$136,020**	**$228,304**	**$192,226**	**$190,304**
CAPITAL ISR TOTAL (Base Capital - Without Gas Expansion)	**$156,866**	**$196,197**	**$282,251**	**$261,488**	**$256,973**
CAPITAL ISR TOTAL (With Gas Expansion) Amount does not include incremental paving costs associated with RI Paving Law, PE Stamps (FY23-26), or Smart Gas Meter - IS Integration (FY24)	**$176,304**	**$203,546**	**$298,223**	**$261,938**	**$256,973**
INCREMENTAL COSTS					
Smart Gas Meter - IS Integration	$0	$0	$3,000	$0	$0
PE Stamps	$0	$1,515	$1,515	$1,515	$1,515
Incremental Paving - Main Installation	$3,019	$5,764	$5,937	$6,115	$6,298
Incremental Paving - Patches	$823	$4,945	$5,093	$5,246	$5,404
INCREMENTAL COSTS TOTAL	**$3,842**	**$12,224**	**$12,545**	**$12,876**	**$13,217**
CAPITAL ISR TOTAL (with Gas Expansion and Incremental Costs)	**$180,145**	**$215,769**	**$313,768**	**$274,815**	**$270,190**

Table 3

RI Gas ISR Historical Spend
($000)

Investment Categories	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**
	Actual	**Actual**	**Actual**	**Actual**	**Actual**
NON-DISCRETIONARY					
Public Works	$ 7,732	$ 8,597	$ 14,590	$ 13,575	$ 16,523
Mandated Programs	$ 16,861	$ 16,370	$ 22,110	$ 18,868	$ 19,043
Damage / Failure (Reactive)	$ -	$ -	$ 1,610	$ -	$ -
Special Projects	$ -	$ 5,020	$ 1,780	$ 8,486	$ -
NON-DISCRETIONARY TOTAL	**$ 24,592**	**$ 29,987**	**$ 40,080**	**$ 40,928**	**$ 35,566**
DISCRETIONARY					
Proactive Main Replacement	$ 58,386	$ 48,872	$ 51,210	$ 52,548	$ 58,032
Proactice Main Replacement - Large Diameter LPCI Program	$ -	$ -	$ 1,180	$ -	$ 1,115
Atwells Avenue	$ -	$ -	$ -	$ 81	$ 906
Service Replacement - Proactive	$ 1,789	$ -	$ -	$ -	$ -
Reliability	$ 7,914	$ 8,403	$ 13,950	$ 10,290	$ 15,933
Special Projects	$ 1,188	$ -	$ -	$ -	$ -
DISCRETIONARY TOTAL	**$ 69,277**	**$ 57,275**	**$ 66,330**	**$ 62,918**	**$ 75,986**
Base ISR Capital Total (Excluding Growth)	**$ 93,869**	**$ 87,262**	**$ 106,410**	**$ 103,846**	**$ 111,552**
Southern RI Gas Expansion Project	$ -	$ -	$ -	$ -	$ 42,729
Capital Grand Total (Excluding Growth)	**$ 93,869**	**$ 87,262**	**$ 106,410**	**$ 103,846**	**$ 154,281**
O&M Total	$ 464	$ 488	$ 560	$ 179	$ -
GAS ISR TOTAL	**$ 94,333**	**$ 87,750**	**$ 106,970**	**$ 104,025**	**$ 154,281**

2019 System Integrity Report

Schedule 1

2019 System Integrity Report

2019 System Integrity Report
RI

Enterprise Gas Distribution Systems
Trend-Based Integrity Analysis
05-01-2020

nationalgrid

Gas Distribution Engineering

Gas Asset Management - Gas Process & Engineering

Region	Name	Title	Phone
	Saadat Khan	Director	1 (631) 710-3510
	Leomary Bader	Manager	1 (781) 907-2785
RI	Madeline Blaisdell	Associate Engineer	1 (781) 907-4164

01 Overall Assessment Summary

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Distribution Integrity By Region

Assessment Summary

- Distribution Engineering has reviewed all of the findings in the annual Trend-Based Distribution System Integrity Analysis (System Integrity Report) in accordance with our Distribution Integrity Management Plan (DIMP), and finds that leak receipts have experienced only slight increases in the amount of leak receipts despite an elevated number of Heating Degree Days which is a testament to the effectiveness of the accelerated LPP replacement program in identifying the correct LLP for replacement. There are no immediate causes for concern that would warrant changes to DIMP. Any anomalies found were either explained as non-systemic or set up for continued research and/or monitoring. These will be explained in notes to this report. CI main break rates have decrease in Cast Iron Inventories across the company.

- Below is a summary of the individual key integrity measure results for the eight (8) federal (PHMSA) filing entities that constitute National Grid-US.

Percent Change 2018 To 2019	RI
Leak Receipts	5.9%
Workable Leak Backlog	-3.0%
LPP Main Inventory	-4.4%
LPP Service Inventory	5.1%
Overall Main Leak Rate	5.6%
Cast Iron Main Break Rate	-25.9%
Steel Main Corrosion Leak Rate	2.0%
Service Leak Rate	2.1%

02

Leak Receipts, Repairs and Backlog By HDD Trend (Mains & Services)

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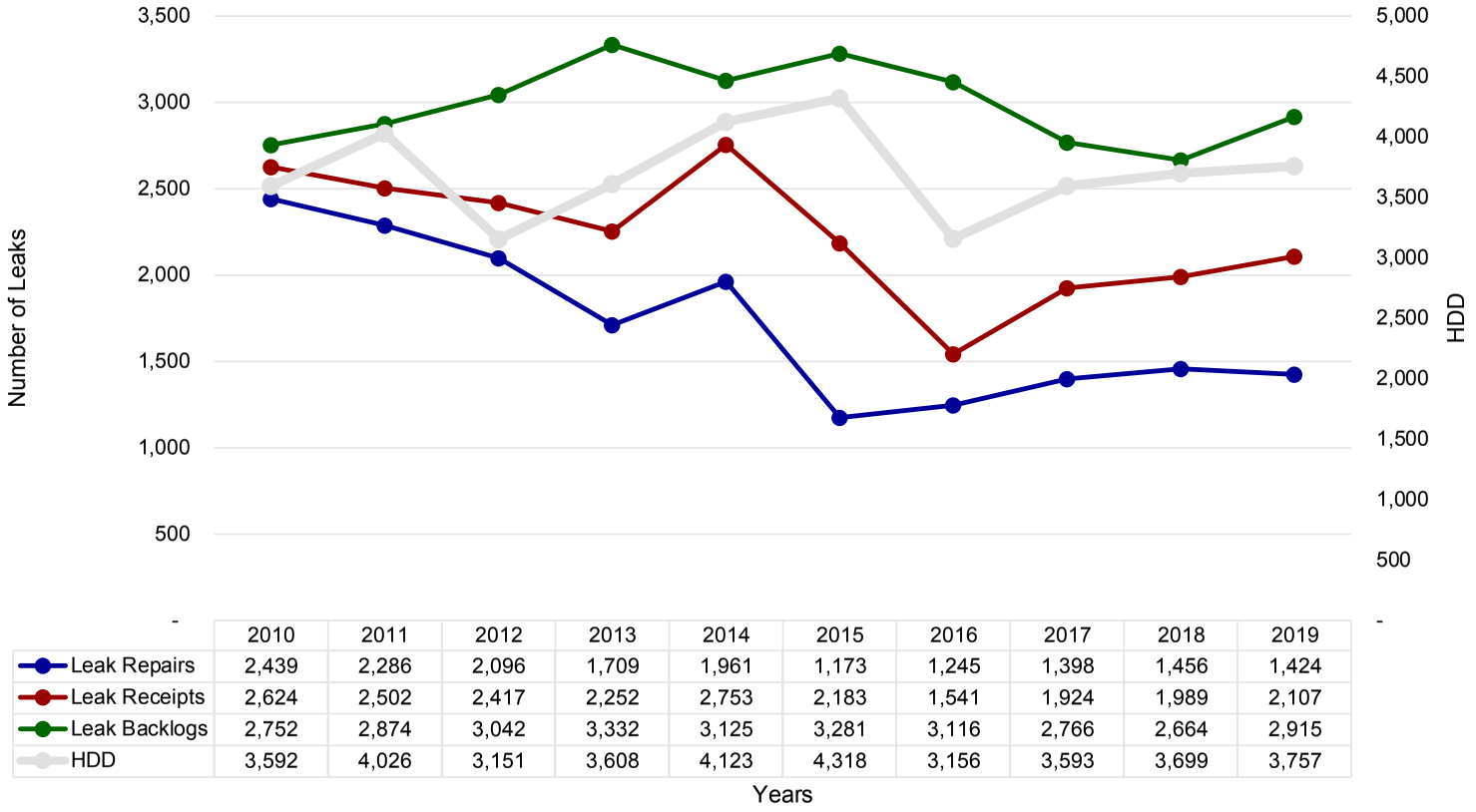
Total Leak Receipts, Repairs & Backlog

(Excluding Damages)

RI

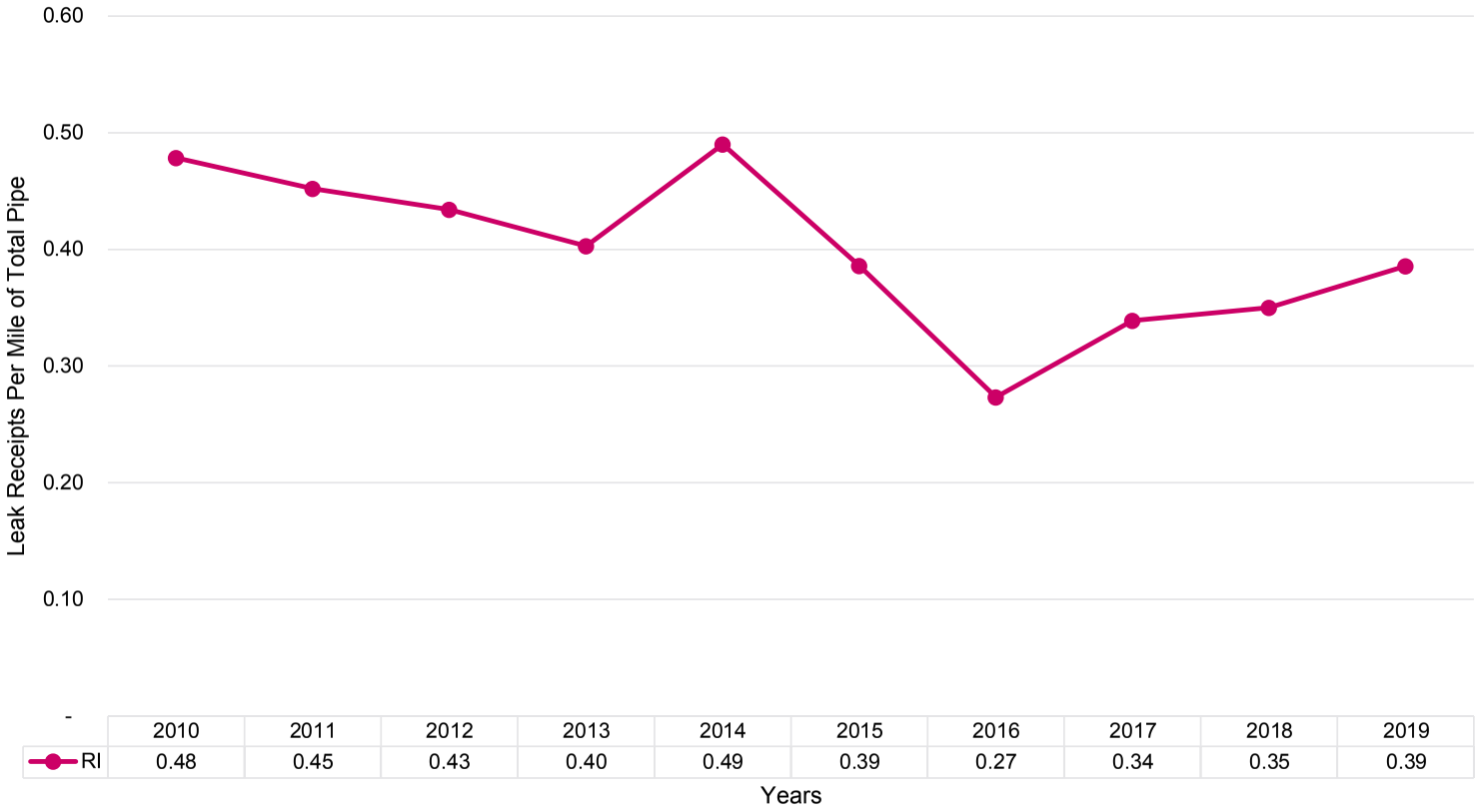


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Leak Repairs	2,439	2,286	2,096	1,709	1,961	1,173	1,245	1,398	1,456	1,424
Leak Receipts	2,624	2,502	2,417	2,252	2,753	2,183	1,541	1,924	1,989	2,107
Leak Backlogs	2,752	2,874	3,042	3,332	3,125	3,281	3,116	2,766	2,664	2,915
HDD	3,592	4,026	3,151	3,608	4,123	4,318	3,156	3,593	3,699	3,757

Leak Receipt Rate By Region

(Excluding Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	0.48	0.45	0.43	0.40	0.49	0.39	0.27	0.34	0.35	0.39

$$Leak\ Receipt\ Rate = \frac{Leak\ Receipts\ (Excluding\ Damages)}{Total\ Miles\ of\ Pipe\ (Miles\ of\ Main + Miles\ of\ Services)}$$

Overall Regional Distribution Integrity Assessment Summary

Rhode Island (RI)	• Leak receipts increased. • Workable leak backlog decreased. • Leak prone main and service inventories continue to decline steadily. • Overall main leak rate increased. Steel main corrosion rate increased and Cast Iron main break rate decreased. • Service leak rate increased.

03

PHMSA Reported Incidents

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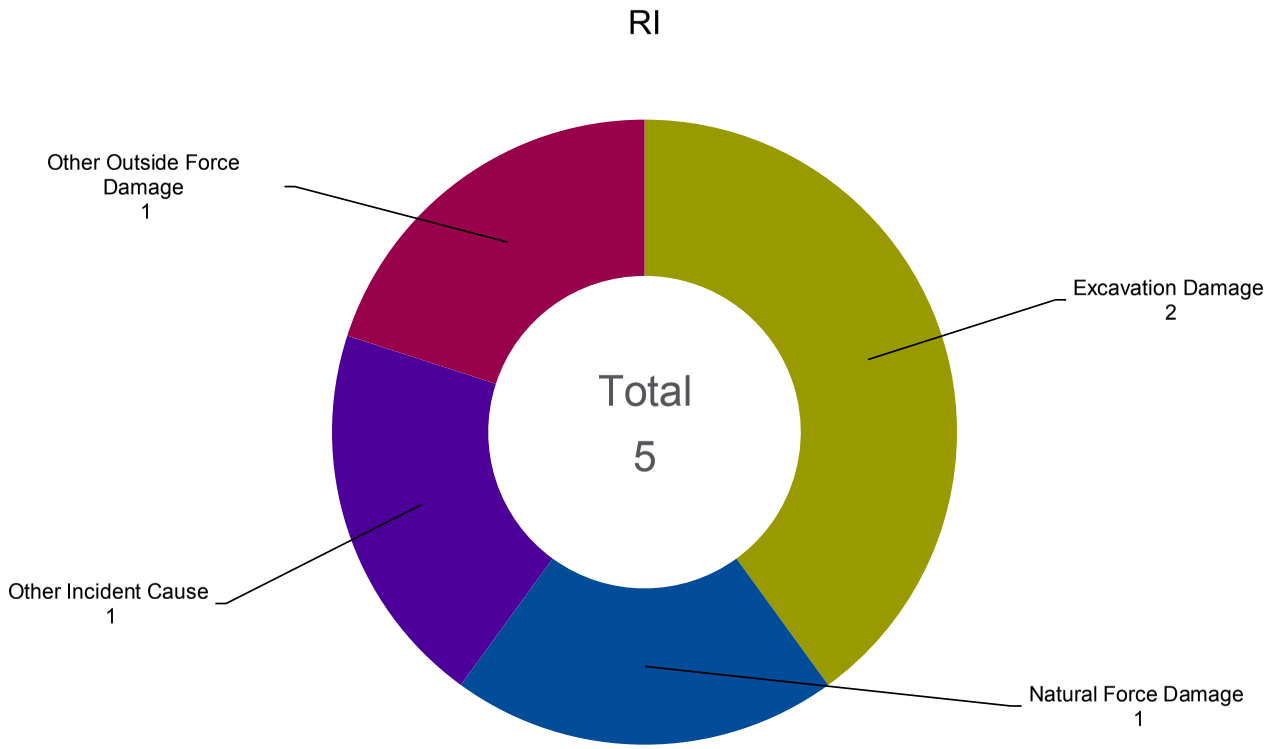
PHMSA Reported Incidents

(Previous 10 years)

RI



04

Leaks Management Analysis (Mains & Services)

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Leak Receipts As A Function Of Total System Pipe Mileage

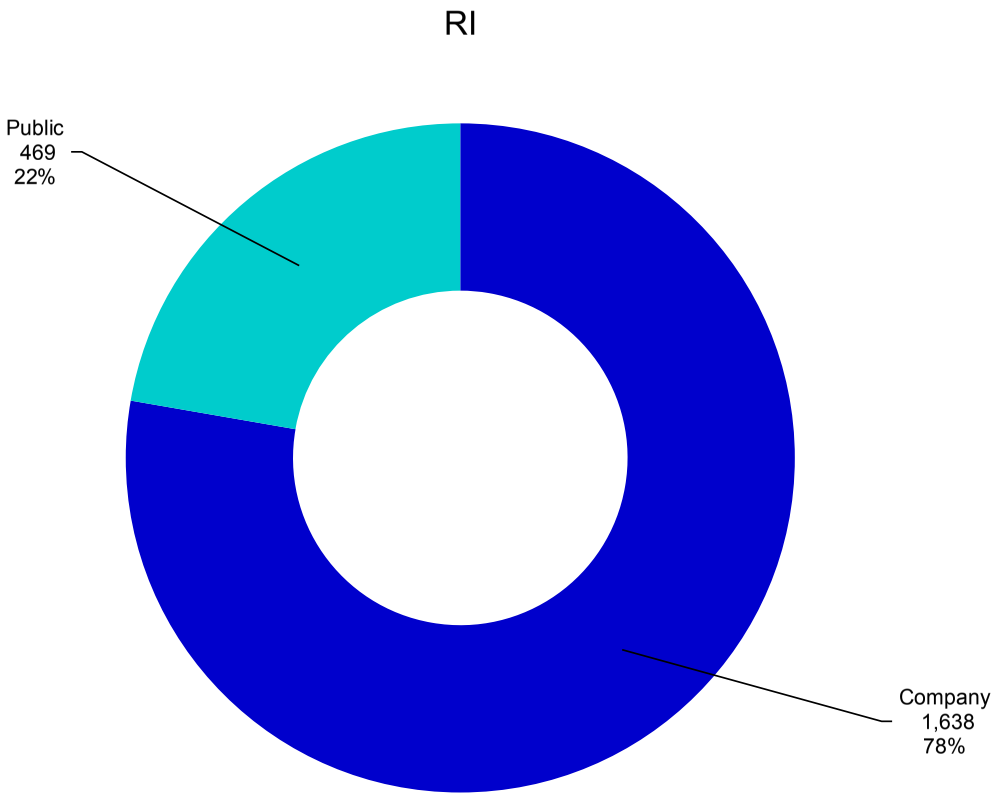
RI

- 2,142 Leak Receipts
- 3,195 miles of Main
  194,550 #'s of Services
  (2,270 miles)
- 5,465 total miles of pipe
- 0.39 Leak Receipts per Mile of Pipe

Leak Receipts By Discovery Source

(Excluding Damages)

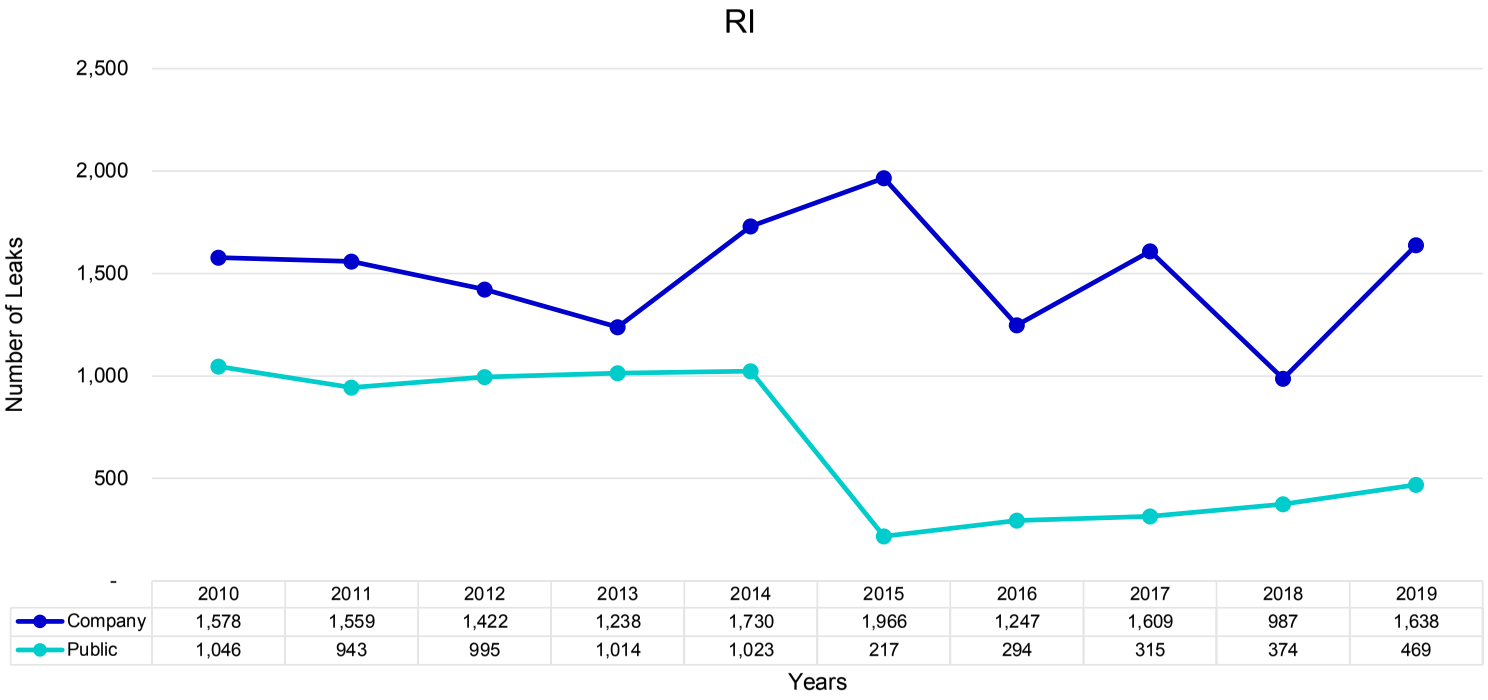
RI



Leak Receipts By Discovery Source

(Excluding Damages)

RI

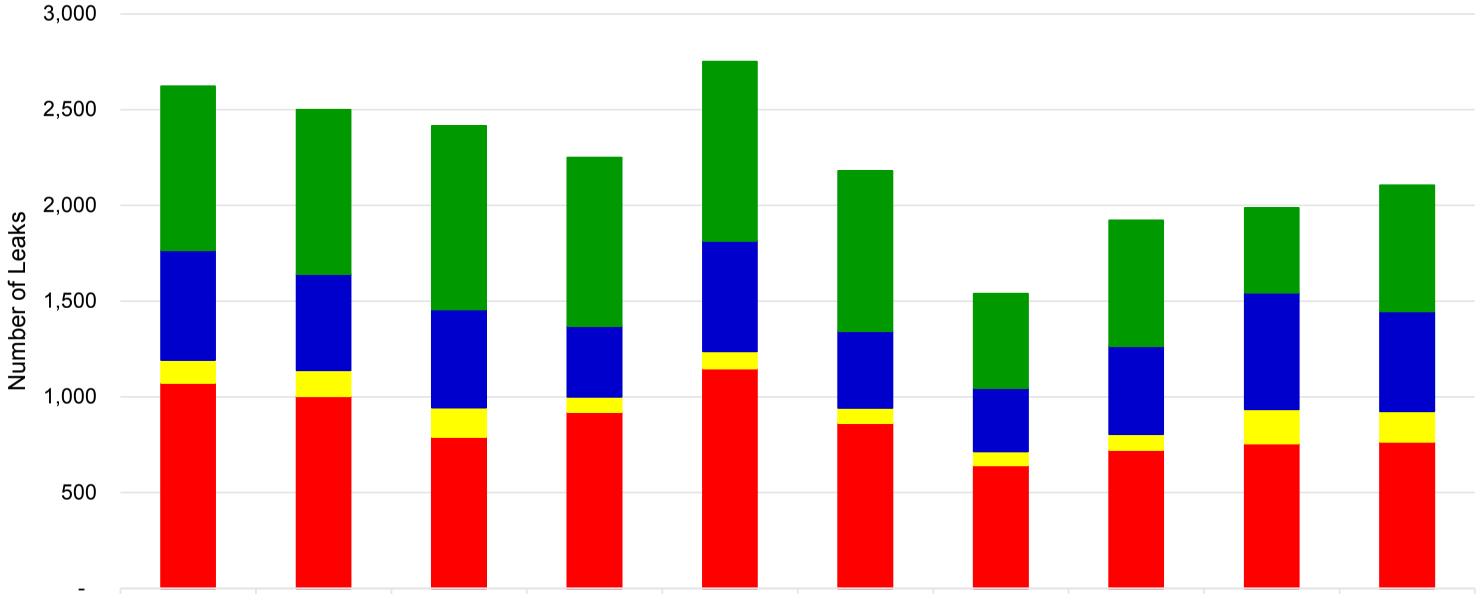


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Company	1,578	1,559	1,422	1,238	1,730	1,966	1,247	1,609	987	1,638
Public	1,046	943	995	1,014	1,023	217	294	315	374	469

Leak Receipts By Type

(Excluding Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Type 3	857	859	959	881	937	838	494	658	444	659
Type 2	573	503	512	370	577	401	331	459	609	522
Type 2A	120	135	154	79	89	80	72	83	178	159
Type 1	1,074	1,005	792	922	1,150	864	644	724	758	767
Total	2,624	2,502	2,417	2,252	2,753	2,183	1,541	1,924	1,989	2,107

Years

05

Leaks Repaired Analysis (Mains & Services)

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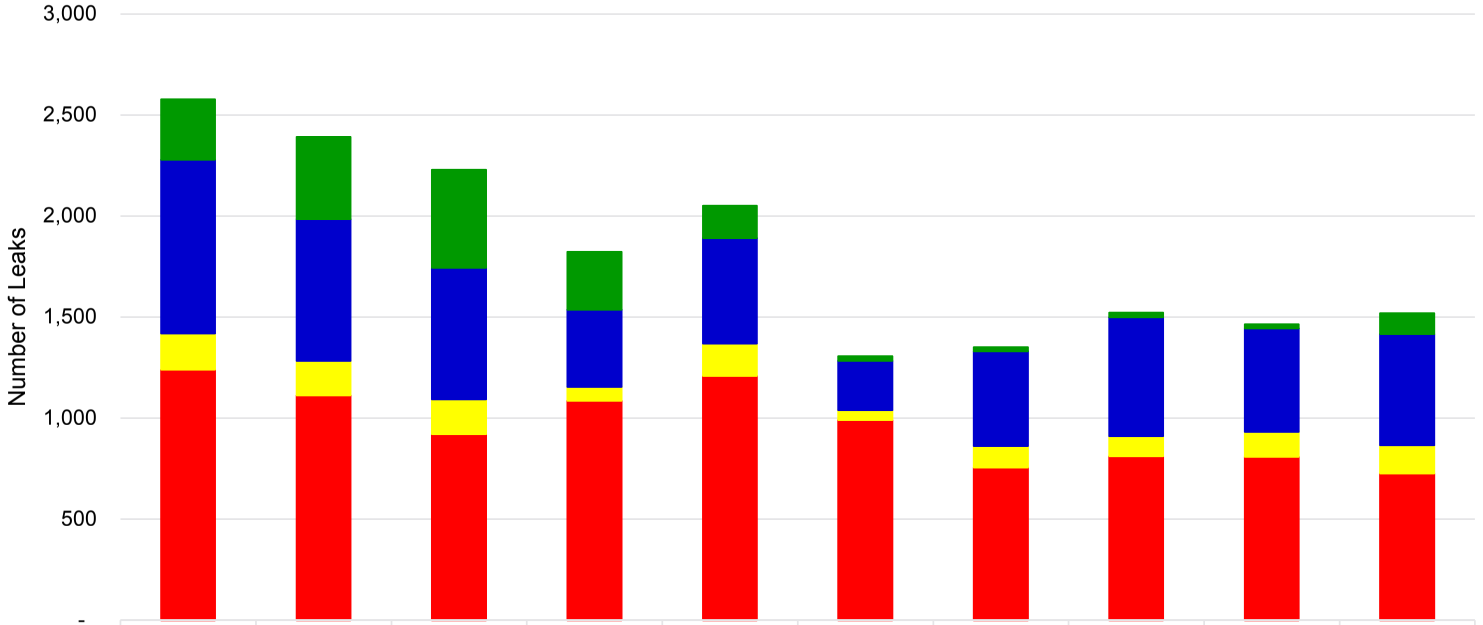
Leaks Repaired By Type

(Including Damages)

RI



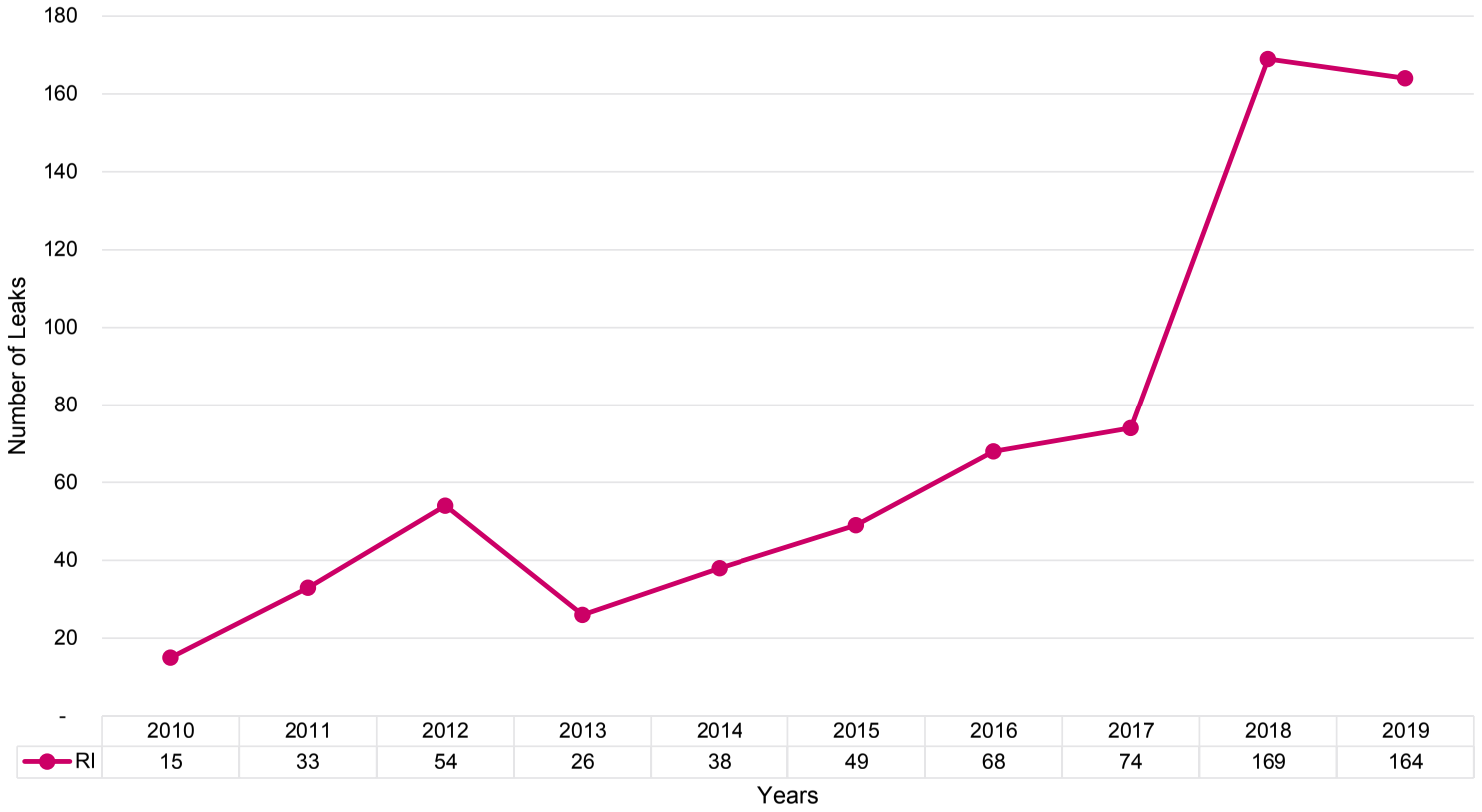
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Type 3	300	407	486	286	162	24	21	24	21	103
Type 2	860	702	651	383	522	244	469	588	513	550
Type 2A	179	171	172	68	160	49	106	99	123	140
Type 1	1,240	1,113	921	1,087	1,209	991	756	812	809	727

Years

Workable Leak Backlog By Region

(Year-End)

RI

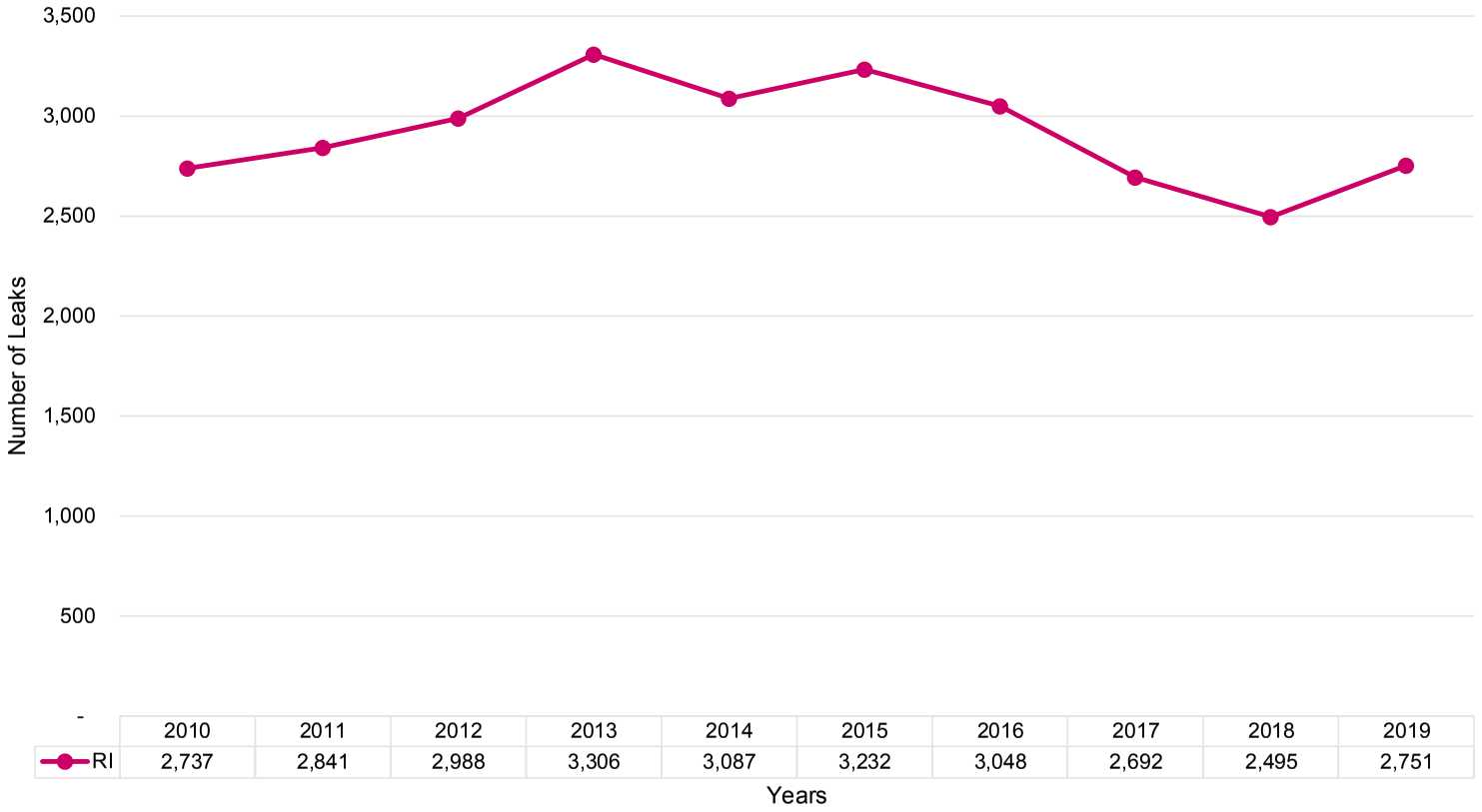


- Note: 2018 experienced an increase in the backlog due to implementation of the Work Continuation Plan.

Open Type 3 Leak Backlog By Region

(Year-End)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	2,737	2,841	2,988	3,306	3,087	3,232	3,048	2,692	2,495	2,751

06 Main Inventory Analysis

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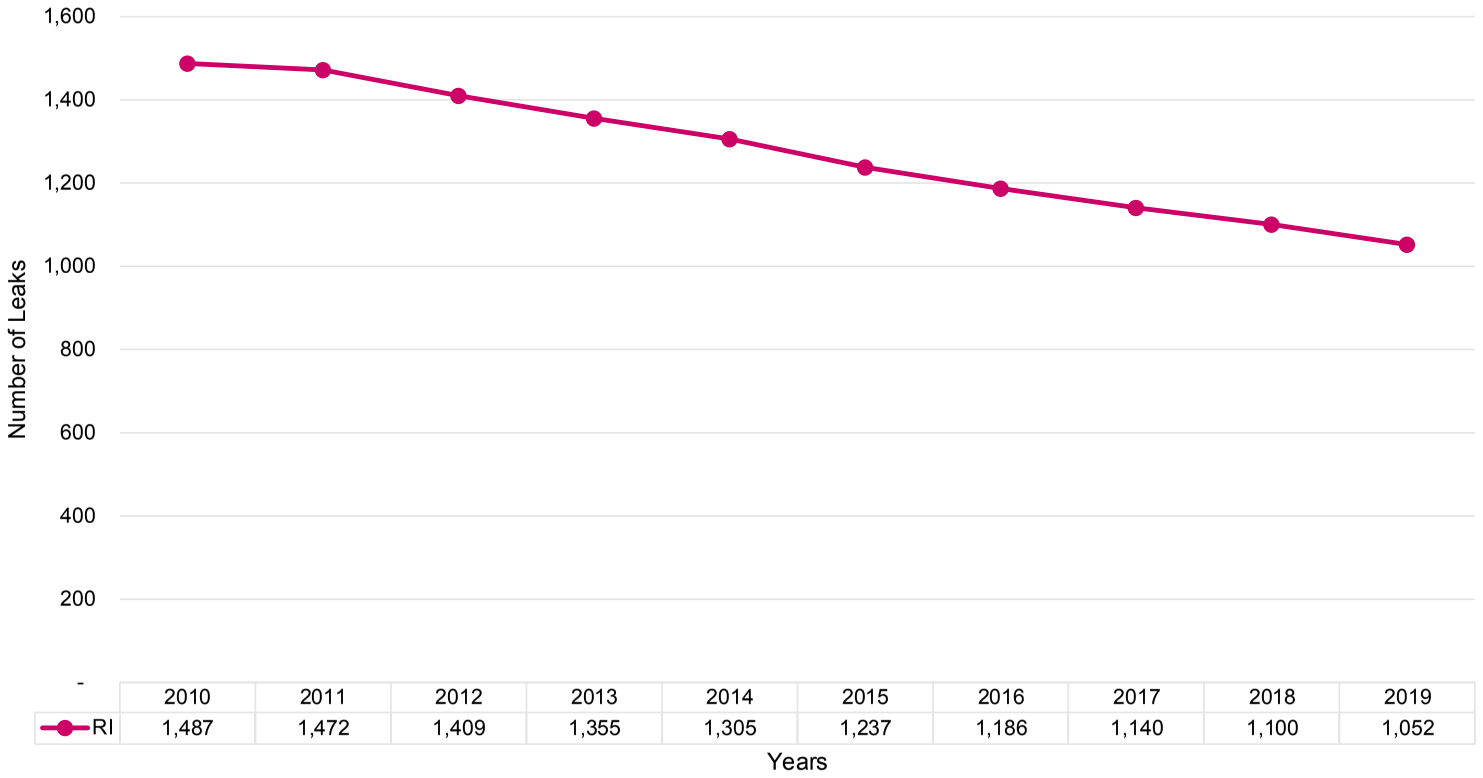
Main Inventory LPP Trend By Region

(Miles)

RI

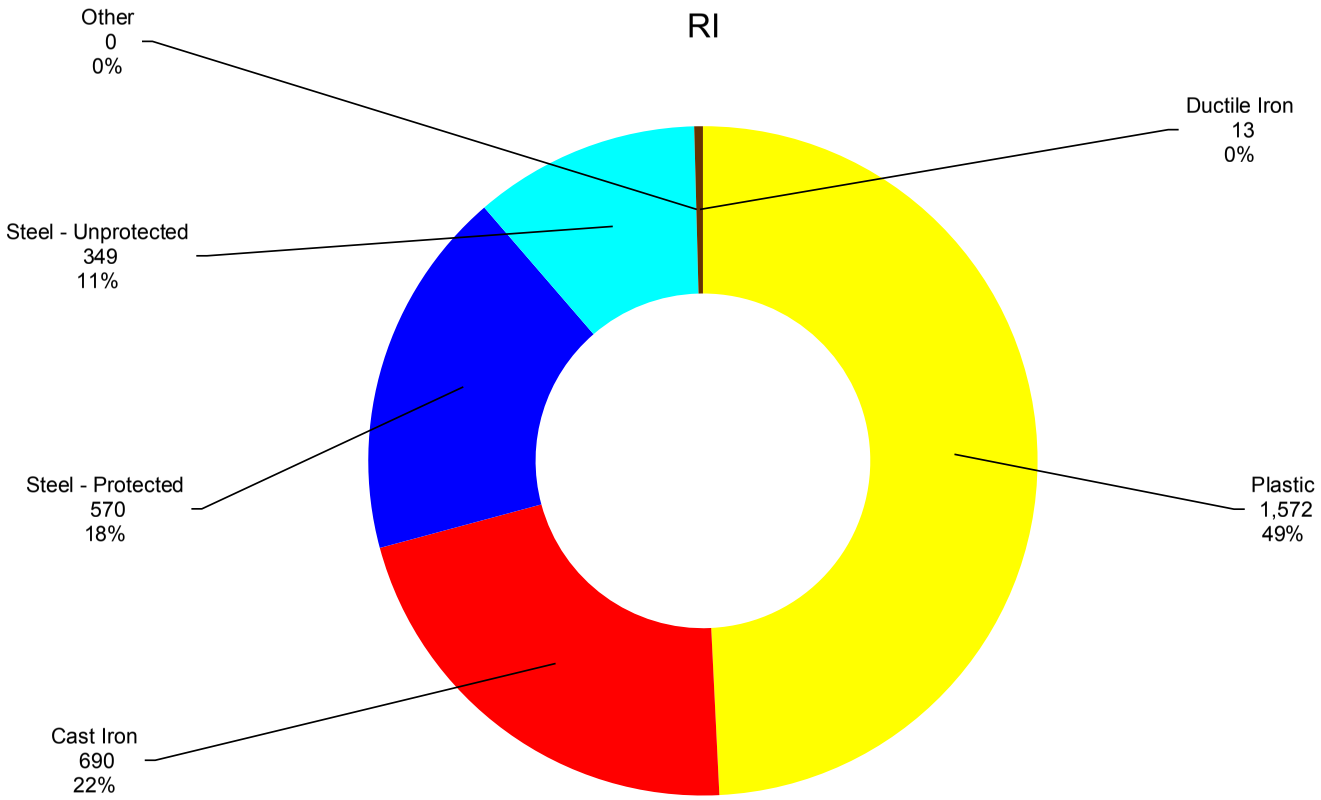


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	1,487	1,472	1,409	1,355	1,305	1,237	1,186	1,140	1,100	1,052

Main Inventory

2019

RI



Main Replacement

RI

Rate Case Supported "Leak-Prone" Main Replacement Levels										
Region	2019 Total Main (Miles)	2019 Leak Prone Main (Miles)	Leaks/Miles of Total Main (Repair rate)	Leaks/Miles of Leak Prone Main (Repair rate)	[5]2019 Annual "Planned" Replacement (Miles)	Planned Replacement % of Leak prone system	[5]2019 Annual "Actual" Replacement (Miles)	Actual Replacement % of Leak prone system	[5]2020 Annual "Planned" Replacement (Miles)	Years to LPP Main Elimination based on "Current" annual plan
RI	3,3195	1,052	0.03	0.91	55	5.2%	51.9	4.9%	52	15

Notes:
1. Leaks per mile of total main excludes Excavation leaks.
2. Leaks per mile of Leak-Prone main (LPP) excludes Excavation leaks and Plastic leaks.
3. Leak-Prone Pipe = Unprotected steel (Bare & Coated) + CI/WI + Aldyl-A (MD, 1985 and prior) + Other.
4. Miles of Leak-Prone main replaced includes all Proactive programs (Main Replacement program & System Reinforcement) and all Reactive programs (Public Works, Water Intrusion & Leak/reactive).
5. Annual planned and actual replacement miles are CY.
6. Data sources are 2016, 2017, 2018 US Gas Leak Prone Pipe Replacement Programs monthly reports from Gas Resource Management CMS.

07

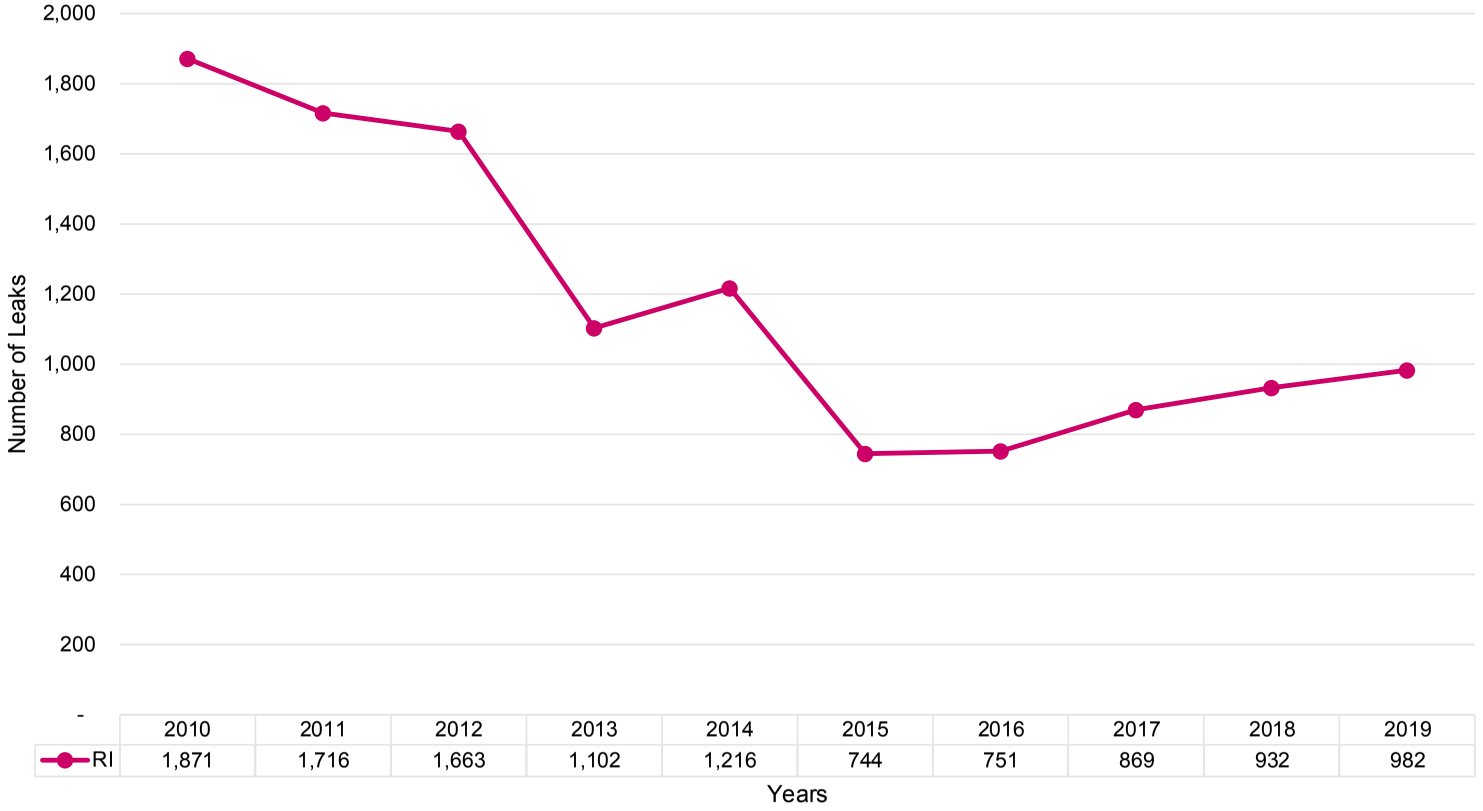
Main Leaks Repaired Analysis

nationalgrid

Main Leak Repairs By Region

(Including Damages)

RI

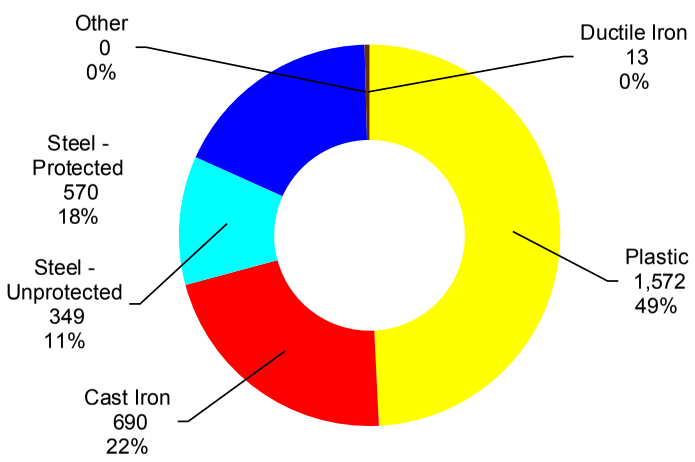


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	1,871	1,716	1,663	1,102	1,216	744	751	869	932	982

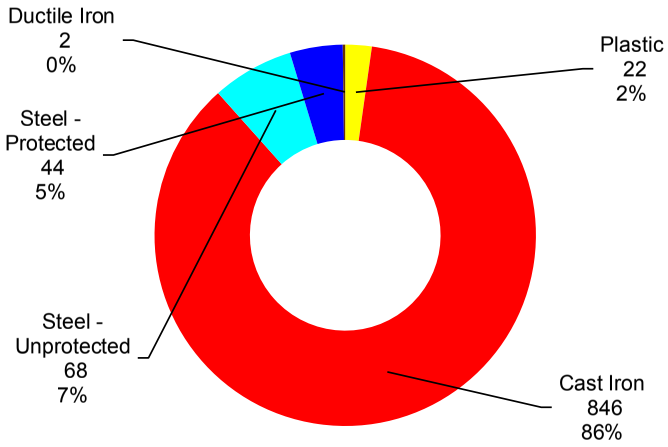
Main Inventory Compared To Main Leak Repairs By Material

RI

Main Inventory



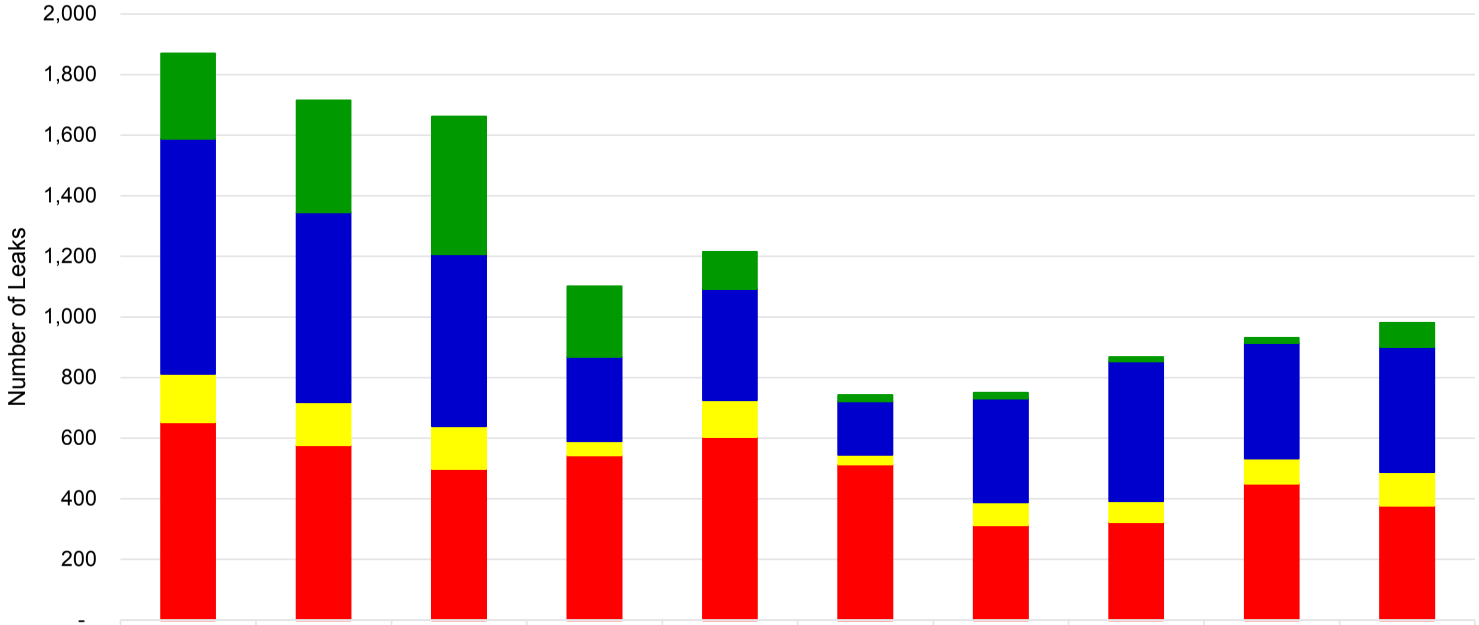
Main Leak Repairs



Main Leaks Repaired By Type

(Including Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Type 3	282	370	455	233	123	22	19	15	17	80
Type 2	776	626	568	278	367	176	343	461	381	413
Type 2A	160	142	141	47	121	32	76	69	83	111
Type 1	653	578	499	544	605	514	313	324	451	378

Years

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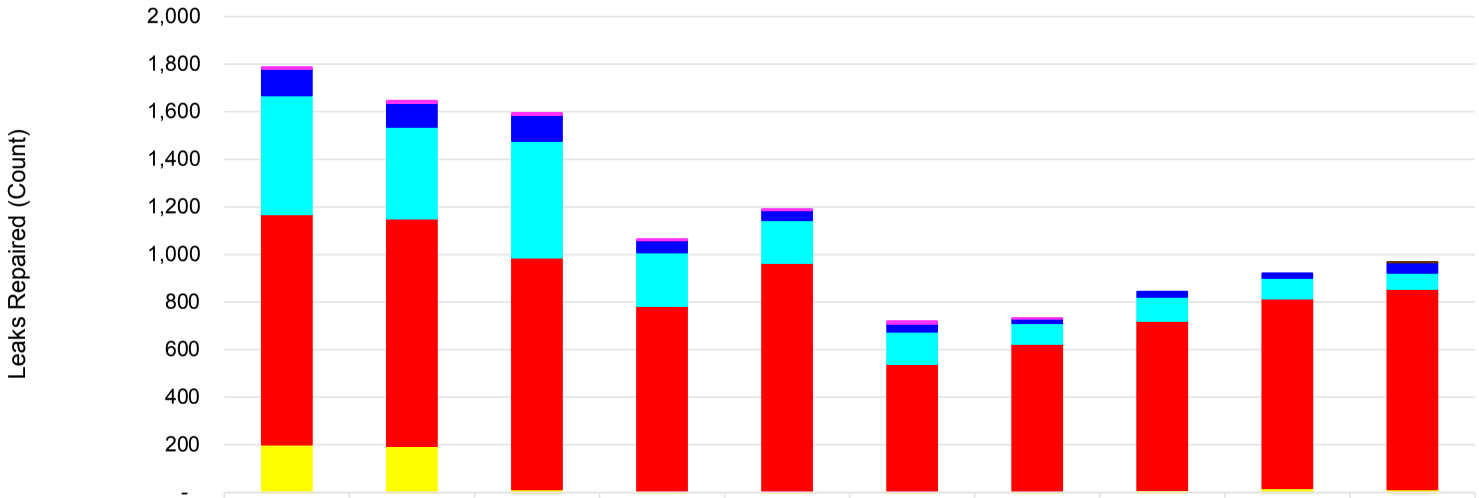
Main Leaks Repaired By Material

(Excluding Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ductile Iron	-	-	-	-	-	-	-	-	-	2
Other	9	11	10	6	6	12	4	-	-	-
Steel - Protected	112	100	109	52	42	33	19	23	20	44
Steel - Unprotected	499	385	490	225	180	135	87	100	86	68
Recond. Cast Iron	-	-	-	-	-	-	-	-	-	-
Cast Iron	968	956	974	777	960	534	619	712	797	842
Plastic	202	196	14	7	5	7	6	10	19	14

Years

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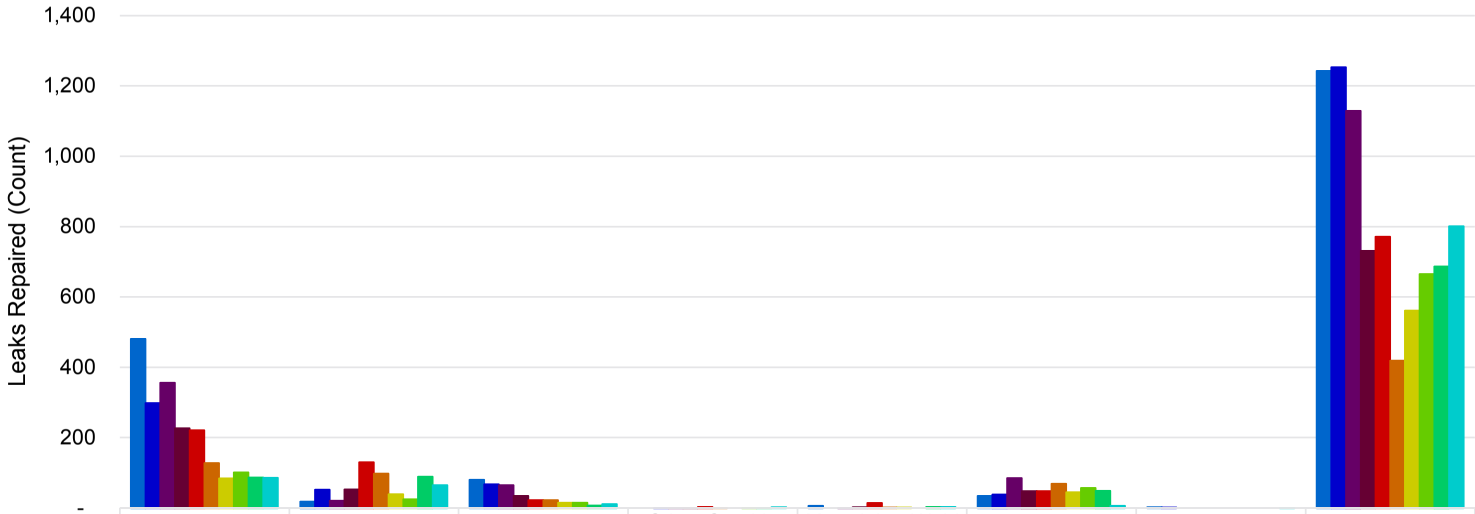
Main Leaks Repaired By Leak Cause

RI



	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	CI Joint Leaks
2010	482	19	81	-	7	35	3	1,244
2011	299	53	68	1	-	39	2	1,254
2012	357	22	66	1	1	86	-	1,130
2013	228	54	35	1	3	49	-	732
2014	222	131	23	4	15	49	-	772
2015	129	99	23	1	2	70	-	420
2016	85	40	16	-	2	46	-	562
2017	102	26	16	1	-	58	-	666
2018	88	90	8	1	4	50	-	688
2019	87	66	12	3	4	7	1	802

Leak Cause

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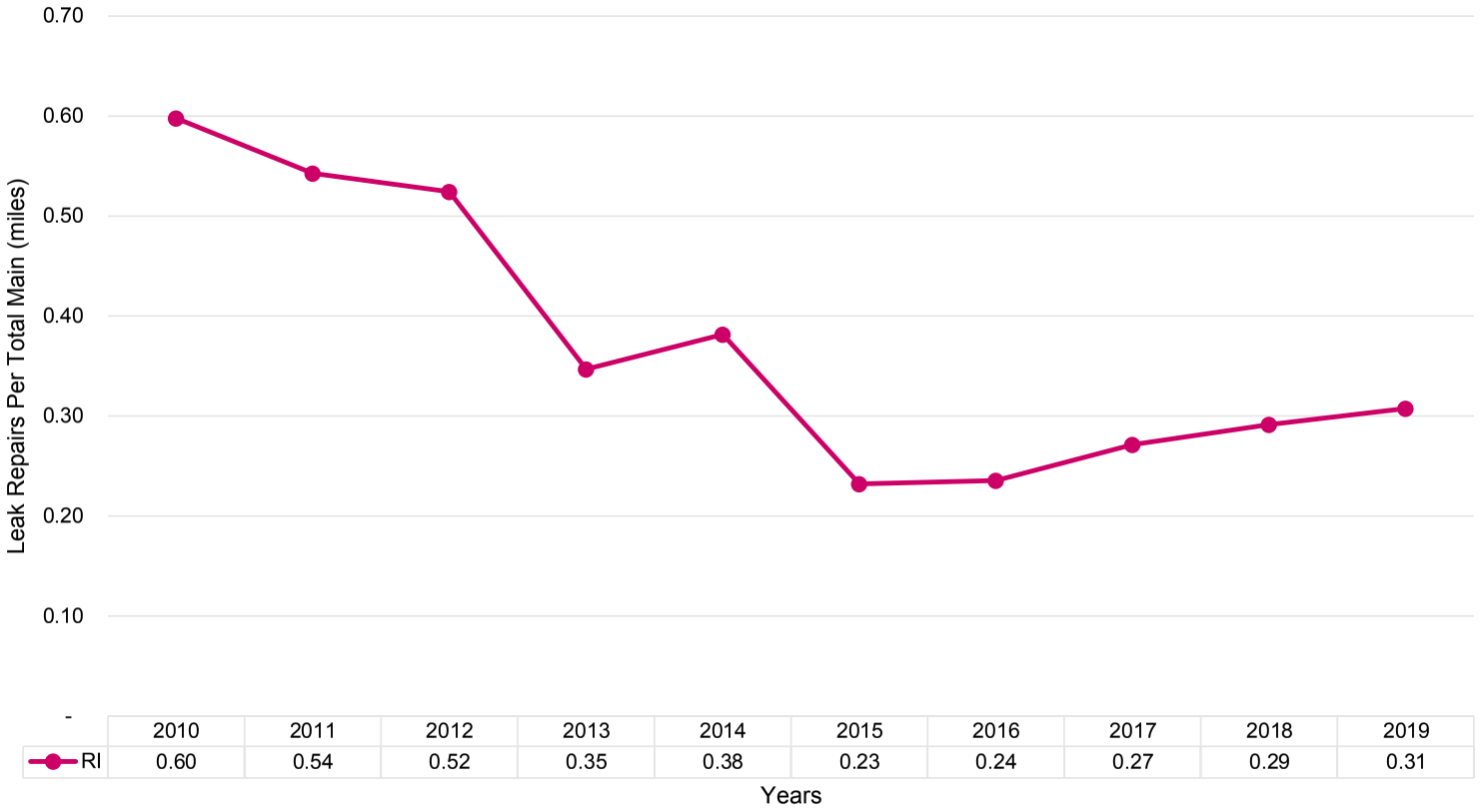
Main Leak Rate By Region

(Including Damages)

RI

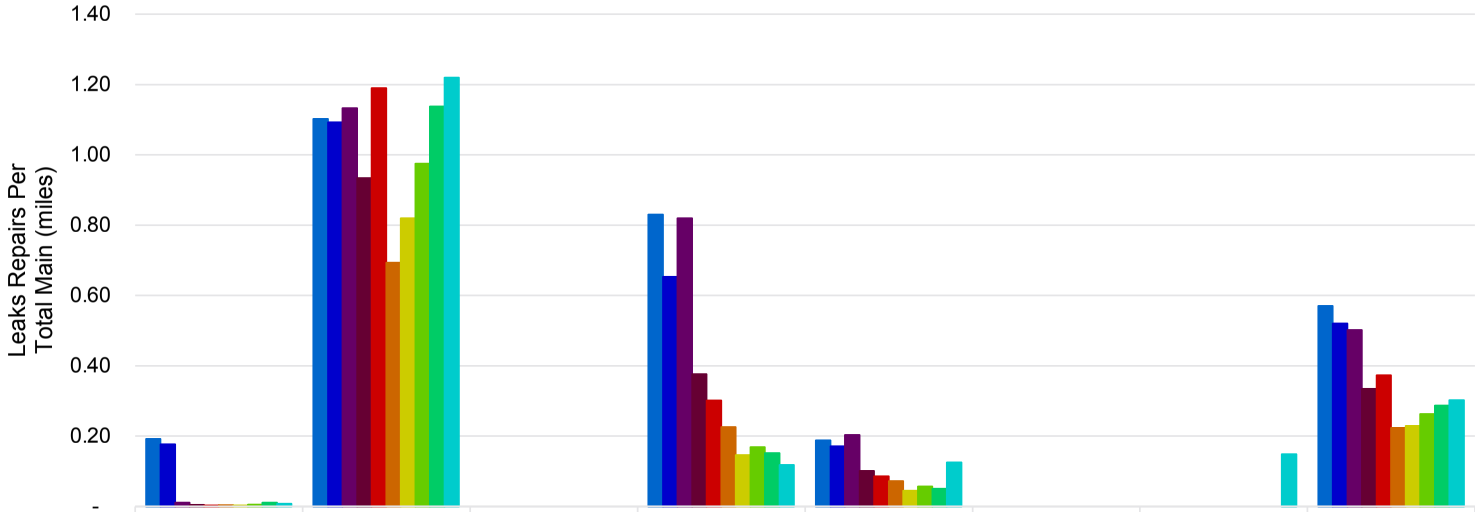


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	0.60	0.54	0.52	0.35	0.38	0.23	0.24	0.27	0.29	0.31

Main Leak Rates By Material

(Excluding Damages)

RI



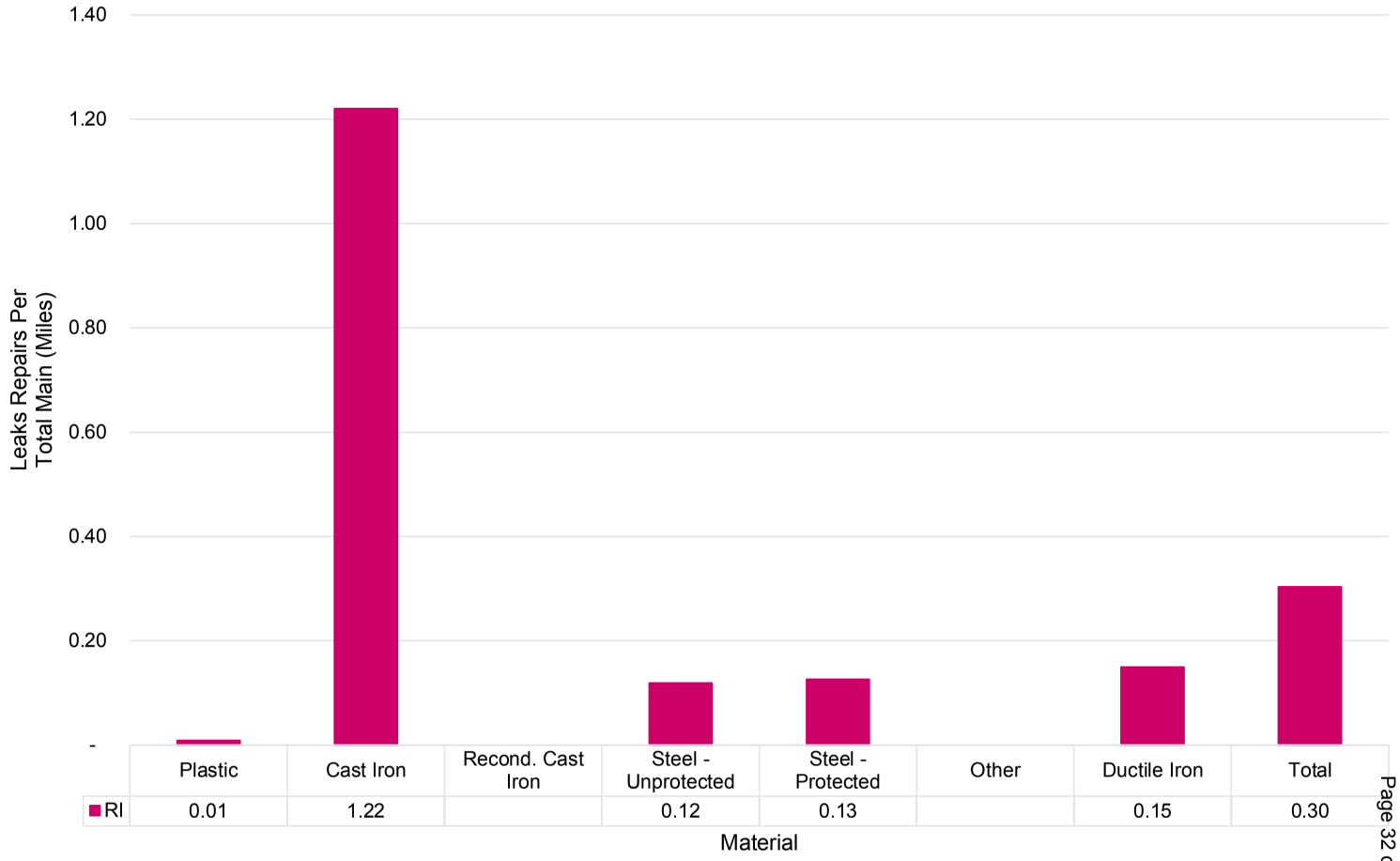
	Plastic	Cast Iron	Recond. Cast Iron	Steel - Unprotected	Steel - Protected	Other	Ductile Iron	Total
2010	0.19	1.10	-	0.83	0.19	-	-	0.57
2011	0.18	1.09	-	0.65	0.17	-	-	0.52
2012	0.01	1.13	-	0.82	0.20	-	-	0.50
2013	0.01	0.93	-	0.38	0.10	-	-	0.34
2014	0.00	1.19	-	0.30	0.09	-	-	0.37
2015	0.01	0.69	-	0.23	0.07	-	-	0.22
2016	0.00	0.82	-	0.15	0.05	-	-	0.23
2017	0.01	0.98	-	0.17	0.06	-	-	0.26
2018	0.01	1.14	-	0.15	0.05	-	-	0.29
2019	0.01	1.22	-	0.12	0.13	-	0.15	0.30

Material

Main Leak Rate By Region

(Excluding Damages)

NGRID

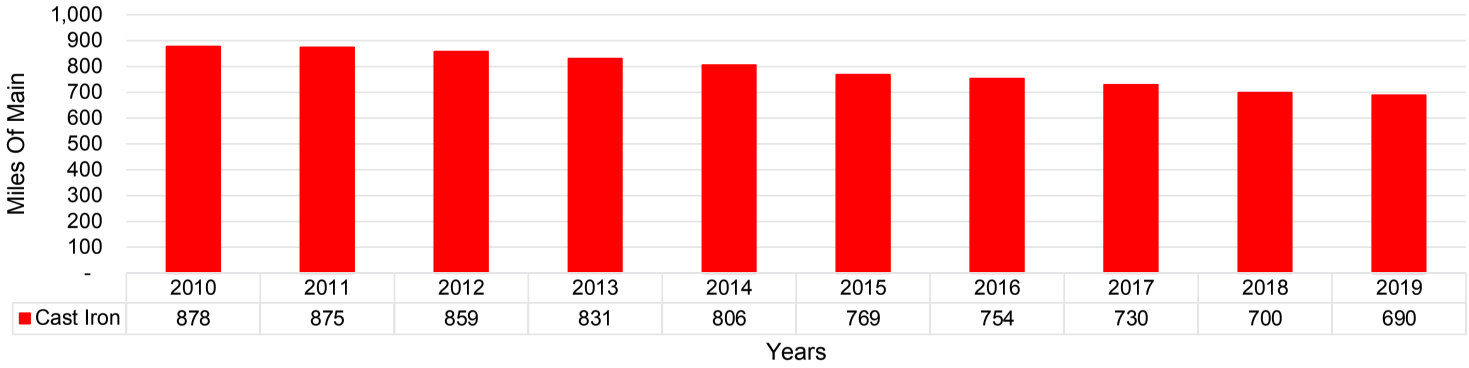



A Closer Look At
Cast Iron Mains
nationalgrid

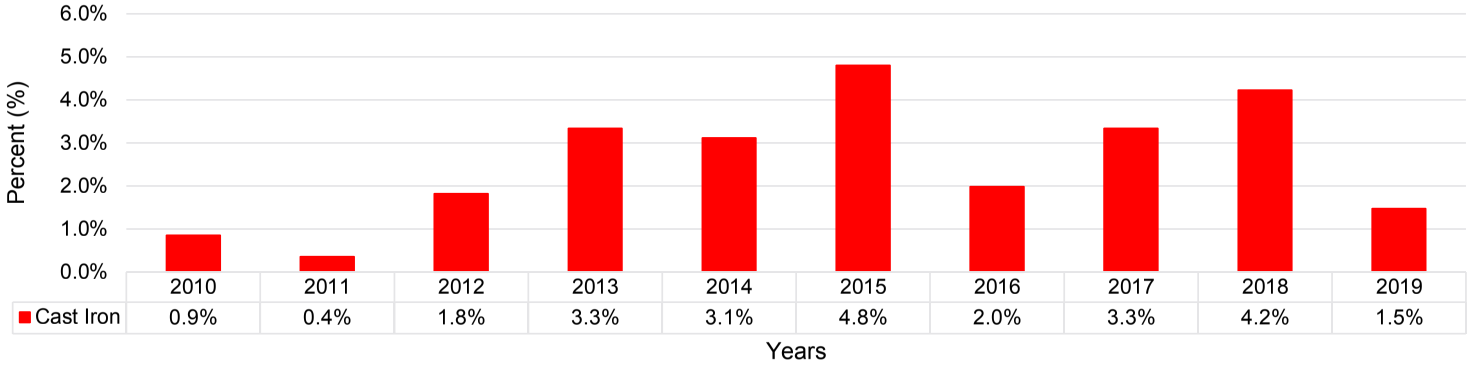
CI Main Inventory Compared to CI Attrition Rate

RI

Cast Iron Main Inventory



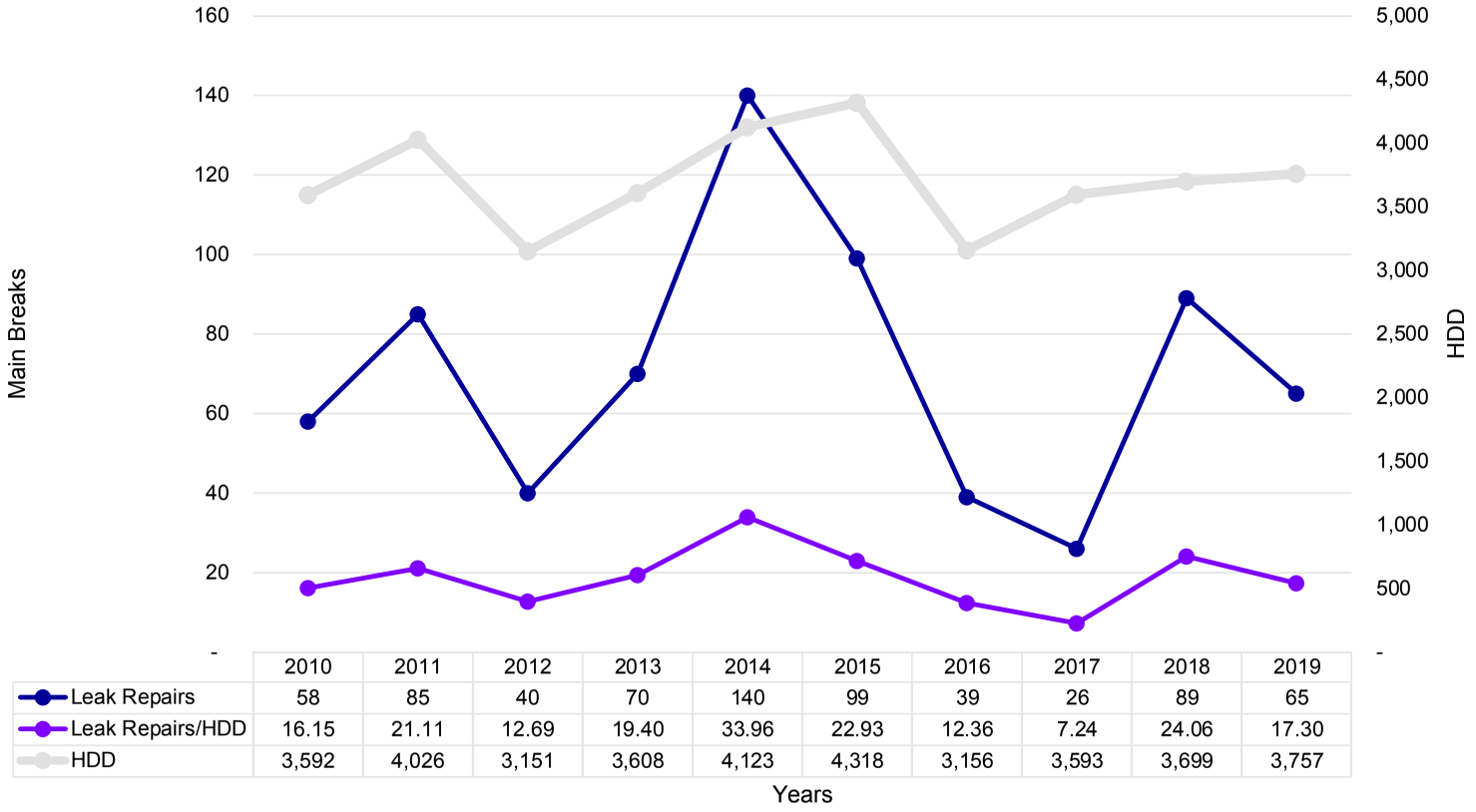
Cast Iron Reduction Percentage



Note: 2019 Providence stopped issuing permits due to paving patch issues

CI Main Breaks Compared To HDD

RI

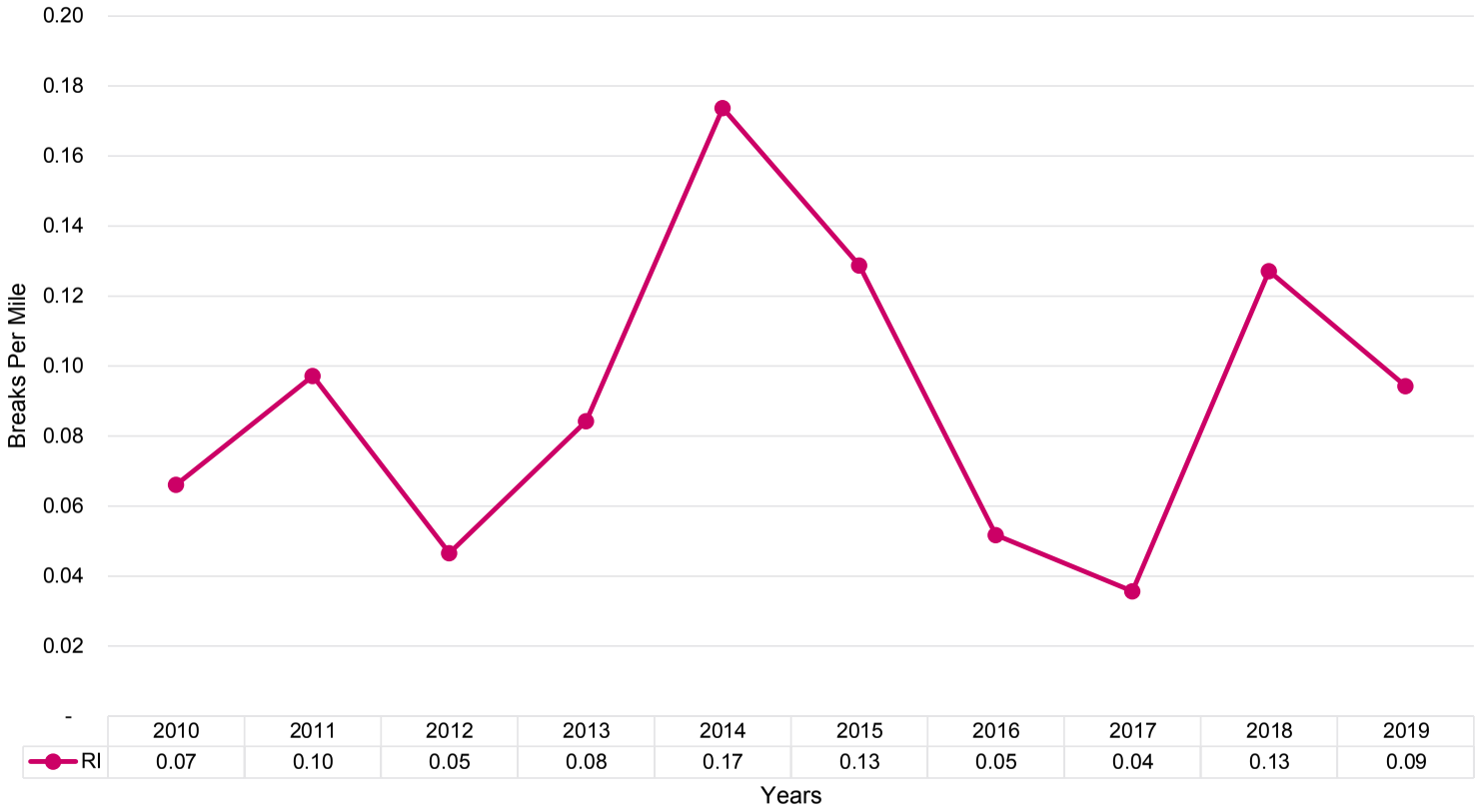


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Leak Repairs	58	85	40	70	140	99	39	26	89	65
Leak Repairs/HDD	16.15	21.11	12.69	19.40	33.96	22.93	12.36	7.24	24.06	17.30
HDD	3,592	4,026	3,151	3,608	4,123	4,318	3,156	3,593	3,699	3,757

- Note: Repairs/HDD is Multiplied By 1,000

Cast Iron Main Breaks Rates By Region

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	0.07	0.10	0.05	0.08	0.17	0.13	0.05	0.04	0.13	0.09

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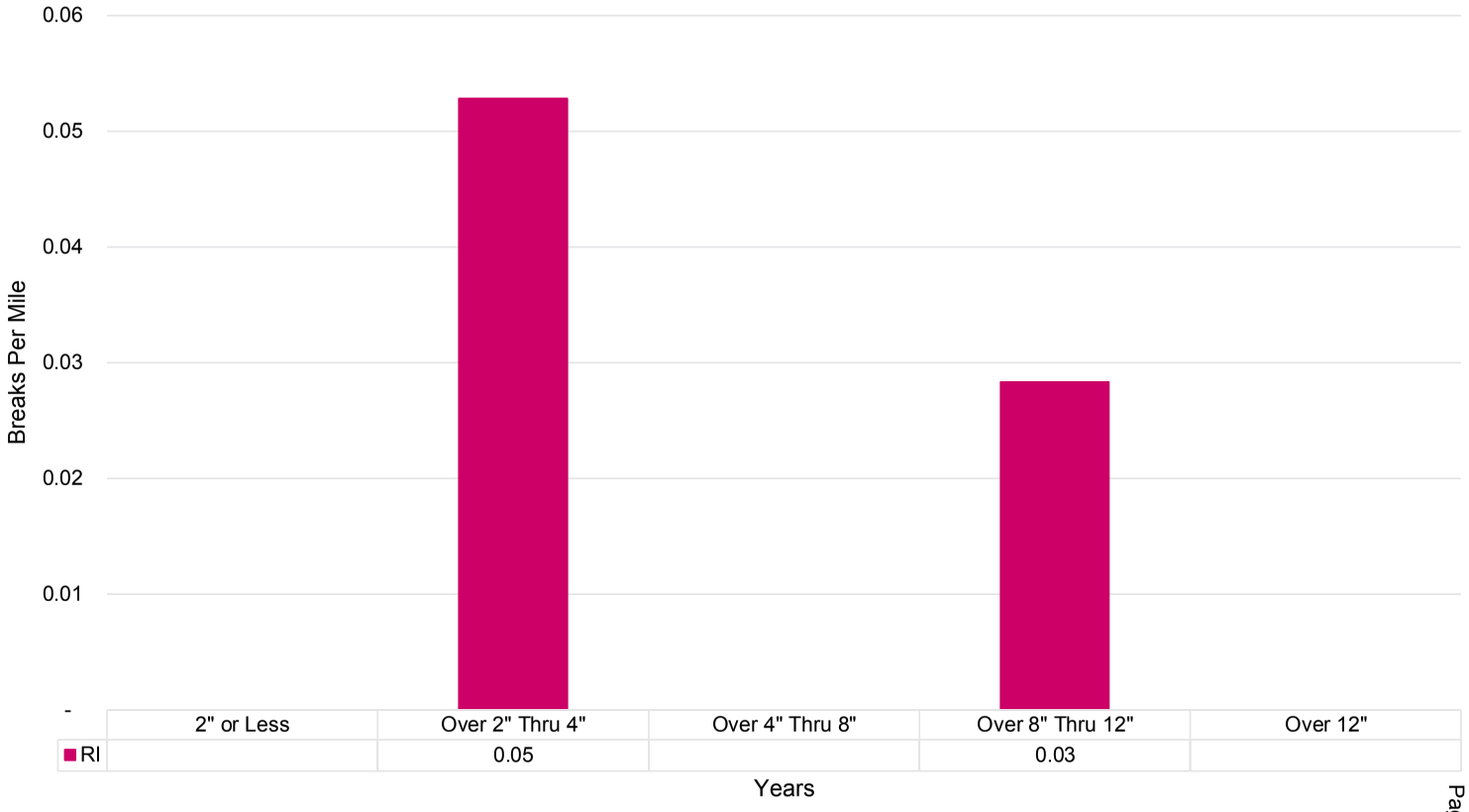
Cast Iron Main Break Rates By Region
(Comparison By Diameter)

RI



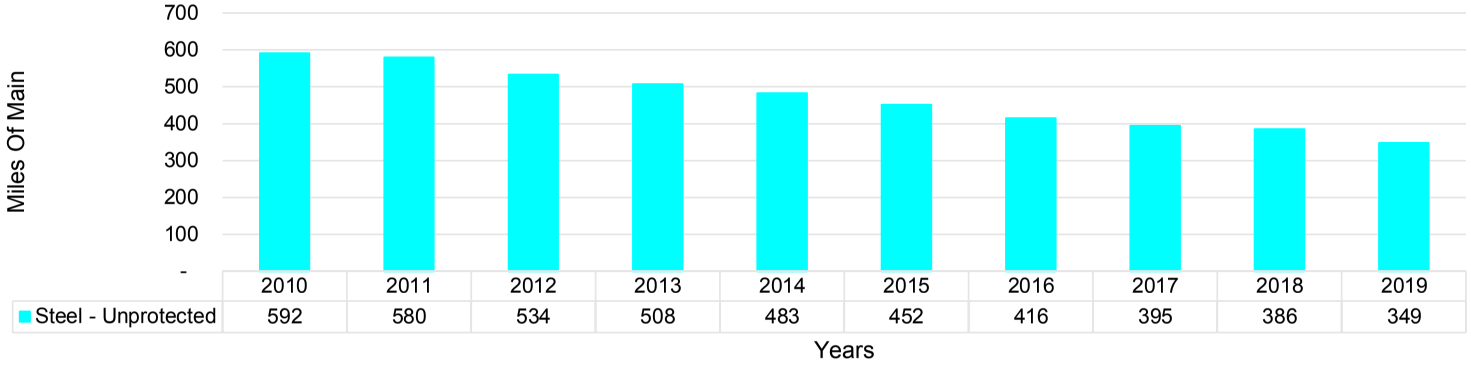
A Closer Look At Steel Mains

nationalgrid

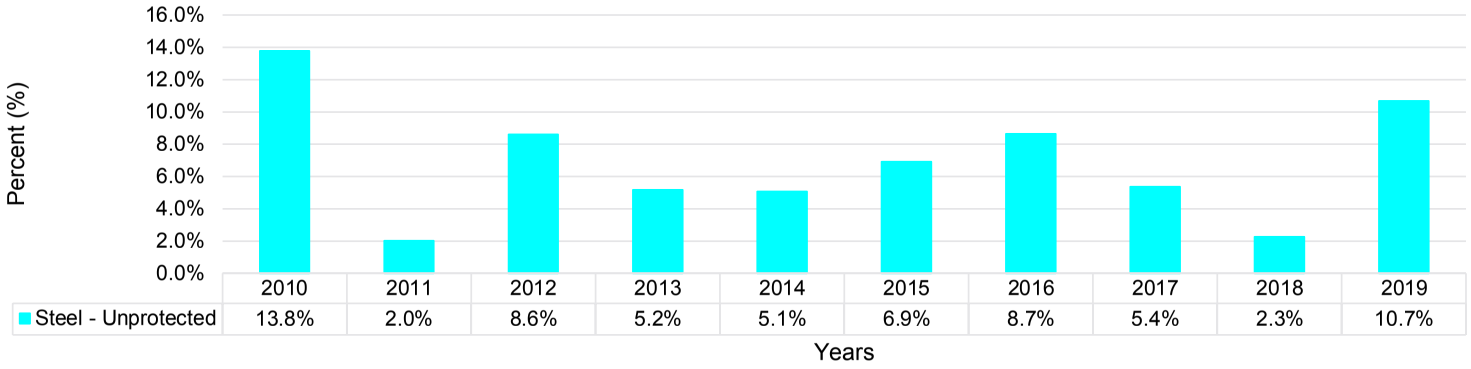
Unprotected Steel Main Inventory Compared to Steel Reduction Percentage

RI

Unprotected Steel Main Inventory



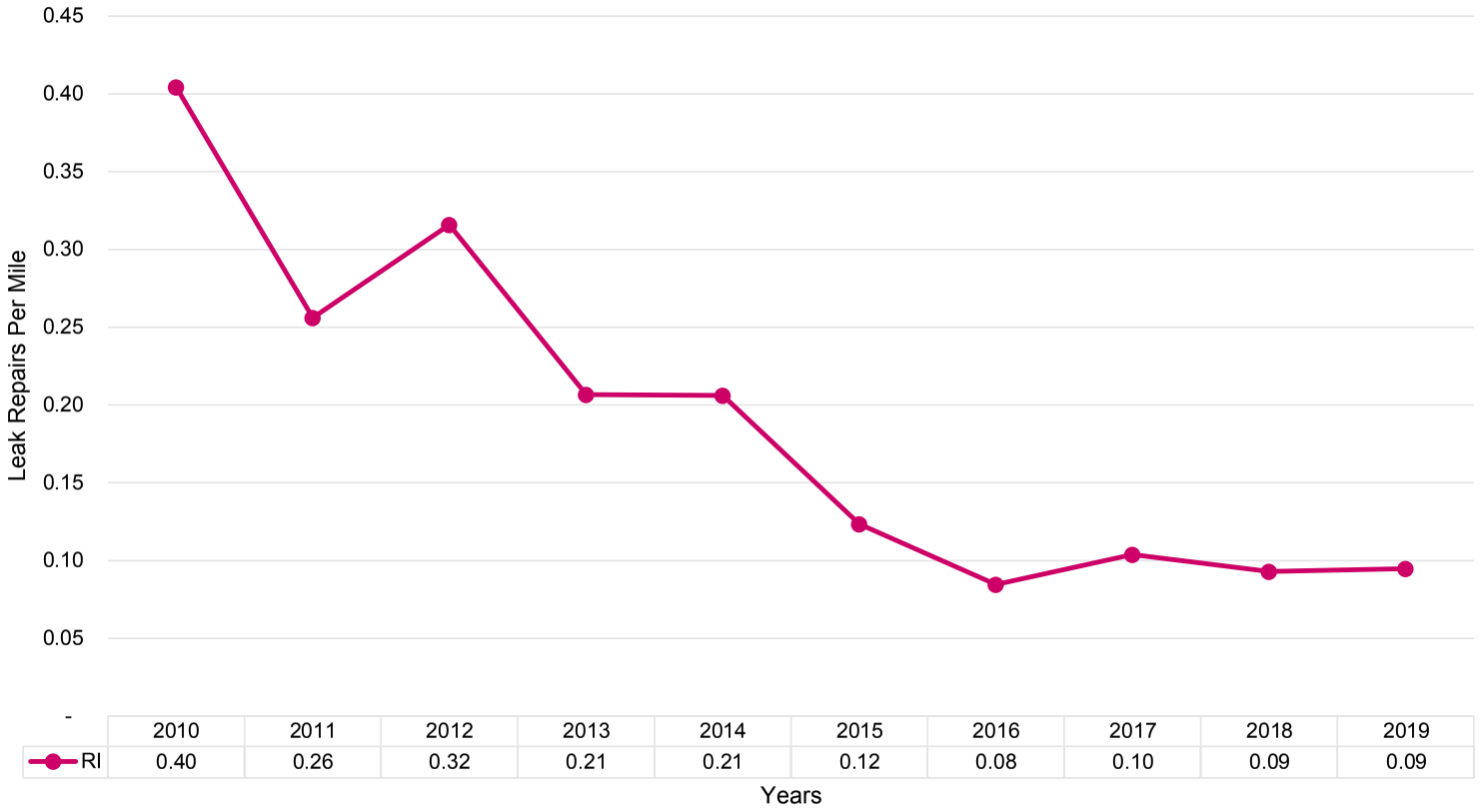
Unprotected Steel Reduction Percentage



Main Corrosion Leak Rates

(Corrosion Leak Repairs Per Mile of Total Steel)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	0.40	0.26	0.32	0.21	0.21	0.12	0.08	0.10	0.09	0.09

Note: Includes **ALL** corrosion leaks, regardless of main material

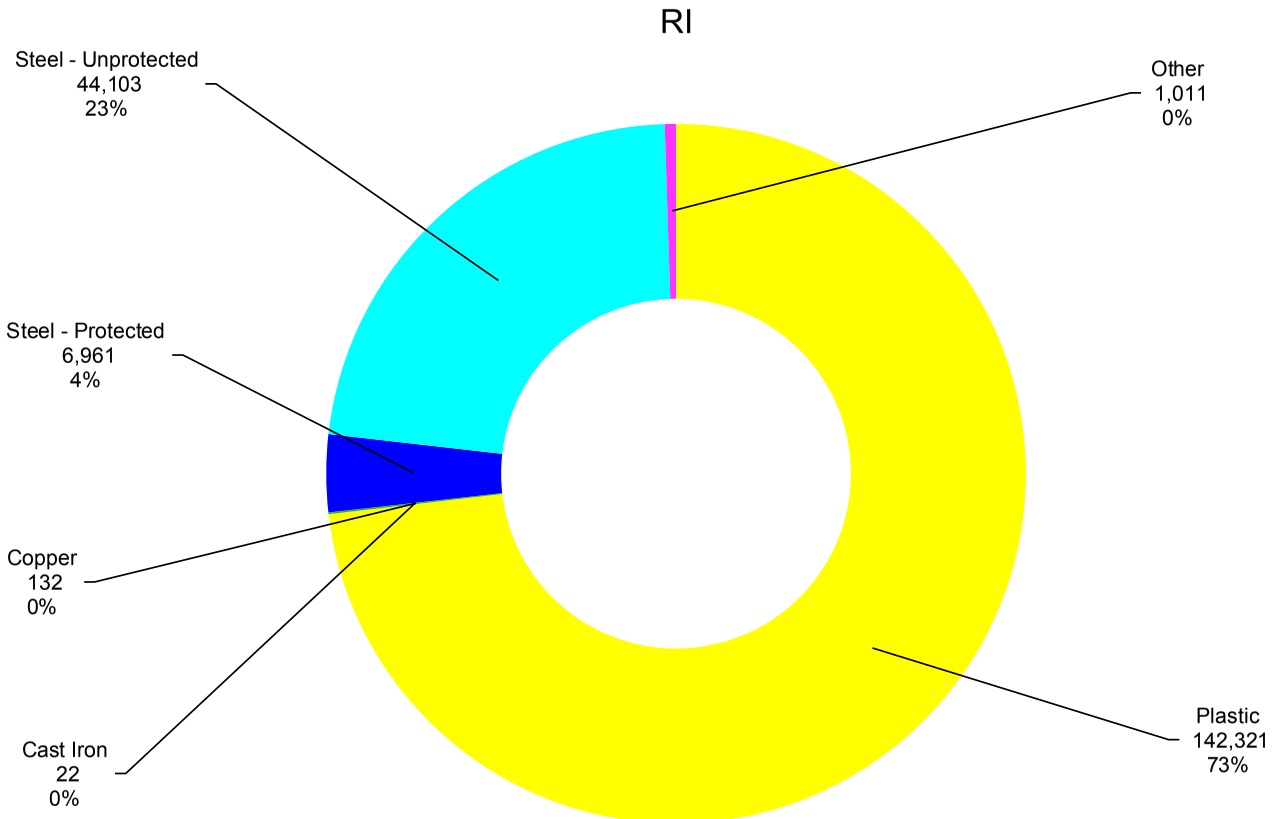
08 Service Inventory Analysis

nationalgrid

Service Inventory Analysis By Material

2019

RI



09 Service Leaks Repaired Analysis

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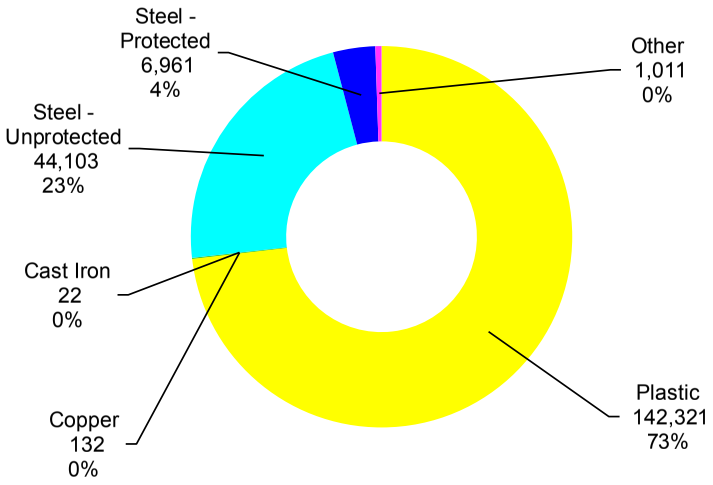
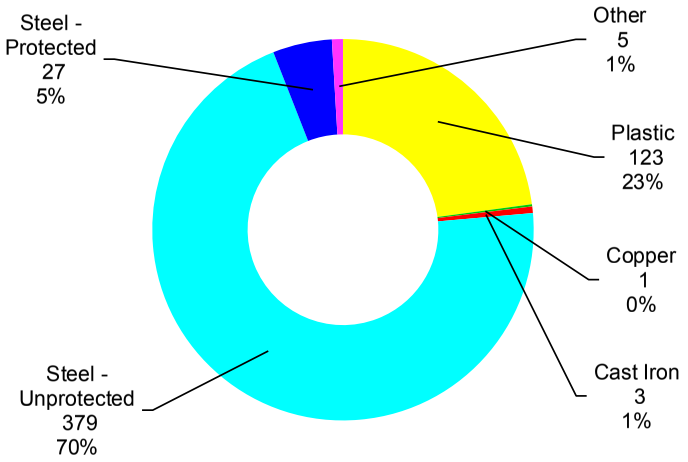
Service Inventory Compared To Service Leak Repairs By Material

RI

Service Inventory



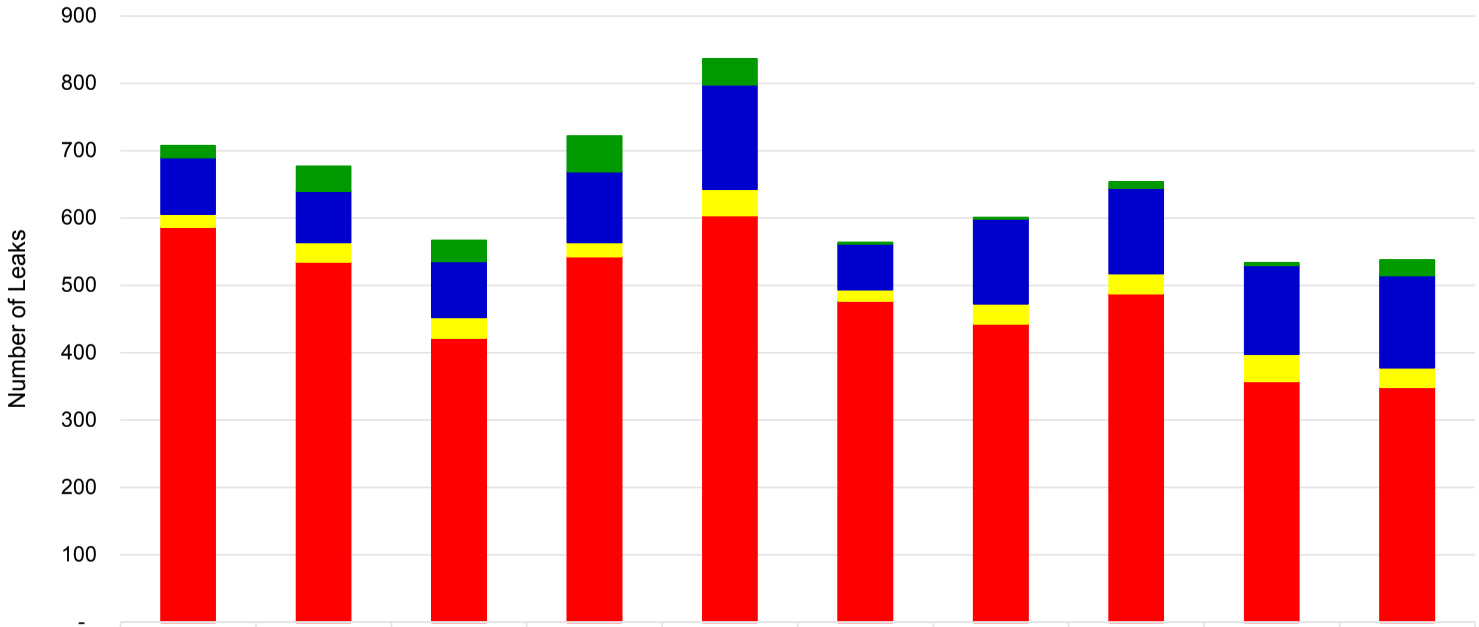
Service Leak Repairs



Service Leaks Repaired By Type

(Including Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Type 3	18	37	31	53	39	2	2	9	4	23
Type 2	84	76	83	105	155	68	126	127	132	137
Type 2A	19	29	31	21	39	17	30	30	40	29
Type 1	587	535	422	543	604	477	443	488	358	349

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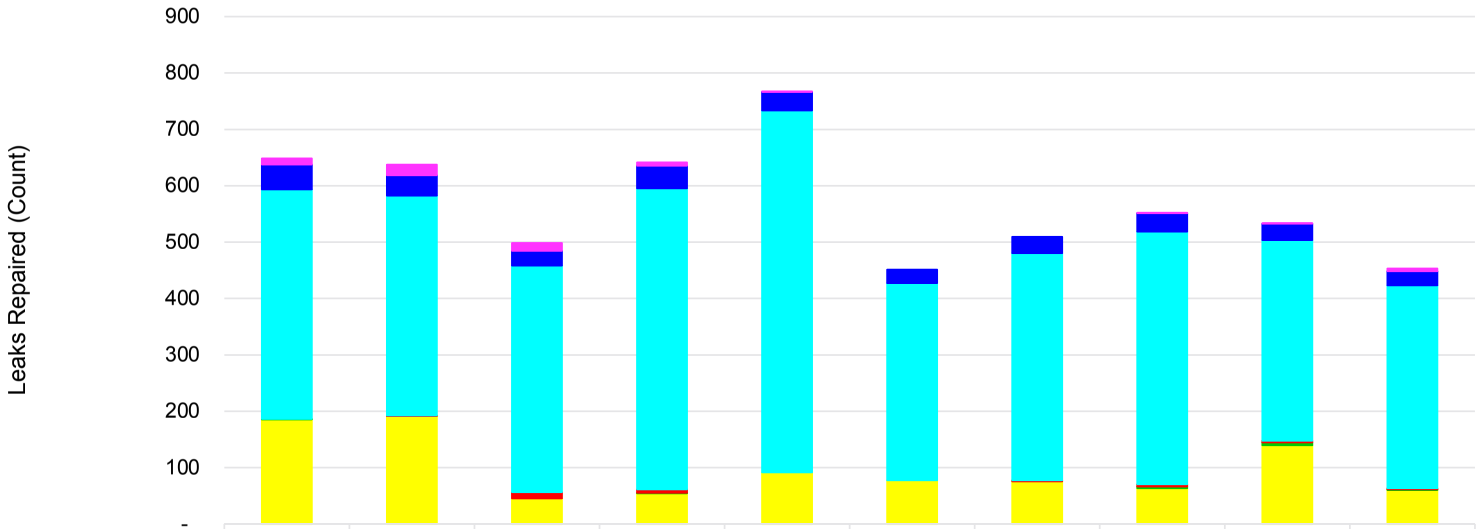
Service Leaks Repaired By Material

(Excluding Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other	11	19	14	6	1	-	-	1	1	5
Steel - Protected	44	36	26	40	33	24	29	33	29	25
Steel - Unprotected	407	390	402	534	642	350	403	448	356	360
Cast Iron	-	1	11	6	-	-	2	4	3	2
Copper	1	-	-	1	-	-	-	3	5	1
Plastic	186	192	46	55	92	78	76	64	140	61

Years

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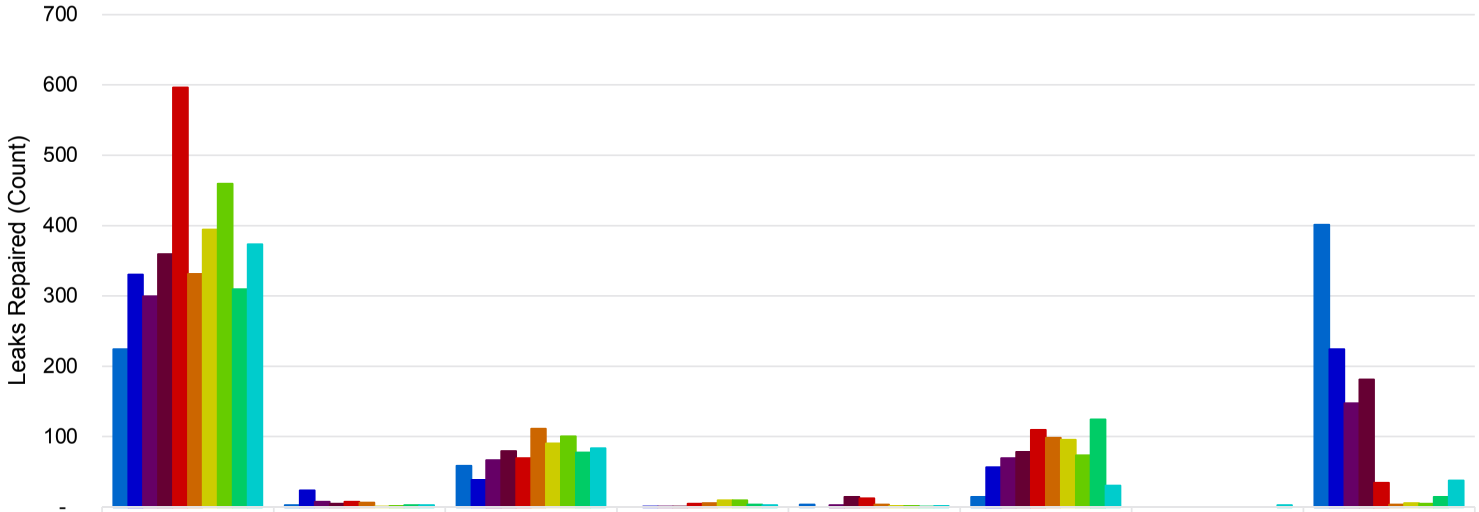
Service Leaks Repaired By Leak Cause

RI



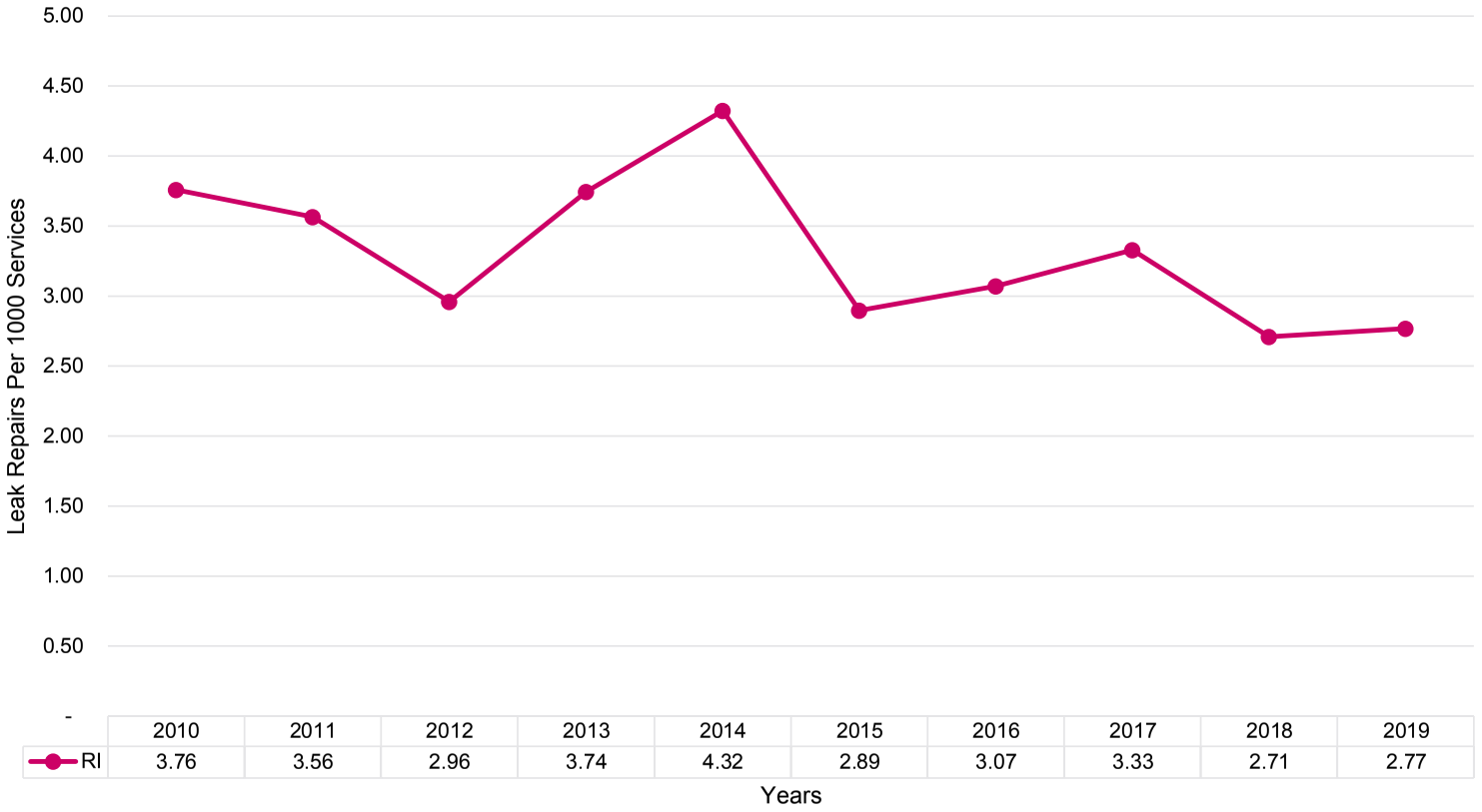
	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	Other
2010	225	3	59	-	4	15	-	402
2011	331	24	39	1	-	57	-	225
2012	300	8	67	1	3	70	-	148
2013	360	5	80	1	15	79	-	182
2014	597	8	70	5	13	110	-	35
2015	332	7	112	6	4	99	-	4
2016	395	1	91	10	2	96	-	6
2017	460	2	101	10	2	74	-	5
2018	310	3	78	4	1	125	-	15
2019	374	3	84	3	2	31	3	38

Leak Cause

Service Leak Rate By Region

(Including Damages)

RI

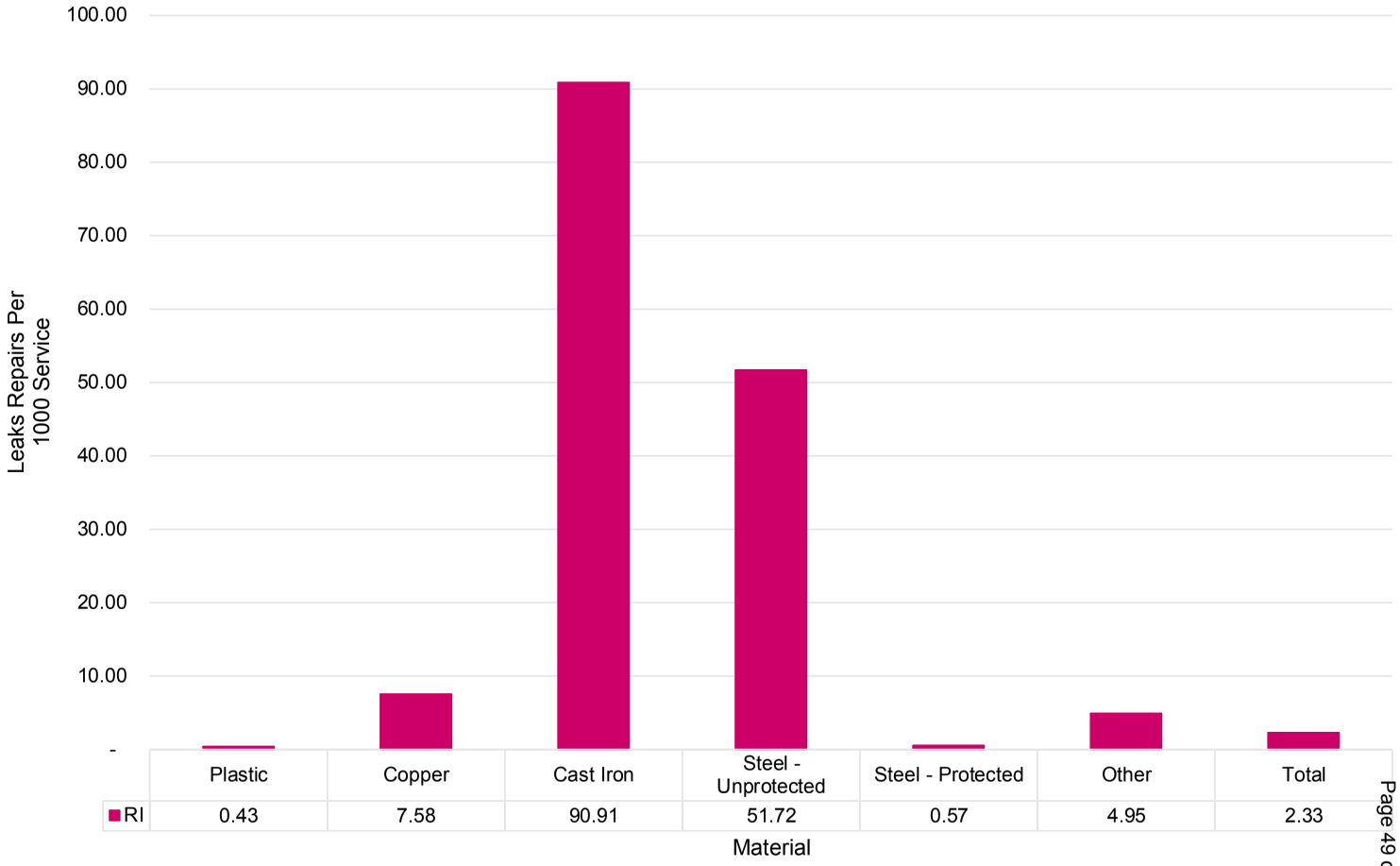


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	3.76	3.56	2.96	3.74	4.32	2.89	3.07	3.33	2.71	2.77

Service Leak Rate By Region

(Excluding Damages)

RI



10

Distribution DOT Report Data Comparison

nationalgrid

Distribution DOT Data Comparison

2019

NGRID

	General Data Correction	RI - LPP INVENTORY						US NGRID - LPP INVENTORY					
		2019		2018		Delta(19-18)	%	2019		2018		Delta(19-18)	%
	Explanation Needed	1,052	Main	1,100	Main	-48	-4.4%	8,923	Main	9,393	Main	-470	-5.0%
	Discussed & Approved	44,257	Service	42,109	Service	+2148	5.1%	484,839	Service	506,808	Service	-21969	-4.3%
2018 - 2019 DOT Comparisons		**RI**						**US - NGRID (ALL REGIONS COMBINED)**					
		2019		2018		Delta(19-18)	%	2019		2018		Delta(19-18)	%
Main Inventory	Cast Iron	689.775	miles	700	miles	-11	-1.6%	4,228	miles	4,456	miles	-227.598	-5.1%
	Reconditioned Cast Iron	-	miles	0	miles	+0	N/A	7	miles	7	miles	-0.309	-4.2%
	Plastic	1,572.279	miles	1,539	miles	+33	2.1%	17,837	miles	17,276	miles	+560.189	3.2%
	UP Bare Steel	191.657	miles	199	miles	-7	-3.5%	3,158	miles	3,322	miles	-164.402	-4.9%
	UP Coated Steel	157.041	miles	187	miles	-30	-16.0%	1,517	miles	1,594	miles	-76.886	-4.8%
	Total UP Steel	348.698	miles	386	miles	-37	-9.6%	4,675	miles	4,916	miles	-241.288	-4.9%
	CP Bare Steel	-	miles	0	miles	+0	N/A	176	miles	180	miles	-3.738	-2.1%
	CP Coated Steel	570.416	miles	562	miles	+8	1.4%	8,746	miles	8,711	miles	+34.387	0.4%
	Total CP Steel	570.416	miles	562	miles	+8	1.4%	8,922	miles	8,891	miles	+30.649	0.3%
	Other	0.049	miles	0	miles	+0	0.0%	0	miles	0	miles	-0.037	-35.6%
	Ductile Iron	13.343	miles	14	miles	-1	-7.2%	13	miles	14	miles	-0.503	-3.6%
	TOTAL MAIN	**3,194.560**	**miles**	**3,201**	**miles**	**-7**	**-0.2%**	**35,682**	**miles**	**35,561**	**miles**	**+120.713**	**0.3%**
Main Leaks	Corrosion	87	repairs	102	repairs	-15	-14.7%	2,217	repairs	1,981	repairs	+236	11.9%
	Natural Forces	66	repairs	94	repairs	-28	-29.8%	591	repairs	885	repairs	-294	-33.2%
	Excavation	12	repairs	12	repairs	+0	0.0%	242	repairs	250	repairs	-8	-3.2%
	Other Outside Force	3	repairs	1	repairs	+2	200.0%	27	repairs	21	repairs	+6	28.6%
	Material or Welds	4	repairs	5	repairs	-1	-20.0%	61	repairs	84	repairs	-23	-27.4%
	Equipment	7	repairs	57	repairs	-50	-87.7%	821	repairs	804	repairs	+17	2.1%
	Operations	1	repairs	0	repairs	+1	N/A	3	repairs	5	repairs	-2	-40.0%
	Other	802	repairs	756	repairs	+46	6.1%	8,554	repairs	7,073	repairs	+1481	20.9%
	TOTAL MAIN LEAKS	**982**	**repairs**	**1,027**	**repairs**	**-45**	**-4.4%**	**12,516**	**repairs**	**11,103**	**repairs**	**+1413**	**12.7%**
Service Inventory	Copper	132	svcs	189	svcs	-57	-30.2%	114,886	svcs	130,846	svcs	-15960	-12.2%
	Plastic	142,321	svcs	144,929	svcs	-2608	-1.8%	1,908,526	svcs	1,869,535	svcs	+38991	2.1%
	UP Bare Steel	38,382	svcs	33,726	svcs	+4656	13.8%	198,005	svcs	199,856	svcs	-1851	-0.9%
	UP Coated Steel	5,721	svcs	8,067	svcs	-2346	-29.1%	170,124	svcs	174,449	svcs	-4325	-2.5%
	Total UP Steel	44,103	svcs	41,793	svcs	+2310	5.5%	368,129	svcs	374,305	svcs	-6176	-1.6%
	CP Bare Steel	0	svcs	0	svcs	+0	N/A	13,100	svcs	13,073	svcs	+27	0.2%
	CP Coated Steel	6,961	svcs	9,334	svcs	-2373	-25.4%	145,620	svcs	150,260	svcs	-4640	-3.1%
	Total CP Steel	6,961	svcs	9,334	svcs	-2373	-25.4%	158,720	svcs	163,333	svcs	-4613	-2.8%
	Other	1,011	svcs	763	svcs	+248	32.5%	97,079	svcs	106,118	svcs	-9039	-8.5%
	Cast Iron / Wrought Iron	22	svcs	127	svcs	-105	-82.7%	1,824	svcs	1,657	svcs	+167	10.1%
	TOTAL SERVICES	**194,550**	**svcs**	**197,135**	**svcs**	**-2585**	**-1.3%**	**2,649,164**	**svcs**	**2,645,794**	**svcs**	**+3370**	**0.1%**
Service Leaks Excluding Above Ground Leaks	Corrosion	374	repairs	333	repairs	+41	12.3%	4,185	repairs	3,326	repairs	+859	25.8%
	Natural Forces	3	repairs	3	repairs	+0	0.0%	132	repairs	165	repairs	-33	-20.0%
	Excavation	85	repairs	88	repairs	-3	-3.4%	1,326	repairs	1,511	repairs	-185	-12.2%
	Other Outside Force	2	repairs	5	repairs	-3	-60.0%	101	repairs	94	repairs	+7	7.4%
	Material or Welds	2	repairs	2	repairs	+0	0.0%	44	repairs	64	repairs	-20	-31.3%
	Equipment	31	repairs	135	repairs	-104	-77.0%	1,809	repairs	2,092	repairs	-283	-13.5%
	Operations	2	repairs	0	repairs	+2	N/A	10	repairs	7	repairs	+3	42.9%
	Other	36	repairs	20	repairs	+16	80.0%	156	repairs	106	repairs	+50	47.2%
	TOTAL SVC LEAKS	**535**	**repairs**	**586**	**repairs**	**-51**	**-8.7%**	**7,763**	**repairs**	**7,365**	**repairs**	**+398**	**5.4%**
Service Leaks Including Above Ground Leaks	Corrosion	375	repairs	333	repairs	+42	12.6%	4,225	repairs	3,328	repairs	+897	27.0%
	Natural Forces	3	repairs	3	repairs	+0	0.0%	162	repairs	177	repairs	-15	-8.5%
	Excavation	85	repairs	88	repairs	-3	-3.4%	1,326	repairs	1,512	repairs	-186	-12.3%
	Other Outside Force	3	repairs	7	repairs	-4	-57.1%	123	repairs	103	repairs	+20	19.4%
	Material or Welds	2	repairs	2	repairs	+0	0.0%	80	repairs	64	repairs	+16	25.0%
	Equipment	31	repairs	135	repairs	-104	-77.0%	1,966	repairs	2,093	repairs	-127	-6.1%
	Operations	3	repairs	0	repairs	+3	N/A	71	repairs	9	repairs	+62	688.9%
	Other	38	repairs	20	repairs	+18	90.0%	926	repairs	120	repairs	+806	671.7%
	TOTAL SVC LEAKS	**540**	**repairs**	**588**	**repairs**	**-48**	**-8.2%**	**8,879**	**repairs**	**7,406**	**repairs**	**+1473**	**19.9%**
Total Leak Repairs (Main & Service) Excluding Above Ground Leak		1,517	repairs	1,613	repairs	-96	-6.0%	20,279	repairs	18,468	repairs	+1811	9.8%
Total Leak Repairs (Main & Service) Including Above Ground Leak		1,522	repairs	1,615	repairs	-93	-5.8%	21,395	repairs	18,509	repairs	+2886	15.6%
Workable Backlog As of 12/31		164	leaks	169	leaks	-5	-3.0%	1,181	leaks	1,576	leaks	-395	-25.1%
UFG (Net)		2.6%		2.5%		0.10%	4.0%	3.3%		2.39%		0.91%	38.1%
Average Service Length (Ft)		61.6	ft	66.5	ft	-5	-7.5%	59.6	ft	59.7	ft	-0.175	-0.3%

11

Gas Distribution System Statistics

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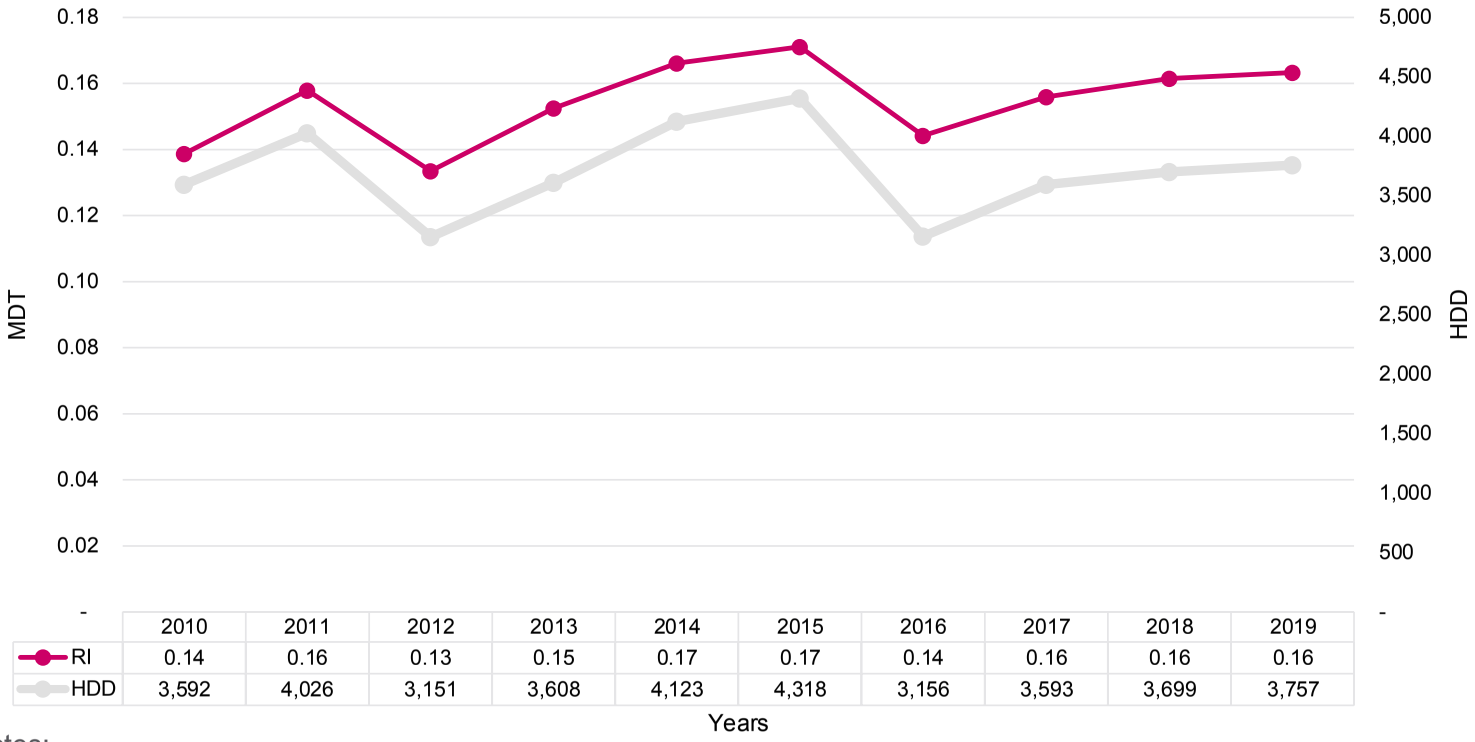
Average Customer Used Rate

(Compared to HDD)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	0.14	0.16	0.13	0.15	0.17	0.17	0.14	0.16	0.16	0.16
HDD	3,592	4,026	3,151	3,608	4,123	4,318	3,156	3,593	3,699	3,757

Notes:

- Customer Used = Sendout (MDT) / Total Customer
- Total Customer includes Residential and Commercial
- HDD: Heating Degree Days
- MDT: Million Dekatherm

Gas Distribution System Statistics

2019	Pipeline / Customer / Sendout Statistics									
Region	Miles of Main	Number of Services	Average Service Length (ft/svc)	Miles of Services	Total Distribution Pipeline	Residential Customers	Commercial and Industrial Customers	Total Customers	Sendout (MDT)	Sendout (MDT) / HDD
RI	3,195	194,550	61.6	2,270	5,464	247,714	25,260	272,974	44,552	12

Caution:

- This chart is for comparative-illustrative purposes only. The data is not audited & many assumption have been made.
- Inventory data is from the Annual DOT/PHMSA Distribution Reports.
- Customer data is from the Gas Customer Data base- Active Gas Accounts
- Sendout data is from the sendouts for the 12-month period used to calculate UFG for the DOT Reports.

Gas Distribution System Statistics

2019	Percentages of NGRID System					Asset Ratios			Gas Consumption Ratios			
Region	Percent of Main (%)	Percent of Service (%)	Percent of Distribution Pipeline (%)	Percent of Customers (%)	Percent of Sendout (%)	Service Density (svc / mile of main)	Meter Density (Customers / service)	Customer Density (Customers / Mile of Total Pipline)	Main Capacities Used (Sendout MDT / Mile of Main)	Service Capacities Used (Sendout MDT / Service)	Pipeline Capacities Used (Sendout MDT / Mile Of Pipe)	Customer Usage (Sendout MDT / Customer)
RI	9.0%	7.3%	8.2%	7.3%	6.3%	60.90	1.40	49.96	13.95	0.23	8.15	0.16

Gas Distribution System Statistics

2019	Leak Prone Pipe Inventory						Leak Prone Pipe Percentages		
Region	Leak Prone Main (miles)	Percent of Total Main (%)	Leak Prone Services	Percent of Total Services	Miles of Leak prone Services	Total Leak Prone Pipe (miles)	Percent of Total Leak Prone Main	Percent of Total Leak Prone Services	Percent of Total Leak Prone Pipe
RI	1,052	32.9%	44,257	22.7%	516	1,568	11.8%	9.1%	10.8%

Notes:
- Leak-Prone Main includes Cast Iron/Wrought Iron, Unprotected Steel , Aldyl-A and Other Material.
- Leak-Prone Service includes Cast Iron/Wrought Iron, Copper and Unprotected Steel.

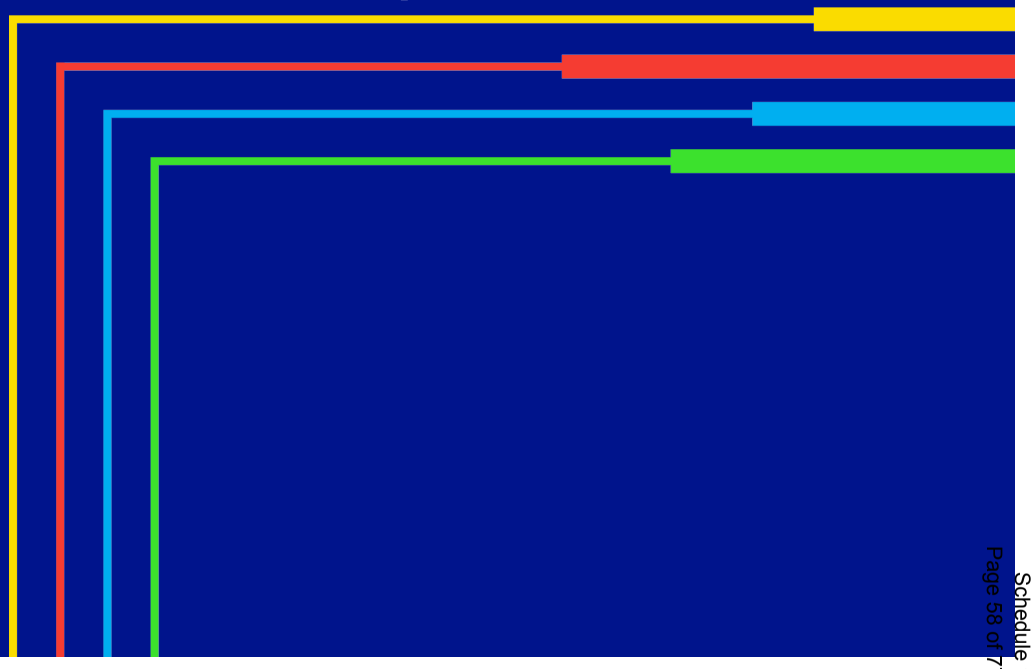
Gas Distribution System Statistics

2019	Leak Data				Leak Rate Ratios					
Region	Total Leak Receipts (Main & Service)	Total Leak Repairs (Main & Service)	Year End Workable Leak Backlog	Total Repairs and Workable Leaks	Total Leak Receipts per Mile Total Pipe	Total Leak Receipts per Mile Leak Prone Pipe	Total Leak Repairs Per Mile Total Pipe	Total Leak Repairs Per Mile Leak Prone Pipe	Repairs and Workables per Mile Total Pipe	Repairs and Workable per Mile Leak Prone Pipe
RI	2,107	1,520	164	1,684	0.39	1.34	0.28	0.97	0.31	1.07

Notes:
- Total Leak Receipts (Main & Service) data excludes Excavation Leaks.
- Total Leak Repairs (Main & Service) data includes Excavation Leaks.
- Total Leak Repairs (Main & Service) data excludes Above Ground Leaks.

12

System Integrity Report Analysis (Findings and Explanations)



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Analysis of Findings and Explanations

Rhode Island (RI)

- Total leak receipts have increased by 7.7% (153) in 2019 compared to 2018.
- MAIN – Leak repairs have decreased by 4.4% (45) in 2019 compared to 2018. Total Cast Iron Joint leaks comprise 74% of all main leaks.
- SERVICE – Leak repairs have decreased by 9% (51) compared to 2018. Corrosion leaks comprise 80% of all service leaks.
- TOTAL – Gas leak repairs decreased by 6% (96) in 2019.

Analysis of Findings and Explanations

- **Rhode Island has seen some irregularities in both Main and Service Inventories and Leak Inventories due to conversion from Smallworld and LMS to ArcGIS and Maximo.**

LPP Replacement Projection

		New England												
Region	**Program**	**CY13**	**CY14**	**CY15**	**CY16**	**CY17**	**CY18**	**CY19**	**CY20**	**CY21**	**CY22**	**CY23**	**CY24**	**CY25**	**CY26**
RI	All Programs	44.0	28.8	56.0	60.3	53.6	67.8	51.9	56	70	70	75	80	85	88
	Proactive	39.9	23.0	50.3	46.2	48.3	51.2	50.0	48	49	49	57	62	72	74

13 Meter Statistics

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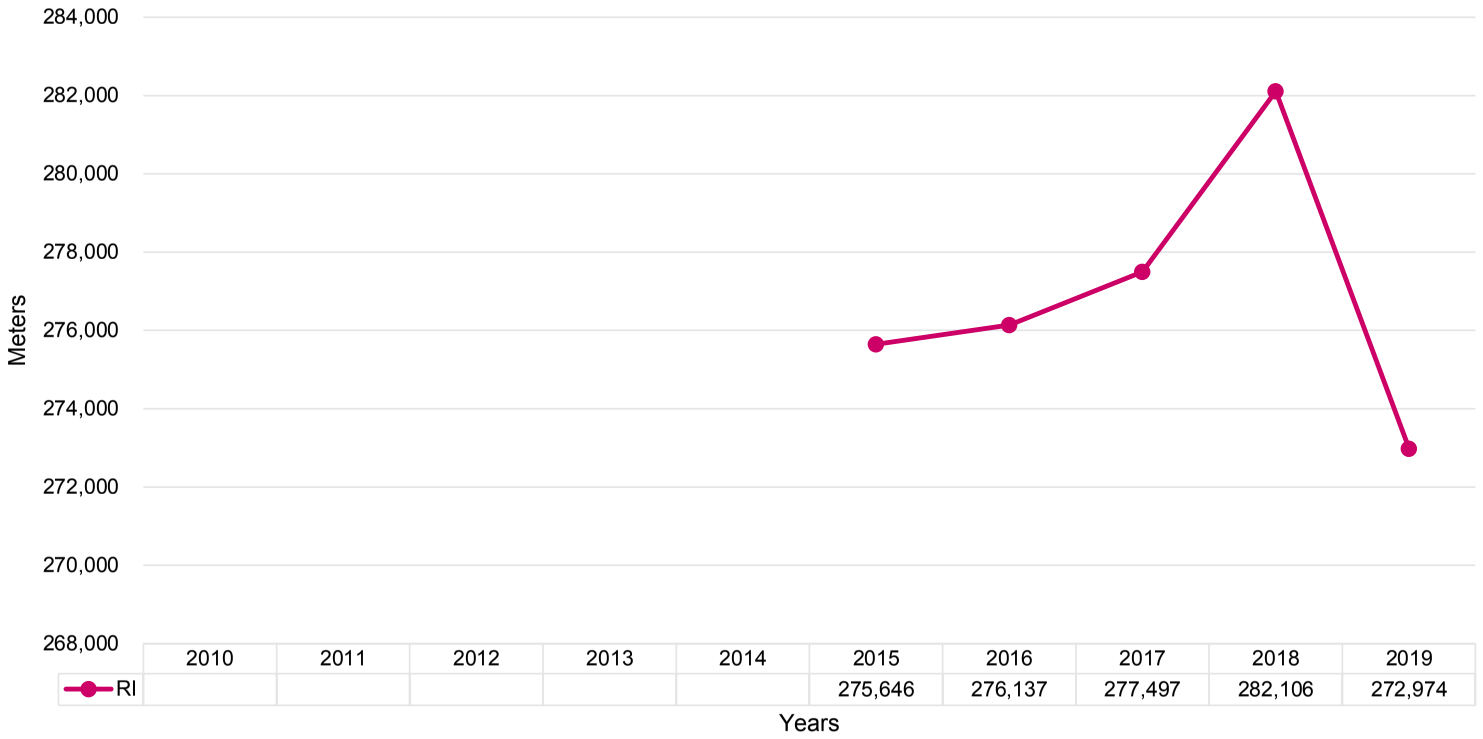
Meter Population By Region

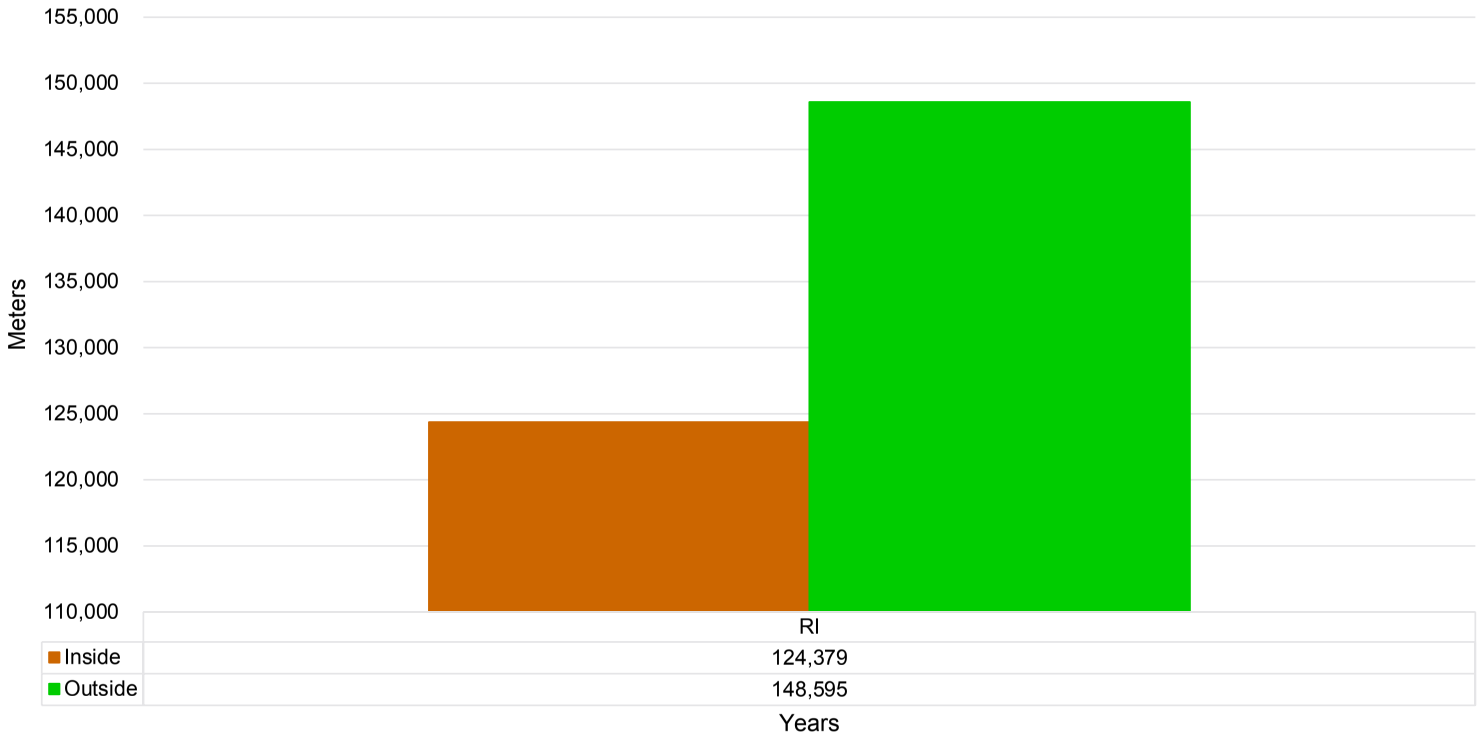
RI

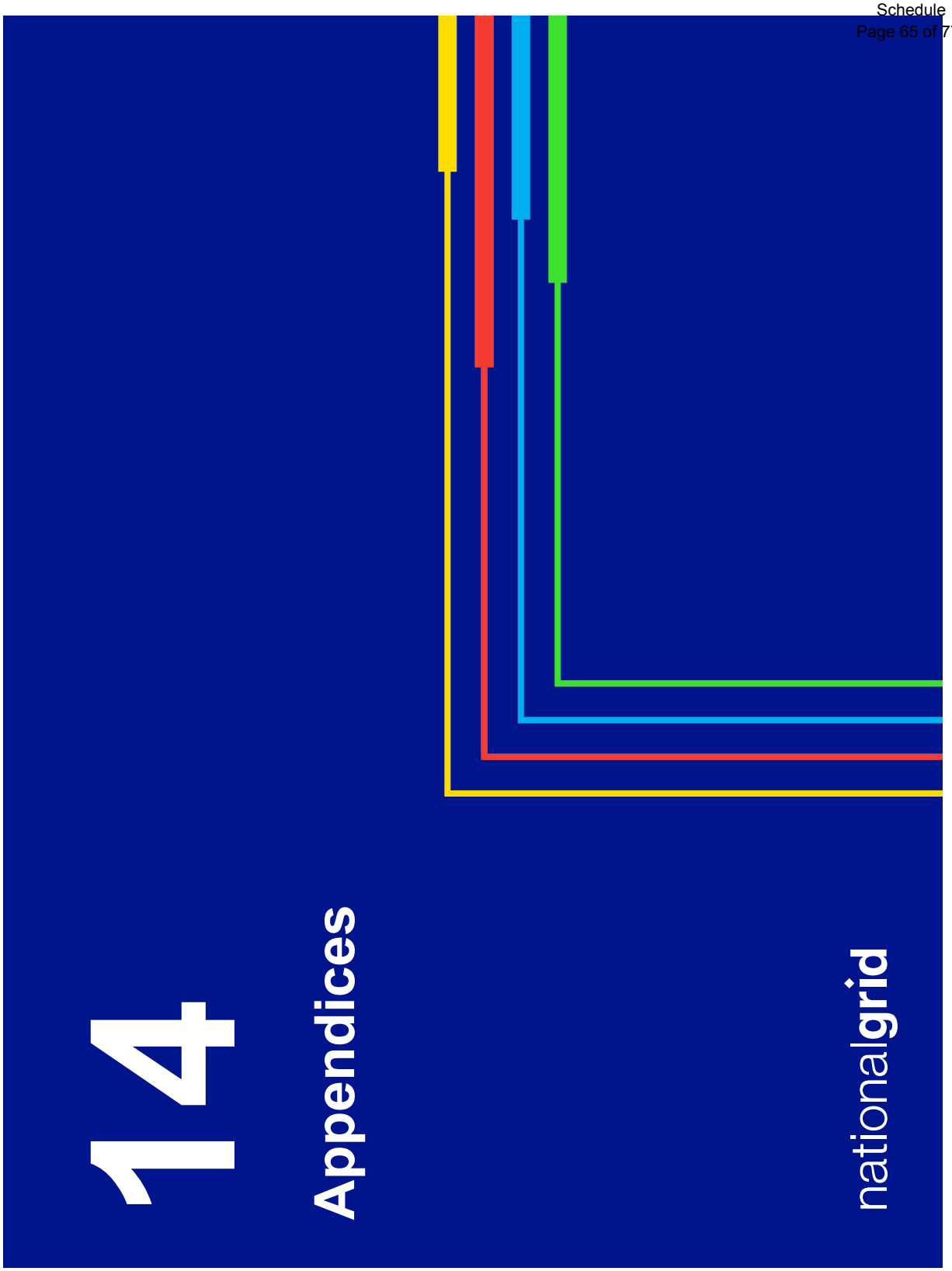


Meter Population By Region

Inside Vs Outside

RI

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Appendices
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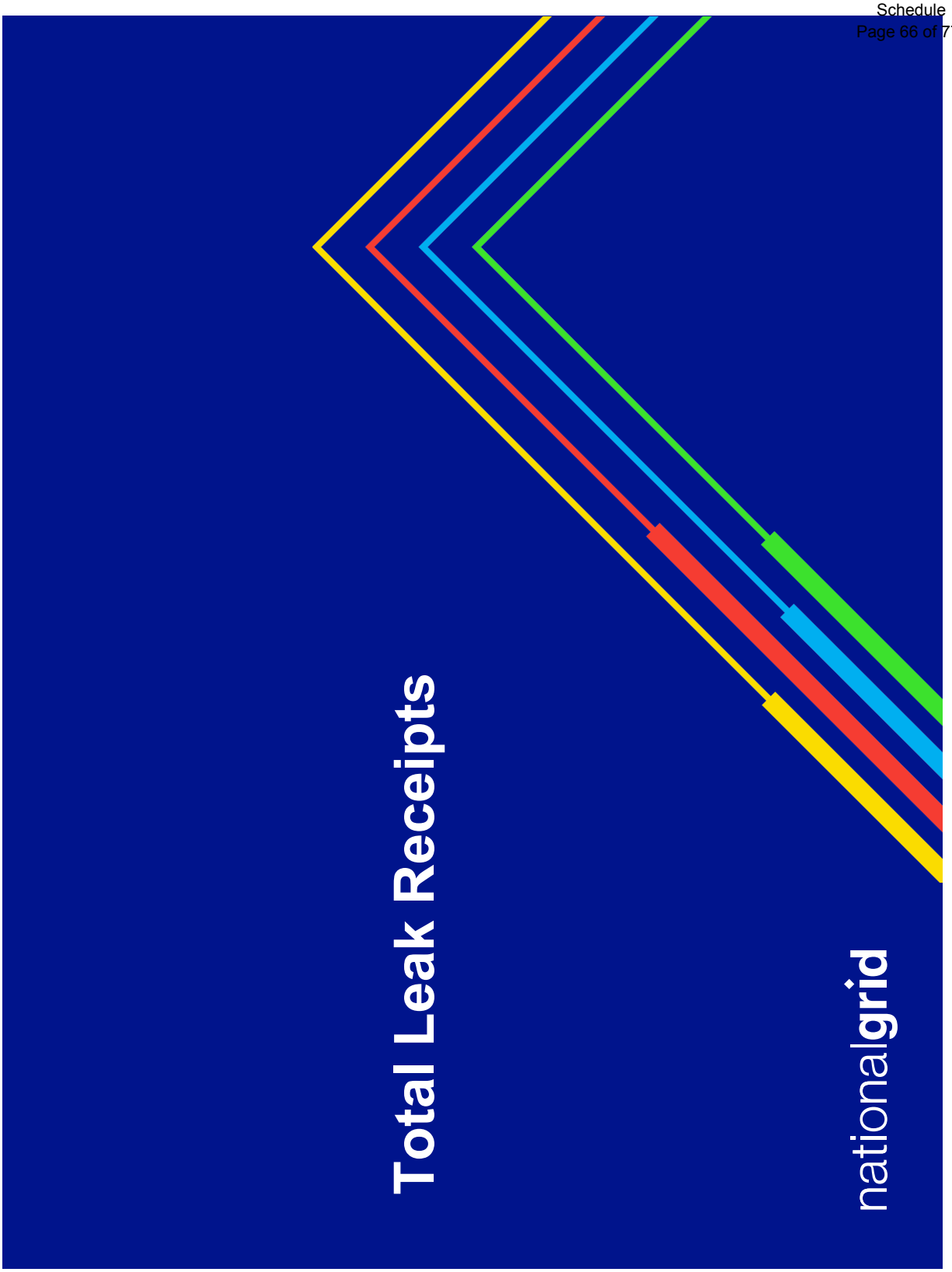
Total Leak Receipts
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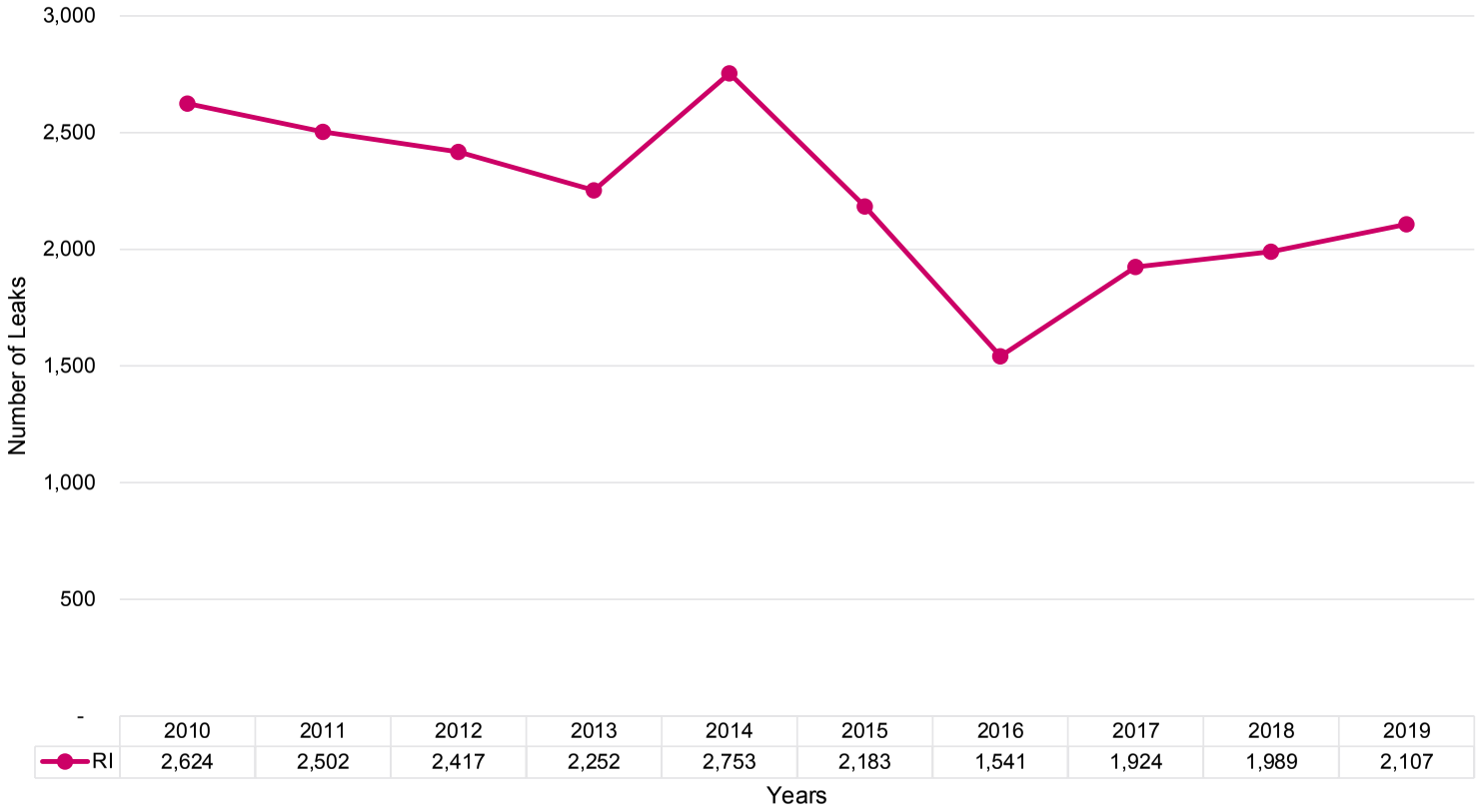
Leak Receipts By Region

(Excluding Damages)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
RI	2,624	2,502	2,417	2,252	2,753	2,183	1,541	1,924	1,989	2,107

2019 Material Cause Matrix (Main Leak Repairs)

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2019 Material Cause Matrix

(Main Leaks)

RI

RI Main Leaks	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	Other	Total
Plastic	1	-	8	1	1	3	-	8	**22**
Cast Iron	13	65	4	1	1	2	-	760	**846**
Recond. Cast Iron	-	-	-	-	-	-	-	-	**-**
Steel - Protected	21	1	-	1	2	-	1	18	**44**
Steel - Unprotected	52	-	-	-	-	2	-	14	**68**
Other	-	-	-	-	-	-	-	-	**-**
Ductile Iron	-	-	-	-	-	-	-	2	**2**
Total	87	66	12	3	4	7	1	802	982

2019 Material Cause Matrix (Service Leak Repairs)

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2019 Material Cause Matrix

(Service Leaks)

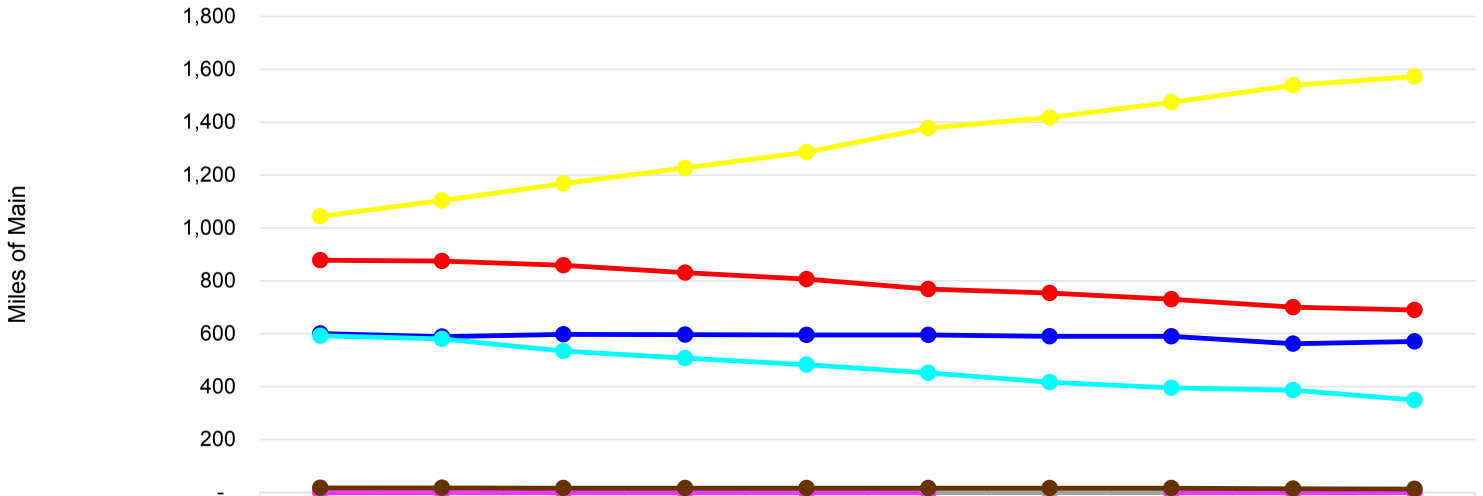
RI

RI Service Leaks	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	Other	Total
Plastic	17	-	62	2	2	25	2	13	**123**
Copper	1	-	-	-	-	-	-	-	**1**
Cast Iron	1	1	1	-	-	-	-	-	**3**
Steel - Unprotected	338	1	19	-	-	4	-	17	**379**
Steel - Protected	16	1	2	-	-	2	-	6	**27**
Other	1	-	-	1	-	-	1	2	**5**
Total	374	3	84	3	2	31	3	38	538

Main Inventory Trend By Material

(Count)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Plastic	1,044	1,103	1,168	1,227	1,287	1,378	1,417	1,476	1,539	1,572
Cast Iron	878	875	859	831	806	769	754	730	700	690
Recond. Cast Iron	-	-	-	-	-	-	-	-	-	-
Steel - Protected	601	588	597	596	595	595	590	590	562	570
Steel - Unprotected	592	580	534	508	483	452	416	395	386	349
Other	-	-	-	-	-	-		-	-	0
Ductile Iron	17	17	16	16	16	16	16	16	14	13

Years

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas Infrastructure, Safety, and Reliability Plan
Section 2: Gas Capital Investment Plan
2019 System Integrity Report
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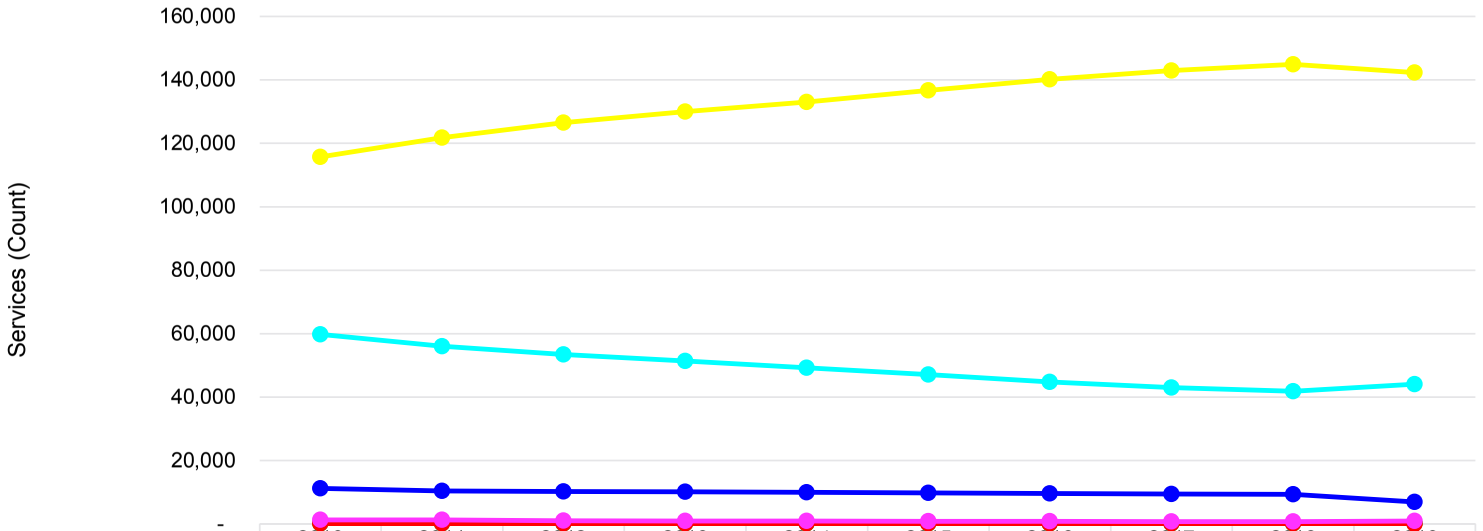
Service Inventory Trend By Material

(Count)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Plastic	115,718	121,770	126,474	130,002	133,024	136,700	140,206	142,956	144,929	142,321
Copper	171	209	208	207	205	202	201	192	189	132
Cast Iron	162	194	189	185	174	137	134	129	127	22
Steel - Protected	11,206	10,422	10,285	10,150	9,989	9,800	9,585	9,456	9,334	6,961
Steel - Unprotected	59,800	56,049	53,449	51,387	49,265	47,104	44,806	42,969	41,793	44,103
Other	1,348	1,322	1,085	1,000	958	900	854	803	775	1,011

Years

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas Infrastructure, Safety, and Reliability Plan
Section 2: Gas Capital Investment Plan
2019 System Integrity Report
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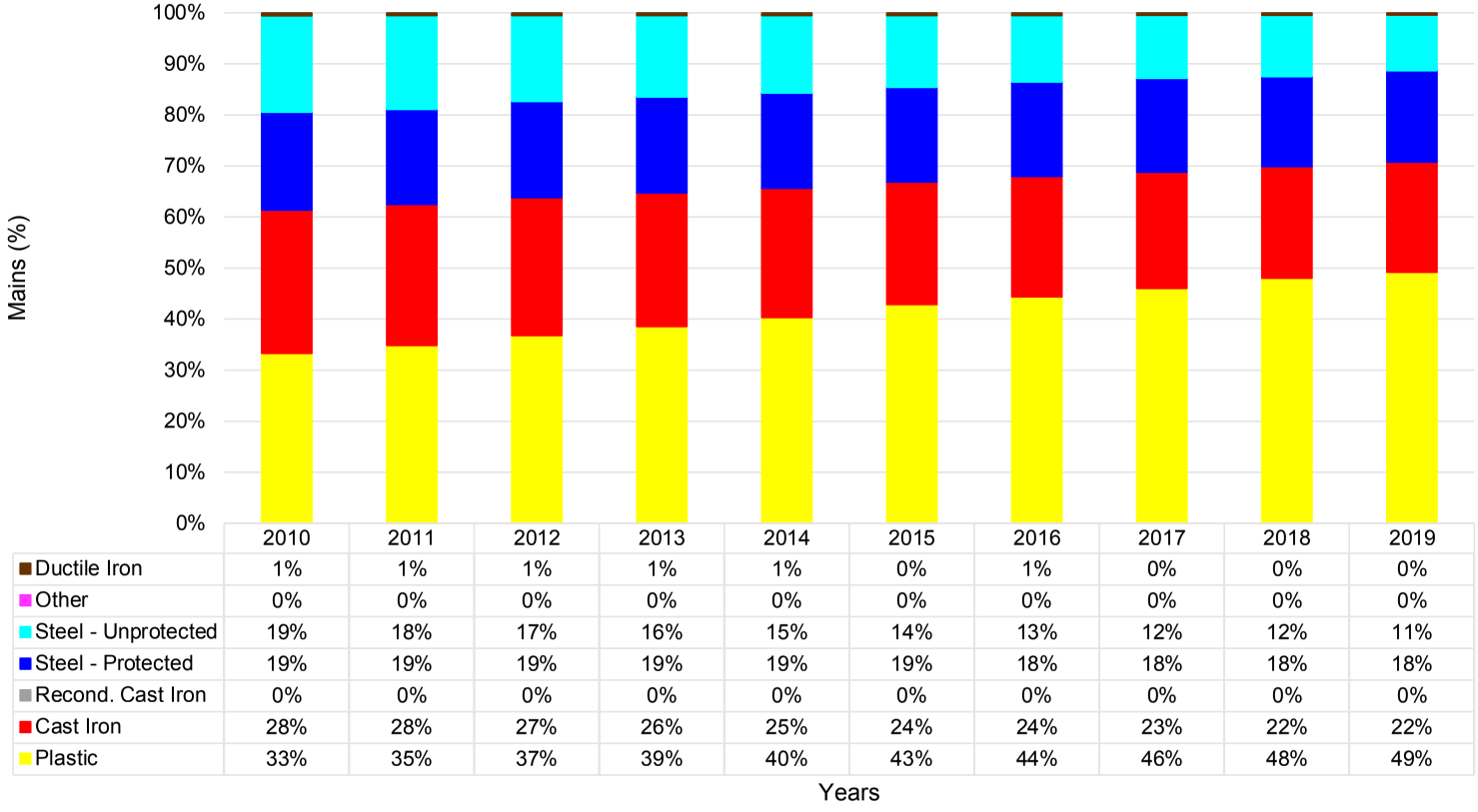
Main Inventory Analysis By Material

(Percent)

RI

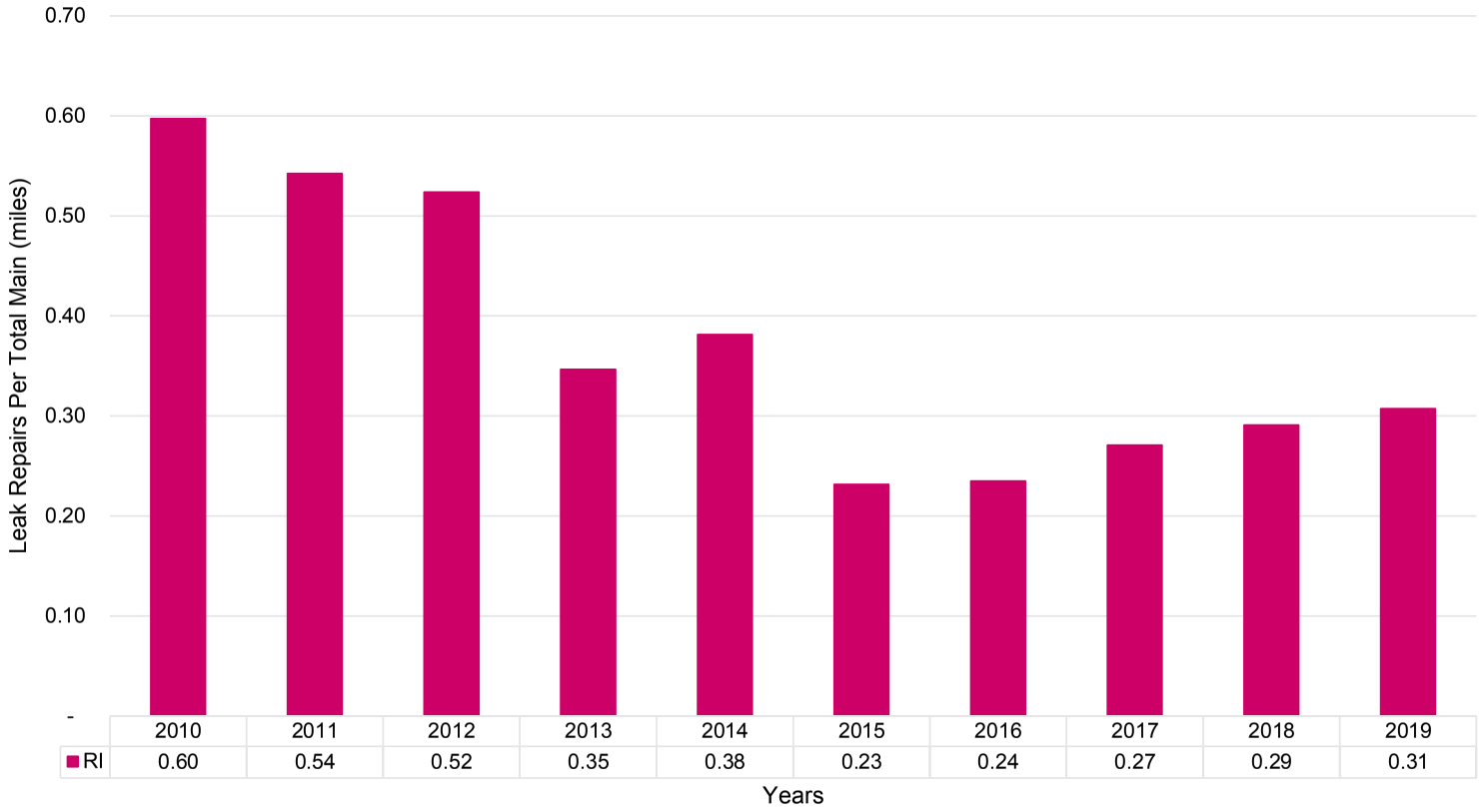


	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ductile Iron	1%	1%	1%	1%	1%	0%	1%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Steel - Unprotected	19%	18%	17%	16%	15%	14%	13%	12%	12%	11%
Steel - Protected	19%	19%	19%	19%	19%	19%	18%	18%	18%	18%
Recond. Cast Iron	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cast Iron	28%	28%	27%	26%	25%	24%	24%	23%	22%	22%
Plastic	33%	35%	37%	39%	40%	43%	44%	46%	48%	49%

Main Leak Rate By Region

(Including Damages)

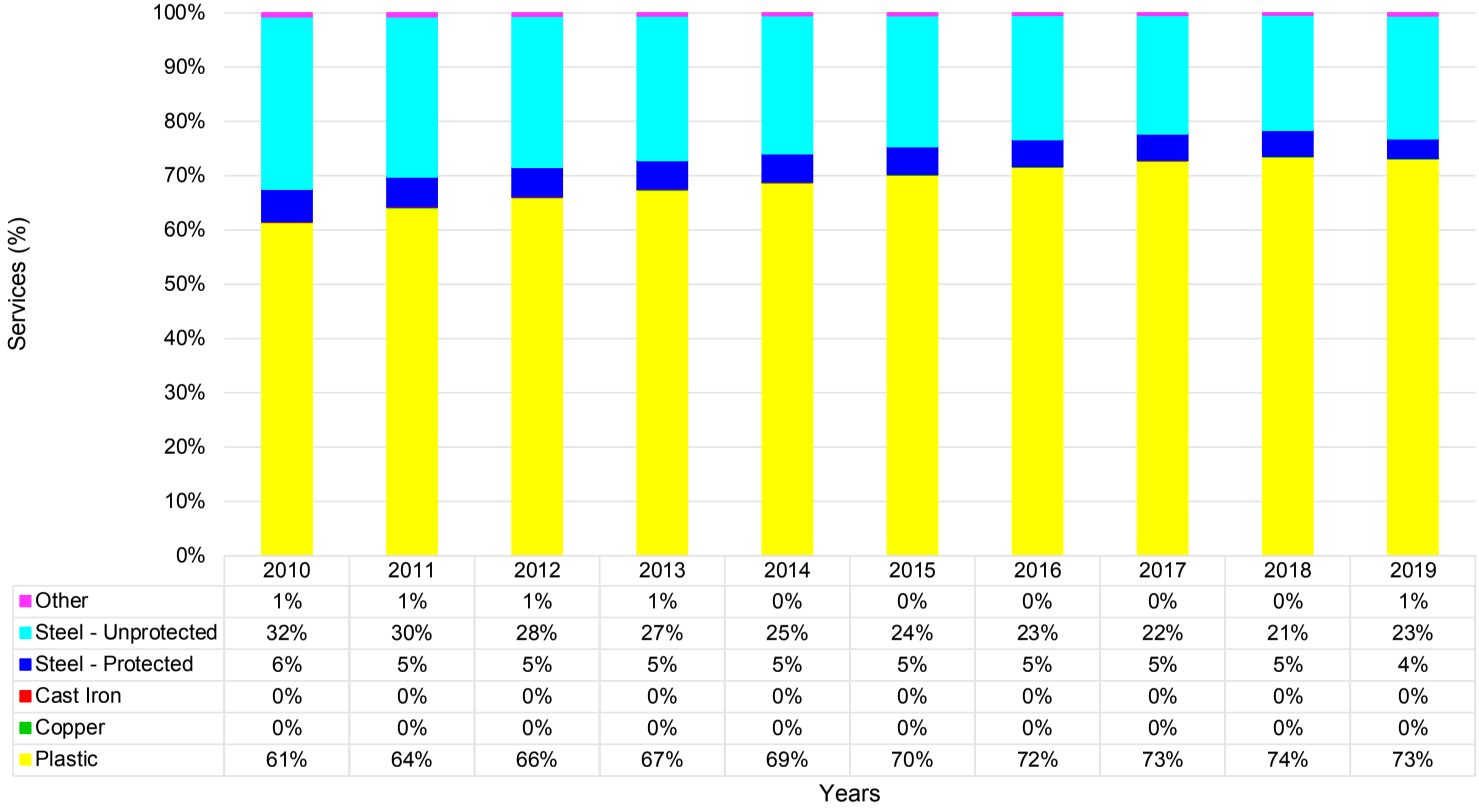
RI



Service Inventory Analysis By Material

(Percent)

RI



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Other	1%	1%	1%	1%	0%	0%	0%	0%	0%	1%
Steel - Unprotected	32%	30%	28%	27%	25%	24%	23%	22%	21%	23%
Steel - Protected	6%	5%	5%	5%	5%	5%	5%	5%	5%	4%
Cast Iron	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Copper	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Plastic	61%	64%	66%	67%	69%	70%	72%	73%	74%	73%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Section 3
Revenue Requirement

Section 3

Revenue Requirement
FY 2022 Proposal

Revenue Requirement
FY 2022 Proposal

The attached proposed revenue requirement calculation reflects the revenue requirement related to the Company's proposed investment in its Gas ISR Plan for the fiscal year ended March 31, 2022.

As shown on Attachment 1, Page 1, Column (b), the Company's FY 2022 Gas ISR Plan cumulative revenue requirement totals $39,525,779. The revenue requirement consists of the following elements: (1) the revenue requirement of $6,464,832 on FY 2022 proposed non-growth ISR capital investment of $175,462,000, as calculated on Attachment 1, Page 15; (2) the FY 2022 revenue requirement on incremental non-growth ISR capital investment for FY 2018 through FY 2021 totaling $24,799,518, as summarized on Attachment 1, Page 1; and (3) property tax expenses of $8,261,429, as shown on Attachment 1, Page 24, in accordance with the property tax recovery mechanism included in the Amended Settlement Agreement in Docket No. 4323 and continued under the Amended Settlement Agreement in Docket No. 4770. Importantly, the incremental capital investment for the FY 2022 ISR revenue requirement excludes capital investment embedded in base rates in Docket No. 4770 for FY 2018 through FY 2022. Incremental non-growth capital investment for this purpose is intended to represent the net change in net plant for non-growth infrastructure investments during the relevant fiscal year and is defined as capital additions plus cost of removal, less annual depreciation expense ultimately embedded in the Company's base rates (excluding depreciation expense attributable to general plant, which is not eligible for inclusion in the Gas ISR Plan).

For illustration purposes only, Attachment 1, Page 1, Column (c) provides the FY 2023 revenue requirement for the respective vintage year capital investments. Notably, these amounts will be trued up to actual investment activity after the conclusion of the fiscal year, with rate adjustments for the revenue requirement differences incorporated in future ISR filings.

Gas Infrastructure Investment

Incremental Capital Investment

As noted above, Attachment 1, Page 15 calculates the revenue requirement of incremental capital investment associated with the Company's FY 2022 Gas ISR Plan, that is, gas infrastructure investment (net of general plant) incremental to the amounts embedded in the Company's base distribution rates. The proposed capital investment, including cost of removal, was obtained from Table 1 in Section 2 of the Plan. The FY 2022 revenue requirement also includes the incremental capital investment associated with the Company's actual ISR capital investments from FY 2018 through FY 2020 and FY 2021 ISR Plan, excluding investments reflected in rate base in Docket No. 4770.

Attachment 1, Page 18 includes the calculation of the incremental FY 2018 through FY 2022 ISR capital investment and the related incremental cost of removal, incremental retirements, and incremental net operating loss ("NOL") position for the FY 2022 ISR revenue requirement. The calculations on Page 18 compare ISR-eligible capital investment, cost of removal, retirements, and net NOL position for FY 2018 through FY 2022 to the corresponding amounts reflected in rate base in Docket No. 4770.

Incremental Capital Investment Calculation

The ISR mechanism was established to allow the Company to recover outside of base rates its costs associated with plant additions incurred to enhance its gas infrastructure and improve the reliability and safety of its gas facilities. When new base rates are implemented, as was the case in Docket No. 4770, the Company no longer recovers costs for pre-rate case ISR plant additions through a separate ISR factor. Instead, such costs are recovered through base rates, and the underlying ISR plant additions become a component of base distribution rate base from that point forward. The forecast used to develop rate base in the distribution rate case included forecasted ISR plant additions for FY 2018, FY 2019, and five months of FY 2020 (using the level of plant additions approved in the FY 2018 Gas ISR Plan as a proxy for FY 2019 and FY 2020). The effective date of new rates in Docket No. 4770 was September 1, 2018. Therefore, recovery of the approved FY 2012 through FY 2017 ISR revenue requirement through the ISR factor ended on August 31, 2018, and all future recovery of those ISR plant additions will be through the Company's base rates.

As a result of the implementation of new base rates pursuant to Docket No. 4770 effective September 1, 2018, the cumulative amount of forecasted ISR plant additions were rolled into base rates effective at that date. The FY 2022 revenue requirement for incremental FY 2018 through FY 2022 ISR investments reflect a full year of revenue requirement because none of these incremental investments are included in the Company's rate base in Docket 4770. These incremental fiscal year vintage amounts must remain in the ISR recovery mechanism as provided for in the terms of the approved Amended Settlement Agreement in Docket No. 4770. The current filing is based on the actual ISR investment made during the Company's fiscal years

ended March 31, 2018, 2019, and 2020 and estimated ISR investment levels for the Company's fiscal years ended March 31, 2021 and 2022, and which are incremental to the levels reflected in rate base in the Company's last base rate case (Docket No. 4770).

Gas Infrastructure Revenue Requirement

The revenue requirement calculation on incremental gas infrastructure investment for vintage year FY 2022 is shown on Attachment 1, Page 15. The revenue requirement calculation incorporates the incremental Gas ISR Plan capital investment, cost of removal, and retirements, which are the basis for determining the two components of the revenue requirement: (1) the return on investment (i.e., average Plan rate base at the weighted average cost of capital); and (2) depreciation expense. The calculation on Page 15 begins with the determination of the depreciable net incremental capital that will be included in the Plan rate base. Because depreciation expense is affected by plant retirements, retirements have been deducted from the total allowed capital included in the Plan rate base in determining depreciation expense. Retirements, however, do not affect rate base, as both plant-in-service and the depreciation reserve are reduced by the installed value of the plant being retired and, therefore, have no impact on net plant. Incremental book depreciation expense on Line 12 is computed based on the net depreciable additions from Line 3 at the 2.99 percent composite depreciation rate approved in Docket No. 4770 and as shown on Line 9. The Company has assumed a half-year convention for the year of installation. Unlike retirements, cost of removal affects rate base, but not depreciation expense. Consequently, the cost of removal, as shown on Line 7, is combined with the incremental depreciable investment amount from Line 6 (vintage year ISR Plan

allowable capital additions, less non-general plant depreciation expense included in base distribution rates) to arrive at the incremental investment on Line 8 to be included in the rate base upon which the return component of the annual revenue requirement is calculated.

The rate base calculation incorporates net plant from Line 8 and accumulated depreciation on current vintage year investment and accumulated deferred tax reserves as shown on Lines 13 and 18, respectively. The deferred tax amount arising from the capital investment, as calculated on Lines 14 through 18, equals the difference between book depreciation and tax depreciation on the capital investment, multiplied by the effective tax rate, net of any tax net operating loss (NOL) or NOL utilization. The calculation of tax depreciation is described below. The average rate base before deferred tax proration adjustment is shown on Line 23. This amount then nets with the deferred tax proration adjustment on Line 24 to derive the average ISR rate base on Line 25. This average rate base is multiplied by the pre-tax rate of return approved by the PUC in Docket No. 4770, as shown on Line 26, to compute the return and tax portion of the incremental revenue requirement, as shown on Line 27. Incremental depreciation expense is added to this amount on Line 28. The sum of these amounts reflects the annual revenue requirement associated with the capital investment portion of the Plan on Line 29, which is carried forward to Page 1 as part of the total Plan revenue requirement. Similar revenue requirement calculations for the vintage FY 2018 through FY 2021 incremental Plan capital investment are shown on Pages 2, 5, 8 and 12, respectively. These capital investment revenue requirement amounts are added to the total property tax recovery on Page 1, Line 9 to derive the total FY 2022 Gas ISR Plan revenue requirement of $39,525,779, as shown on Page 1, Line 11.

Tax Depreciation Calculation

The tax depreciation calculation for FY 2022 is provided on Attachment 1, Page 16. The tax depreciation amount assumes that a portion of the capital investment, as shown on Lines 1 through 3, will be eligible for immediate deduction on the Company's fiscal year federal income tax return. This immediate deductibility is referred to as the capital repairs deduction.[1] In addition, plant additions not subject to the capital repairs deduction may be subject to bonus depreciation, as shown on Page 16, Lines 4 through 12 for FY 2022. During 2010, Congress passed the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 (the "2010 Tax Act"), which provided for an extension of bonus depreciation. Specifically, the 2010 Tax Act provided for the application of 100 percent bonus depreciation for investment constructed and placed into service after September 8, 2010 through December 31, 2011, and then 50 percent bonus depreciation for similar capital investment placed into service after December 31, 2011 through December 31, 2012. The 50 percent bonus depreciation rate was later extended through December 31, 2013, and then extended further through December 31, 2017 via the Protecting Americans From Tax Hikes ("PATH") Act. As noted in the Company's previous Gas ISR filings, the Tax Cuts and Jobs Act of 2017 (the "2017 Tax Act") went into

[1] In 2009, the Internal Revenue Service ("IRS") issued additional guidance, under Internal Revenue Code Section 162, related to certain work considered to be repair and maintenance expense, and eligible for immediate tax deduction for income tax purposes, but capitalized by the Company for book purposes. As a result of this additional guidance, the Company recorded a one-time tax expense for repair and maintenance costs in its FY 2009 federal income tax return filed on December 11, 2009 by National Grid Holdings, Inc. Since that time, the Company has taken a capital repairs deduction on all subsequent fiscal year tax returns. This has formed the basis for the capital repairs deduction assumed in the Company's revenue requirement. This tax deduction has the effect of increasing deferred taxes and lowering the revenue requirement that customers will pay under the capital investment reconciliation mechanism. The Company's federal income tax returns are subject to audit by the IRS. If it is determined in the future that the Company's position on its tax returns on this matter was incorrect, the Company will reflect any related IRS disallowances, plus any associated interest assessed by the IRS, in a subsequent reconciliation filing under the Gas ISR Plan.

effect on December 22, 2017. The 2017 Tax Act has many elements, but two particular aspects have an impact on the Gas ISR revenue requirement. The first is the reduction of the federal income tax rate from 35 percent to 21 percent commencing January 1, 2018. The second 2017 Tax Act element affecting the Gas ISR revenue requirement is changes to the bonus depreciation rules eliminating bonus depreciation for certain capital investments, including ISR-eligible investments, effective September 28, 2017. However, property acquired prior to September 28, 2017 and placed in service in tax years beginning after December 31, 2017 is allowed bonus depreciation. The Company's original interpretation of the 2017 Tax Act was that no deduction for bonus depreciation would be allowed in FY 2019 and FY 2020. However, based on current industry practice, the Company included a deduction for bonus depreciation on its FY 2019 tax return and estimates it will also include a bonus depreciation deduction in its FY 2020 return. The Company's FY 2022 revenue requirement includes the impact of the 2017 Tax Act on vintage FY 2018 through FY 2022 investment.

Finally, the remaining plant additions not deducted as bonus depreciation are then subject to the IRS Modified Accelerated Cost-Recovery System ("MACRS"), tax depreciation rate. Also, the IRS clarified its tangible property regulations, and, consequently, the Company submitted a §481(a) election with the IRS to apply for a change in accounting method regarding the treatment of gains or losses on asset retirements, which are characterized as partial retirements for tax purposes. On December 17, 2015, the Company submitted this election to the PUC, as required under IRS rules. The late partial disposition election was made to protect the Company's deduction of cost of removal ("COR"). Otherwise, the Company would have been required to make a §481(a) adjustment to reverse all historical COR deductions, resulting in a

substantial reduction in deferred tax liabilities. Because the Company made the election, COR remains 100% deductible. The vintage FY 2018 through FY 2022 tax depreciation calculations in this filing include an additional tax deduction related to this change in accounting issue. The total amount of tax depreciation equals the amount of capital repairs deduction plus the bonus depreciation deduction, MACRS depreciation, the tax loss on retirements, and cost of removal. These annual total tax depreciation amounts are carried forward to Line 10 of Page 15 and incorporated in the deferred tax calculation. Similar tax depreciation calculations are provided for FY 2018, FY 2019, FY 2020 and FY 2021 on Pages 3, 6, 9 and 13, respectively.

The Company continues to monitor for new guidance pertaining to the 2017 Tax Act and any resulting impacts to its pending rate requests. The Company will file its FY 2020 tax return in December 2020. At that time, the Company will evaluate whether any revisions are required to its calculation of accumulated deferred income taxes included in rate base in the FY 2020, FY 2021, and FY 2022 vintage revenue requirement calculations in this docket. If so, the Company will supplement this filing with a revised FY 2022 revenue requirement calculation.

Federal Net Operating Loss

Tax NOLs are generated when the Company has tax deductions on its income tax returns that exceed its taxable income. Tax NOLs do not mean that the Company is suffering losses in its financial statements. Instead, the Company's tax NOLs are the result of the significant tax deductions that have been generated in recent years by the bonus depreciation and capital repairs tax deductions. In addition to first-year bonus tax depreciation, the Internal Revenue Code allows the Company to classify certain costs as repairs expense, which the Company takes as an

immediate deduction on its income tax return. However, such costs are recorded as plant investment on the Company's books. These significant bonus depreciation and capital repairs tax deductions have exceeded the amount of taxable income reported in tax returns filed for FY 2009 to FY 2018, with the exception of FY 2011 and FY 2017. NOLs are recorded as non-cash assets on the Company's balance sheet and represent a benefit that the Company and customers will receive when the Company is able to realize actual cash savings and applies the NOLs against taxable income in the future.

As a result of the 2017 Tax Act, the Company originally did not expect to generate new NOLs in FY 2018. Instead, the Company expected that it would begin to utilize prior years' NOLs in FY 2019. Therefore, estimated NOL utilization is included in base rates in Docket No. 4770. The calculation of accumulated deferred income taxes in this filing includes the incremental amount of forecasted NOL utilization in FY 2022, which is the fiscal year the benefit would be reflected in the Company's federal income tax return. The Company revised its estimated NOL utilization for FY 2021 and FY 2022, which have been reflected in this FY 2022 revenue requirement calculation.

NOL utilization is an increase to the Company's accumulated deferred income taxes. Accumulated deferred income taxes, which equal the difference between book depreciation and tax depreciation on ISR capital investment, multiplied by the effective tax rate, are included as a credit or reduction in the calculation of rate base.

Accumulated Deferred Income Tax Proration Adjustment

The Gas ISR Plan includes a proration calculation with respect to the accumulated deferred income tax ("ADIT") balance included in rate base. The calculation fulfills requirements set out under IRS Regulation 26 C.F.R. §1.167(l)-1(h)(6). This regulation sets forth normalization requirements for regulated entities so that the benefits of accelerated depreciation are not passed back to customers too quickly. The penalty of a normalization violation is the loss of all federal income tax deductions for accelerated depreciation, including bonus depreciation. Any regulatory filing that includes capital expenditures, book depreciation expense, and ADIT related to those capital expenditures must follow the normalization requirements. When the regulatory filing is based on a future period, the deferred tax must be prorated to reflect the period of time that the ADIT balances are in rate base. This filing includes FY 2018, FY 2019, FY 2020, FY 2021 and FY 2022 proration calculations at Attachment 1, on Pages 4, 7, 10, 14 and 17, respectively, the effects of which are included in each year's respective revenue requirement.

Property Tax Recovery Adjustment

The Property Tax Recovery Adjustment is set forth on Attachment 1, Pages 23 and 24. The method used to recover property tax expense under the Gas ISR Plan was modified by the Amended Settlement Agreement in Docket No. 4323 and continued by the Amended Settlement Agreement in Docket No. 4770. In determining the base on which property tax expense is calculated for purposes of the Plan revenue requirement, the Company includes an amount equal to the base rate allowance for depreciation expense and depreciation expense on incremental

Plan plant additions in the accumulated reserve for depreciation that is deducted from plant additions. The Property Tax Recovery Adjustment also includes the impact of any changes in the Company's effective property tax rates on base rate embedded property, plus cumulative Plan net additions. Property tax impacts associated with non-ISR plant additions are excluded from the property tax recovery formula. This provision of the Amended Settlement Agreement in Docket No. 4323 took effect for Plan property tax recovery periods subsequent to the end of the rate year for that docket, or January 31, 2014, and has been continued by the Amended Settlement Agreement in Docket No. 4770. The FY 2022 revenue requirement includes $8,261,429 for the Net Property Tax Recovery Adjustment.

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Annual Revenue Requirement Summary

Line No.		Approved Fiscal Year 2021 (a)	Fiscal Year 2022 (b)	Fiscal Year 2023 (c)
	Operation and Maintenance Expenses			
1	Forecasted Gas Operation and Maintenance Expense	$0	$0	$0
	Capital Investment:			
2	Actual Revenue Requirement on FY 2018 Incremental Capital Included in ISR Rate Base	$676,445	$690,881	$705,341
3	Actual Revenue Requirement on FY 2019 Incremental Capital Included in ISR Rate Base	$292,352	$291,583	$290,803
4	Actual Revenue Requirement on FY 2020 Incremental Capital Included in ISR Rate Base	$9,556,813	$8,718,700	$8,490,363
5	Forecasted Revenue Requirement on FY 2021 Capital Included in ISR Rate Base	$7,524,753	$15,098,354	$14,755,678
6	Forecasted Revenue Requirement on FY 2022 Capital Included in ISR Rate Base		$6,464,832	$12,755,437
7	Total Capital Investment Revenue Requirement	$18,050,363	$31,264,350	$36,997,622
8	FY 2021 Property Tax Recovery Adjustment	$4,711,167		
9	FY 2022 Property Tax Recovery Adjustment		$8,261,429	
10	**Total Capital Investment Component of Revenue Requirement**	**$22,761,529**	**$39,525,779**	**$36,997,622**
11	**Total Fiscal Year Revenue Requirement**	**$22,761,529**	**$39,525,779**	**$36,997,622**
12	**Incremental Fiscal Year Rate Adjustment**		**$16,764,250**	

Column Notes:
(a) RIPUC Docket No. 4996, Revised Section 3, Attachment 1R, Page 1 of 22, Column (b)

Line Notes for Columns (b) & (c) only:
2 Page 2 of 25, Line 30, Col. (e) and Col. (f)
3 Page 5 of 25, Line 29, Col. (d) and Col. (e)
4 Page 8 of 25, Line 29, Col. (c) and Col. (d)
5 Page 12 of 25, Line 29, Col. (b) and Col. (c)
6 Page 15 of 25, Line 29, Col. (a) and Col. (b)
7 Sum of Lines 2 through Line 6
9 Page 24 of 25, Line 55, Column (k) × 1,000
10 Sum of Line 7 through Line 9
11 Line 1 + Line 10
12 Line 11 Col (b) - Line 11 Col (a)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
FY 2022 Revenue Requirement FY 2018 Actual Incremental Gas Capital Investment

Line No.				Fiscal Year 2018 (a)	Fiscal Year 2019 (b)	Fiscal Year 2020 (c)	Fiscal Year 2021 (d)	Fiscal Year 2022 (e)	Fiscal Year 2023 (f)
	Depreciable Net Capital Included in ISR Rate Base								
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 18 of 25 , Line 3 ,Col (a)		$4,632,718	$0	$0	$0	$0	$0
2	Retirements	Page 18 of 25 , Line 9 ,Col (a)		$12,059,428	$0	$0	$0	$0	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		($7,426,710)	($7,426,710)	($7,426,710)	($7,426,710)	($7,426,710)	($7,426,710)
	Change in Net Capital Included in ISR Rate Base								
4	Capital Included in ISR Rate Base	Line 1		$4,632,718	$0	$0	$0	$0	$0
5	Depreciation Expense			$0	$0	$0	$0	$0	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$4,632,718	$4,632,718	$4,632,718	$4,632,718	$4,632,718	$4,632,718
7	Cost of Removal	Page 18 of 25 , Line 6 ,Col (a)		$1,941,168	$1,941,168	$1,941,168	$1,941,168	$1,941,168	$1,941,168
8	**Net Plant Amount**	Year 1 = Line 6 + Line 7, Then = Prior Year		**$6,573,886**	**$6,573,886**	**$6,573,886**	**$6,573,886**	**$6,573,886**	**$6,573,886**
	Deferred Tax Calculation:								
9	Composite Book Depreciation Rate		1/	3.38%	3.15%	2.99%	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1=Page 3 of 25, Line 24, Col (a); then = Page 3 of 25, Col (d)		$7,820,728	$21,720	$20,089	$18,585	$17,189	$15,901
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$7,820,728	$7,842,448	$7,862,538	$7,881,123	$7,898,312	$7,914,213
12	Book Depreciation	Year 1= Line 3 × Line 9 × 50%; then = Line 3 × Line 9		($125,511)	($234,127)	($222,059)	($222,059)	($222,059)	($222,059)
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		($125,511)	($359,638)	($581,697)	($803,756)	($1,025,814)	($1,247,873)
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$7,946,239	$8,202,087	$8,444,235	$8,684,878	$8,924,126	$9,162,086
15	Effective Tax Rate		2/	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$1,668,710	$1,722,438	$1,773,289	$1,823,824	$1,874,066	$1,924,038
17	Less: FY 2018 Federal NOL	-Page 19 of 25, Line 11, Col (f)		($6,051,855)	($6,051,855)	($6,051,855)	($6,051,855)	($6,051,855)	($6,051,855)
18	Excess Deferred Tax	(Line 14 × 31.55% blended FY18 tax rate) - Line 16; then = Prior Year Line 18		$838,328	$838,328	$838,328	$838,328	$838,328	$838,328
19	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17 + Line 18		($3,544,817)	($3,491,089)	($3,440,238)	($3,389,703)	($3,339,461)	($3,289,489)
	ISR Rate Base Calculation:								
20	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$6,573,886	$6,573,886	$6,573,886	$6,573,886	$6,573,886	$6,573,886
21	Accumulated Depreciation	- Line 13		$125,511	$359,638	$581,697	$803,756	$1,025,814	$1,247,873
22	Deferred Tax Reserve	- Line 19		$3,544,817	$3,491,089	$3,440,238	$3,389,703	$3,339,461	$3,289,489
23	Year End Rate Base before Deferred Tax Proration	Sum of Lines 20 through 22		$10,244,214	$10,424,613	$10,595,821	$10,767,344	$10,939,161	$11,111,248
	Revenue Requirement Calculation:								
24	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = 0; then Average of (Prior + Current Year Line 23)						$10,853,253	$11,025,204
25	Proration Adjustment	Year 1 and 2 =0; then = Page 4 of 25, Line 41, Col (j) and Col. (k)						$2,157	$2,145
26	Average ISR Rate Base after Deferred Tax Proration	Line 24 + Line 25						$10,855,409	$11,027,349
27	Pre-Tax ROR	Page 25 of 25, Line 30, Column (e)						8.41%	8.41%
28	Return and Taxes	Line 26 × Line 27						$912,940	$927,400
29	Book Depreciation	Year 1 = N/A; then = Line 12						($222,059)	($222,059)
30	**Annual Revenue Requirement**	Sum of Lines 28 through 29		**N/A**	**N/A**	**N/A**	**N/A**	**$690,881**	**$705,341**

1/ 3.38%, Composite Book Depreciation Rate approved per RIPUC Docket No. 4323, in effect until Aug 31, 2018
2.99%, Composite Book Depreciation Rate approved per RIPUC Docket No. 4770, effective on Sep 1, 2018
FY 19 Composite Book Depreciation Rate = 3.38% × 5 /12 + 2.99% × 7 / 12
2/ The Federal Income Tax rate changed from 35% to 21% on January 1, 2018 per the Tax Cuts and Jobs Act of 2017

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2018 Incremental Capital Investment

Line No.				Fiscal Year 2018 (a)
	Capital Repairs Deduction			
1	Plant Additions	Page 2 of 25, Line 1		$4,632,718
2	Capital Repairs Deduction Rate	Per Tax Department	1/	85.43%
3	Capital Repairs Deduction	Line 1 × Line 2		$3,957,731
4	Bonus Depreciation			
5	Plant Additions	Line 1		$4,632,718
6	Less Capital Repairs Deduction	Line 3		$3,957,731
7	Plant Additions Net of Capital Repairs Deduction	Line 5 - Line 6		$674,987
8	Percent of Plant Eligible for Bonus Depreciation	Per Tax Department		100.00%
9	Plant Eligible for Bonus Depreciation	Line 7 × Line 8		$674,987
10	Bonus depreciation 100% category	100% × 15.86%	2/	15.86%
11	Bonus depreciation 50% category	50% × 58.05%	2/	29.03%
12	Bonus depreciation 40% category	40% × 26.35%	2/	10.54%
13	Bonus Depreciation Rate (October 2017 - March 2018)	1 × 50% × 0%	2/	0.00%
14	Total Bonus Depreciation Rate	Line 10 + Line 11 + Line 12 + Line 13		55.43%
15	Bonus Depreciation	Line 9 × Line 14		$374,112
	Remaining Tax Depreciation			
16	Plant Additions	Line 1		$4,632,718
17	Less Capital Repairs Deduction	Line 3		$3,957,731
18	Less Bonus Depreciation	Line 15		$374,112
19	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 16 - Line 17 - Line 18		$300,875
20	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
21	Remaining Tax Depreciation	Line 19 × Line 20		$11,283
22	FY18 tax (gain)/loss on retirements	Per Tax Department	3/	$1,536,434
23	Cost of Removal	Page 2 of 25, Line 7		$1,941,168
24	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 15, 21, 22 & 23		$7,820,728

20 Year MACRS Depreciation

MACRS basis: $300,875

Fiscal Year	(b)	(c) Annual	(d) Cumulative
2018	3.75%	$11,283	$7,820,728
2019	7.22%	$21,720	$7,842,448
2020	6.68%	$20,089	$7,862,538
2021	6.18%	$18,585	$7,881,123
2022	5.71%	$17,189	$7,898,312
2023	5.29%	$15,901	$7,914,213
2024	4.89%	$14,707	$7,928,920
2025	4.52%	$13,606	$7,942,525
2026	4.46%	$13,425	$7,955,950
2027	4.46%	$13,422	$7,969,372
2028	4.46%	$13,425	$7,982,797
2029	4.46%	$13,422	$7,996,219
2030	4.46%	$13,425	$8,009,644
2031	4.46%	$13,422	$8,023,066
2032	4.46%	$13,425	$8,036,491
2033	4.46%	$13,422	$8,049,913
2034	4.46%	$13,425	$8,063,338
2035	4.46%	$13,422	$8,076,761
2036	4.46%	$13,425	$8,090,186
2037	4.46%	$13,422	$8,103,608
2038	2.23%	$6,713	$8,110,320
	100.00%	$300,875	

1/ Capital Repairs percentage is based on the actual results of the FY 2018 tax return.
2/ Percent of Plant Eligible for Bonus Depreciation is the actual result of FY2018 tax return
3/ Actual Loss for FY2018

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2018 Incremental Capital Investment

Line No.			(a) FY22	(b) FY23
	Deferred Tax Subject to Proration			
1	Book Depreciation	Page 2 of 25 , Line 12 ,Col (e) and Col. (f)	($222,059)	($222,059)
2	Bonus Depreciation		$0	$0
3	Remaining MACRS Tax Depreciation	Page 3 of 25 , Col (d)	($17,189)	($15,901)
4	FY18 tax (gain)/loss on retirements		$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	($239,248)	($237,960)
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	($50,242)	($49,972)
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction			
9	Cost of Removal			
10	Book/Tax Depreciation Timing Difference at 3/31/2017			
11	Cumulative Book / Tax Timer	Line 8 + Line 9 + Line 10		
12	Effective Tax Rate			
13	Deferred Tax Reserve	Line 11 × Line 12		
14	Total Deferred Tax Reserve	Line 7 + Line 13	($50,242)	($49,972)
15	Net Operating Loss		$0	$0
16	Net Deferred Tax Reserve	Line 14 + Line 15	($50,242)	($49,972)
	Allocation of FY 2018 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	($239,248)	($237,960)
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	($239,248)	($237,960)
20	Total FY 2018 Federal NOL		$0	$0
21	Allocated FY 2018 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20	$0	$0
22	Allocated FY 2018 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20	$0	$0
23	Effective Tax Rate		21%	21%
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23	$0	$0
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	($50,242)	($49,972)

	Proration Calculation	(h) Number of Days in Month	(i) Proration Percentage	(j) FY22	(k) FY23
26	April	30	91.78%	($3,843)	($3,822)
27	May	31	83.29%	($3,487)	($3,468)
28	June	30	75.07%	($3,143)	($3,126)
29	July	31	66.58%	($2,787)	($2,772)
30	August	31	58.08%	($2,432)	($2,419)
31	September	30	49.86%	($2,088)	($2,076)
32	October	31	41.37%	($1,732)	($1,723)
33	November	30	33.15%	($1,388)	($1,380)
34	December	31	24.66%	($1,032)	($1,027)
35	January	31	16.16%	($677)	($673)
36	February	28	8.49%	($356)	($354)
37	March	31	0.00%	$0	$0
38	Total	365		($22,964)	($22,841)
39	Deferred Tax Without Proration	Line 25		($50,242)	($49,972)
40	Average Deferred Tax without Proration	Line 39 × 50%		($25,121)	($24,986)
41	Proration Adjustment	Line 38 - Line 40		$2,157	$2,145

Column Notes:

(i)	Sum of remaining days in the year (Col (h)) ÷ 365
(j) & (k)	Current Year Line 25 ÷ 12 × Current Month Col (i)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
FY 2022 Revenue Requirement FY 2019 Actual Incremental Gas Capital Investment

Line No.				Fiscal Year 2019 (a)	Fiscal Year 2020 (b)	Fiscal Year 2021 (c)	Fiscal Year 2022 (d)	Fiscal Year 2023 (e)
	Depreciable Net Capital Included in ISR Rate Base							
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 18 of 25 , Line 3 ,Col (b)		($914,000)	$0	$0	$0	$0
2	Retirements	Page 18 of 25 , Line 9 ,Col (b)		($1,368,021)	$0	$0	$0	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$454,021	$454,021	$454,021	$454,021	$454,021
	Change in Net Capital Included in ISR Rate Base							
4	Capital Included in ISR Rate Base	Line 1		($914,000)	$0	$0	$0	$0
5	Depreciation Expense			$0	$0	$0	$0	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		($914,000)	($914,000)	($914,000)	($914,000)	($914,000)
7	Cost of Removal	Page 18 of 25 , Line 6 ,Col (b)		$5,626,564	$5,626,564	$5,626,564	$5,626,564	$5,626,564
8	**Net Plant Amount**	**Line 1 = Line 6+7; Then = Prior Year**		**$4,712,564**	**$4,712,564**	**$4,712,564**	**$4,712,564**	**$4,712,564**
	Deferred Tax Calculation:							
9	Composite Book Depreciation Rate	As Approved in RIPUC Docket No. 4323 & 4770	1/	3.15%	2.99%	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1 = Page 6 of 25, Line 21, Col (a); then = Page 6 of 25, Col (d)		$5,200,130	($8,390)	($7,760)	($7,179)	($6,640)
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$5,200,130	$5,191,739	$5,183,979	$5,176,799	$5,170,159
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50%; then = Line 3 × Line 9		$7,157	$13,575	$13,575	$13,575	$13,575
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$7,157	$20,732	$34,307	$47,883	$61,458
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$5,192,973	$5,171,007	$5,149,671	$5,128,917	$5,108,701
15	Effective Tax Rate			21.00%	21.00%	21.00%	21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$1,090,524	$1,085,911	$1,081,431	$1,077,072	$1,072,827
17	Add: FY 2019 Federal NOL incremental utilization	Page 18 of 25, Line 12, Col (b)		$286,350	$286,350	$286,350	$286,350	$286,350
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$1,376,874	$1,372,261	$1,367,781	$1,363,422	$1,359,177
	ISR Rate Base Calculation:							
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$4,712,564	$4,712,564	$4,712,564	$4,712,564	$4,712,564
20	Accumulated Depreciation	- Line 13		($7,157)	($20,732)	($34,307)	($47,883)	($61,458)
21	Deferred Tax Reserve	- Line 18		($1,376,874)	($1,372,261)	($1,367,781)	($1,363,422)	($1,359,177)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$3,328,533	$3,319,570	$3,310,475	$3,301,259	$3,291,929
	Revenue Requirement Calculation:							
23	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = 0; then Average of (Prior + Current Year Line 22)					$3,305,867	$3,296,594
24	Proration Adjustment	Year 1 and 2 =0; then = Page 7 of 25, Line 41, Col (j) and Col. (k)					($187)	($182)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24					$3,305,680	$3,296,412
26	Pre-Tax ROR	Page 25 of 25, Line 30, Column (e)					8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26					$278,008	$277,228
28	Book Depreciation	Line 12					$13,575	$13,575
29	**Annual Revenue Requirement**	**Sum of Lines 27 through 28**		**N/A**	**N/A**	**N/A**	**$291,583**	**$290,803**

1/ 3.38%, Composite Book Depreciation Rate approved per RIPUC Docket No. 4323, in effect until Aug 31, 2018
2.99%, Composite Book Depreciation Rate approved per RIPUC Docket No. 4770, effective on Sep 1, 2018
FY 19 Composite Book Depreciation Rate = 3.38% × 5 /12 + 2.99% × 7 / 12

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2019 Incremental Capital Investment

Line No.				Fiscal Year 2019 (a)
	Capital Repairs Deduction			
1	Plant Additions	Page 5 of 25, Line 1		($914,000)
2	Capital Repairs Deduction Rate	Per Tax Department	1/	85.18%
3	Capital Repairs Deduction	Line 1 × Line 2		($778,545)
	Bonus Depreciation			
4	Plant Additions	Line 1		($914,000)
5	Less Capital Repairs Deduction	Line 3		($778,545)
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		($135,455)
7	Percent of Plant Eligible for Bonus Depreciation	Per Tax Department		100.00%
8	Plant Eligible for Bonus Depreciation	Line 6 × Line 7		($135,455)
9	Bonus Depreciation Rate (30% Eligible)	1 × 30% × 11.65%	2/	3.50%
10	Bonus Depreciation Rate (40% Eligible)	1 × 40% × 26.75%	2/	10.70%
11	Total Bonus Depreciation Rate	Line 9 + Line 10		14.20%
12	Bonus Depreciation	Line 8 × Line 11		($19,228)
	Remaining Tax Depreciation			
13	Plant Additions	Line 1		($914,000)
14	Less Capital Repairs Deduction	Line 3		($778,545)
15	Less Bonus Depreciation	Line 12		($19,228)
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		($116,227)
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
18	Remaining Tax Depreciation	Line 16 × Line 17		($4,359)
19	FY19 tax (gain)/loss on retirements	Per Tax Department	3/	$375,698
20	Cost of Removal	Page 5 of 25, Line 7		$5,626,564
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$5,200,130

(b)	(c)	(d)	(e)
MACRS basis:		($116,227)	
		Annual	Cumulative
Fiscal Year			
2019	3.75%	($4,359)	$5,200,130
2020	7.22%	($8,390)	$5,191,739
2021	6.68%	($7,760)	$5,183,979
2022	6.18%	($7,179)	$5,176,799
2023	5.71%	($6,640)	$5,170,159
2024	5.29%	($6,143)	$5,164,017
2025	4.89%	($5,681)	$5,158,335
2026	4.52%	($5,256)	$5,153,080
2027	4.46%	($5,186)	$5,147,894
2028	4.46%	($5,185)	$5,142,709
2029	4.46%	($5,186)	$5,137,523
2030	4.46%	($5,185)	$5,132,338
2031	4.46%	($5,186)	$5,127,152
2032	4.46%	($5,185)	$5,121,967
2033	4.46%	($5,186)	$5,116,781
2034	4.46%	($5,185)	$5,111,596
2035	4.46%	($5,186)	$5,106,410
2036	4.46%	($5,185)	$5,101,225
2037	4.46%	($5,186)	$5,096,039
2038	4.46%	($5,185)	$5,090,854
2039	2.23%	($2,593)	$5,088,261
	100.00%	($116,227)	$0

1/ Capital Repairs percentage is the actual result of FY2019 tax return
2/ Percent of Plant Eligible for Bonus Depreciation is the actual result of FY2019 tax return
3/ Actual Loss the actual result of FY2019 tax return

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2019 Incremental Capital Investment

Line No.	Deferred Tax Subject to Proration		(a) FY22	(b) FY23
1	Book Depreciation	Page 5 of 25 , Line 12 ,Col (d) and Col. (e)	$13,575	$13,575
2	Bonus Depreciation		$0	$0
3	Remaining MACRS Tax Depreciation	Page 6 of 25 , Col (d)	$7,179	$6,640
4	FY19 tax (gain)/loss on retirements		$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	$20,755	$20,215
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	$4,358	$4,245
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction			
9	Cost of Removal			
10	Book/Tax Depreciation Timing Difference at 3/31/2019			
11	Cumulative Book / Tax Timer	Line 8 + Line 9 + Line 10	$0	$0
12	Effective Tax Rate		21%	21%
13	Deferred Tax Reserve	Line 11 × Line 12	$0	$0
14	Total Deferred Tax Reserve	Line 7 + Line 13	$4,358	$4,245
15	Net Operating Loss		$0	$0
16	Net Deferred Tax Reserve	Line 14 + Line 15	$4,358	$4,245
	Allocation of FY 2019 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	$20,755	$20,215
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	$20,755	$20,215
20	Total FY 2019 Federal NOL		$0	$0
21	Allocated FY 2019 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20	$0	$0
22	Allocated FY 2019 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20	$0	$0
23	Effective Tax Rate		21%	21%
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23	$0	$0
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	$4,358	$4,245

		(h) Number of Days in Month	(i) Proration Percentage	(j) FY22	(k) FY23
	Proration Calculation				
26	April	30	91.78%	$333	$325
27	May	31	83.29%	$303	$295
28	June	30	75.07%	$273	$266
29	July	31	66.58%	$242	$236
30	August	31	58.08%	$211	$205
31	September	30	49.86%	$181	$176
32	October	31	41.37%	$150	$146
33	November	30	33.15%	$120	$117
34	December	31	24.66%	$90	$87
35	January	31	16.16%	$59	$57
36	February	28	8.49%	$31	$30
37	March	31	0.00%	$0	$0
38	Total	365		$1,992	$1,940
39	Deferred Tax Without Proration	Line 25		$4,358	$4,245
40	Average Deferred Tax without Proration	Line 39 × 50%		$2,179	$2,123
41	Proration Adjustment	Line 38 - Line 40		($187)	($182)

olumn Notes:
(i) Sum of remaining days in the year (Col (h)) ÷ 365
(j) & (k) Current Year Line 25 ÷ 12 × Current Month Col (i)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
FY 2022 Revenue Requirement FY 2020 Actual Incremental Gas Capital Investment

Line No.				Fiscal Year 2020 (a)	Fiscal Year 2021 (b)	Fiscal Year 2022 (c)	Fiscal Year 2023 (d)
	Depreciable Net Capital Included in ISR Rate Base						
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 18 of 25 , Line 3 ,Col (c)		$105,296,046	$0	$0	$0
2	Retirements	Page 18 of 25 , Line 9 ,Col (c)	1/	$4,276,135	$0	$0	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$101,019,911	$101,019,911	$101,019,911	$101,019,911
	Change in Net Capital Included in ISR Rate Base						
4	Capital Included in ISR Rate Base	Line 1		$105,296,046	$0	$0	$0
5	Depreciation Expense	Page 22 of 25, Line 72(c)		$23,534,853	$0	$0	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$81,761,193	$81,761,193	$81,761,193	$81,761,193
7	Cost of Removal	Page 18 of 25 , Line 6 ,Col (c)		$7,055,630	$7,055,630	$7,055,630	$7,055,630
8	**Net Plant Amount**	Line 1 = Line 6+7; Then = Prior Year		**$88,816,823**	**$88,816,823**	**$88,816,823**	**$88,816,823**
	Deferred Tax Calculation:						
9	Composite Book Depreciation Rate	Page 20 of 25, Line 86(e)	1/	2.99%	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 9 of 25, Line 21, Col (a); then =Page 9 of 25, Col (d)		$89,531,414	$1,753,362	$1,621,720	$1,500,279
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$89,531,414	$91,284,775	$92,906,495	$94,406,774
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50% ; then = Line 3 × Line 9		$1,510,248	$3,020,495	$3,020,495	$3,020,495
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$1,510,248	$4,530,743	$7,551,238	$10,571,734
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$88,021,166	$86,754,032	$85,355,257	$83,835,040
15	Effective Tax Rate			21.00%	21.00%	21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$18,484,445	$18,218,347	$17,924,604	$17,605,358
17	Add: FY 2020 Federal NOL utilization	Page 18 of 25, Line 12, Col (c)		($3,063,059)	($3,063,059)	($3,063,059)	($3,063,059)
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$15,421,386	$15,155,288	$14,861,545	$14,542,300
	ISR Rate Base Calculation:						
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$88,816,823	$88,816,823	$88,816,823	$88,816,823
20	Accumulated Depreciation	- Line 13		($1,510,248)	($4,530,743)	($7,551,238)	($10,571,734)
21	Deferred Tax Reserve	- Line 18		($15,421,386)	($15,155,288)	($14,861,545)	($14,542,300)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$71,885,189	$69,130,792	$66,404,039	$63,702,789
	Revenue Requirement Calculation:						
23	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = 0; then Average of (Prior + Current Year Line 22)				$67,767,415	$65,053,414
24	Proration Adjustment	Year 1 and 2 =0; then = Page 10 of 25, Line 41, Col (j) and Col. (k)				($12,306)	($13,375)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24				$67,755,109	$65,040,040
26	Pre-Tax ROR	Page 25 of 25, Line 30, Column (e)				8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26				$5,698,205	$5,469,867
28	Book Depreciation	Line 12				$3,020,495	$3,020,495
29	**Annual Revenue Requirement**	Sum of Lines 27 through 28		**N/A**	**N/A**	**$8,718,700**	**$8,490,363**

1/ 2.99%, Composite Book Depreciation Rate of Distribution Plant approved per RIPUC Docket No. 4770, effective on Sep 1, 2018

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2020 Incremental Capital Investments

Line No.				Fiscal Year 2020 (a)
	Capital Repairs Deduction			
1	Plant Additions	Page 8 of 25, Line 1		$105,296,046
2	Capital Repairs Deduction Rate	Per Tax Department	1/	76.14%
3	Capital Repairs Deduction	Line 1 × Line 2		$80,172,409
	Bonus Depreciation			
4	Plant Additions	Line 1		$105,296,046
5	Less Capital Repairs Deduction	Line 3		$80,172,409
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		$25,123,637
7	Percent of Plant Eligible for Bonus Depreciation	Per Tax Department		100.00%
8	Plant Eligible for Bonus Depreciation	Line 6 × Line 7		$25,123,637
9	Bonus Depreciation Rate 30%, up to December 31, 2019	14.78% × 30% × 75%		3.33%
10	Bonus Depreciation Rate 0%, after December 31, 2019			0.00%
11	Total Bonus Depreciation Rate	Line 9 + Line 10		3.33%
12	Bonus Depreciation	Line 8 × Line 11		$835,487
	Remaining Tax Depreciation			
13	Plant Additions	Line 1		$105,296,046
14	Less Capital Repairs Deduction	Line 3		$80,172,409
15	Less Bonus Depreciation	Line 12		$835,487
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		$24,288,150
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
18	Remaining Tax Depreciation	Line 16 × Line 17		$910,806
19	FY20 tax (gain)/loss on retirements	Per Tax Department	2/	$557,081
20	Cost of Removal	Page 8 of 25, Line 7		$7,055,630
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$89,531,414

20 Year MACRS Depreciation

MACRS basis: $24,288,150

Fiscal Year		Annual	Cumulative
2020	3.75%	$910,806	$89,531,414
2021	7.22%	$1,753,362	$91,284,775
2022	6.68%	$1,621,720	$92,906,495
2023	6.18%	$1,500,279	$94,406,774
2024	5.71%	$1,387,582	$95,794,356
2025	5.29%	$1,283,629	$97,077,985
2026	4.89%	$1,187,205	$98,265,189
2027	4.52%	$1,098,310	$99,363,499
2028	4.46%	$1,083,737	$100,447,237
2029	4.46%	$1,083,494	$101,530,731
2030	4.46%	$1,083,737	$102,614,468
2031	4.46%	$1,083,494	$103,697,963
2032	4.46%	$1,083,737	$104,781,700
2033	4.46%	$1,083,494	$105,865,194
2034	4.46%	$1,083,737	$106,948,932
2035	4.46%	$1,083,494	$108,032,426
2036	4.46%	$1,083,737	$109,116,163
2037	4.46%	$1,083,494	$110,199,658
2038	4.46%	$1,083,737	$111,283,395
2039	4.46%	$1,083,494	$112,366,889
2040	2.23%	$541,869	$112,908,758
	100.00%	$24,288,150	

1/ Capital Repairs percentage is the actual result of FY2020 tax return
2/ Percent of Plant Eligible for Bonus Depreciation is the actual result of FY2020 tax return
2/ Actual Loss the actual result of FY2020 tax return

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2020 Incremental Capital Investments

Line No.			(a) FY22	(b) FY23
	Deferred Tax Subject to Proration			
1	Book Depreciation	Page 8 of 25 , Line 12 ,Col (c) and Col. (d)	$3,020,495	$3,020,495
2	Bonus Depreciation		$0	$0
3	Remaining MACRS Tax Depreciation	Page 9 of 25 , Col (d)	($1,621,720)	($1,500,279)
4	FY20 tax (gain)/loss on retirements		$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	$1,398,776	$1,520,216
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	$293,743	$319,245
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction			
9	Cost of Removal			
10	Book/Tax Depreciation Timing Difference at 3/31/2020			
11	Cumulative Book / Tax Timer	Line 8 + Line 9 + Line 10		
12	Effective Tax Rate			
13	Deferred Tax Reserve	Line 11 × Line 12		
14	Total Deferred Tax Reserve	Line 7 + Line 13	$293,743	$319,245
15	Net Operating Loss			
16	Net Deferred Tax Reserve	Line 14 + Line 15	$293,743	$319,245
	Allocation of FY 2018 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	$1,398,776	$1,520,216
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	$1,398,776	$1,520,216
20	Total FY 2020 Federal NOL			
21	Allocated FY 2020 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20	$0	$0
22	Allocated FY 2020 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20	$0	$0
23	Effective Tax Rate		21%	21%
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23	$0	$0
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	$293,743	$319,245

		(h) Number of Days in Month	(i) Proration Percentage	(j) FY22	(k) FY23
	Proration Calculation				
26	April	30	91.80%	$22,472	$24,423
27	May	31	83.33%	$20,399	$22,170
28	June	30	75.14%	$18,392	$19,989
29	July	31	66.67%	$16,319	$17,736
30	August	31	58.20%	$14,246	$15,483
31	September	30	50.00%	$12,239	$13,302
32	October	31	41.53%	$10,166	$11,049
33	November	30	33.33%	$8,160	$8,868
34	December	31	24.86%	$6,086	$6,615
35	January	31	16.39%	$4,013	$4,361
36	February	29	8.47%	$2,073	$2,253
37	March	31	0.00%	$0	$0
38	Total	366		$134,565	$146,248
39	Deferred Tax Without Proration	Line 25		$293,743	$319,245
40	Average Deferred Tax without Proration	Line 39 × 50%		$146,871	$159,623
41	Proration Adjustment	Line 38 - Line 40		($12,306)	($13,375)

Column Notes:
(i) Sum of remaining days in the year (Col (h)) divided by 365
(j) & (k) Current Year Line 25 ÷ 12 × Current Month Col (i)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
ISR Additions April through August 2020

Line No.	Month No.	Month	FY 2020 ISR Additions (a)	In Rates (b)	Not In Rates (c) = (a) - (b)	Weight for Days (d)	Weighted Average (e) = (d) × (c)	Weight for Investment (f)=(c)÷Total(c)
2	1	Apr-19	$12,009,983	$7,764,750	$4,245,233	0.958	$4,068,348	4.03%
3	2	May-19	$12,009,983	$7,764,750	$4,245,233	0.875	$3,714,579	4.03%
4	3	Jun-19	$12,009,983	$7,764,750	$4,245,233	0.792	$3,360,809	4.03%
5	4	Jul-19	$12,009,983	$7,764,750	$4,245,233	0.708	$3,007,040	4.03%
6	5	Aug-19	$12,009,983	$7,764,750	$4,245,233	0.625	$2,653,271	4.03%
7	6	Sep-19	$12,009,983	$0	$12,009,983	0.542	$6,505,407	11.41%
8	7	Oct-19	$12,009,983	$0	$12,009,983	0.458	$5,504,576	11.41%
9	8	Nov-19	$12,009,983	$0	$12,009,983	0.375	$4,503,744	11.41%
10	9	Dec-19	$12,009,983	$0	$12,009,983	0.292	$3,502,912	11.41%
11	10	Jan-20	$12,009,983	$0	$12,009,983	0.208	$2,502,080	11.41%
12	11	Feb-20	$12,009,983	$0	$12,009,983	0.125	$1,501,248	11.41%
13	12	Mar-20	$12,009,983	$0	$12,009,983	0.042	$500,416	11.41%
14		Total	$144,119,796	$38,823,750	$105,296,046		$41,324,429	100.00%
15	**Total Additions September 2019 through March 2020**				**$84,069,881**			
16	**FY 2020 Weighted Average Incremental Rate Base Percentage**						**39.25%**	

Column (a)=Page 18 of 25 , Line 1 ,Col (c)
Column (b)=Page 18 of 25 , Line 2 ,Col (c)
Column (d) = (12.5 - Month No.) ÷ 12
Line 14 = Page 18 of 25 Line 1 Col (c)
Line 15 = Sum of Lines 7(c) through 13(c)
Line 16 = Line 14(e)/Line 14(c)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
FY 2022 Revenue Requirement FY 2021 Forecasted Incremental Gas Capital Investment

Line No.				Fiscal Year 2021 (a)	Fiscal Year 2022 (b)	Fiscal Year 2023 (c)
	Depreciable Net Capital Included in ISR Rate Base					
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 18 of 25 , Line 3 ,Col (d)		$179,664,487	$0	$0
2	Retirements	Page 18 of 25 , Line 9 ,Col (d)	1/	$23,555,236	$0	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$156,109,251	$156,109,251	$156,109,251
	Change in Net Capital Included in ISR Rate Base					
4	Capital Included in ISR Rate Base	Line 1		$179,664,487	$0	$0
5	Depreciation Expense	Page 22 of 25, Line 78(c)		$40,700,586	$0	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$138,963,901	$138,963,901	$138,963,901
7	Cost of Removal	Page 18 of 25 , Line 6 ,Col (d)		$17,833,998	$17,833,998	$17,833,998
8	**Net Plant Amount**	**Line 6 + Line 7**		**$156,797,898**	**$156,797,898**	**$156,797,898**
	Deferred Tax Calculation:					
9	Composite Book Depreciation Rate	Page 20 of 25, Line 86(e)	1/	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 13 of 25, Line 21, Col (a); then = Page 13 of 25, Col (d)		$173,600,482	$1,909,181	$1,765,840
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$173,600,482	$175,509,663	$177,275,503
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50% ; then = Line 3 × Line 9		$2,333,833	$4,667,667	$4,667,667
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$2,333,833	$7,001,500	$11,669,167
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$171,266,649	$168,508,163	$165,606,337
15	Effective Tax Rate			21.00%	21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$35,965,996	$35,386,714	$34,777,331
17	Add: FY 2021 Federal NOL utilization	Page 18 of 25 , Line 12 ,Col (d)		($7,598,182)	($7,598,182)	($7,598,182)
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$28,367,814	$27,788,532	$27,179,148
	ISR Rate Base Calculation:					
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$156,797,898	$156,797,898	$156,797,898
20	Accumulated Depreciation	- Line 13		($2,333,833)	($7,001,500)	($11,669,167)
21	Deferred Tax Reserve	- Line 18		($28,367,814)	($27,788,532)	($27,179,148)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$126,096,251	$122,007,867	$117,949,583
	Revenue Requirement Calculation:					
23	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = 0; then Average of (Prior + Current Year Line 22)			$124,052,059	$119,978,725
24	Proration Adjustment	Year 1 =0; then = Page 14 of 25, Line 41, Col (j) and Col. (k)			($24,864)	($26,156)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24			$124,027,195	$119,952,569
26	Pre-Tax ROR	Page 25 of 25, Line 30, Column (e)			8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26			$10,430,687	$10,088,011
28	Book Depreciation	Line 12			$4,667,667	$4,667,667
29	**Annual Revenue Requirement**	**Sum of Lines 27 through 28**		**N/A**	**$15,098,354**	**$14,755,678**

1/ 2.99%, Composite Book Depreciation Rate approved per RIPUC Docket No. 4770, effective on Sep 1, 2018

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2021 Incremental Capital Investments

Line No.				Fiscal Year 2021 (a)
	Capital Repairs Deduction			
1	Plant Additions	Page 12 of 25, Line 1		$179,664,487
2	Capital Repairs Deduction Rate	Per Tax Department	1/	85.28%
3	Capital Repairs Deduction	Line 1 × Line 2		$153,217,875
	Bonus Depreciation			
4	Plant Additions	Line 1		$179,664,487
5	Less Capital Repairs Deduction	Line 3		$153,217,875
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		$26,446,612
7	Percent of Plant Eligible for Bonus Depreciation	Per Tax Department		0.00%
8	Plant Eligible for Bonus Depreciation	Line 6 × Line 7		$0
9	Bonus Depreciation Rate ()	Per Tax Department		0.00%
10	Bonus Depreciation Rate ()	Per Tax Department		0.00%
11	Total Bonus Depreciation Rate	Line 9 + Line 10		0.00%
12	Bonus Depreciation	Line 8 × Line 11		$0
	Remaining Tax Depreciation			
13	Plant Additions	Line 1		$179,664,487
14	Less Capital Repairs Deduction	Line 3		$153,217,875
15	Less Bonus Depreciation	Line 12		$0
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		$26,446,612
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
18	Remaining Tax Depreciation	Line 16 × Line 17		$991,748
19	FY21 tax (gain)/loss on retirements	Per Tax Department	2/	1,556,861
20	Cost of Removal	Page 12 of 25, Line 7		$17,833,998
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$173,600,482

(b)	(c)	(d)	(e)
20 Year MACRS Depreciation			
MACRS basis:		$26,446,612	
		Annual	Cumulative
Fiscal Year			
2021	3.75%	$991,748	$173,600,482
2022	7.22%	$1,909,181	$175,509,663
2023	6.68%	$1,765,840	$177,275,503
2024	6.18%	$1,633,607	$178,909,110
2025	5.71%	$1,510,895	$180,420,005
2026	5.29%	$1,397,703	$181,817,709
2027	4.89%	$1,292,710	$183,110,419
2028	4.52%	$1,195,916	$184,306,335
2029	4.46%	$1,180,048	$185,486,383
2030	4.46%	$1,179,783	$186,666,166
2031	4.46%	$1,180,048	$187,846,214
2032	4.46%	$1,179,783	$189,025,997
2033	4.46%	$1,180,048	$190,206,045
2034	4.46%	$1,179,783	$191,385,828
2035	4.46%	$1,180,048	$192,565,876
2036	4.46%	$1,179,783	$193,745,660
2037	4.46%	$1,180,048	$194,925,707
2038	4.46%	$1,179,783	$196,105,491
2039	4.46%	$1,180,048	$197,285,539
2040	4.46%	$1,179,783	$198,465,322
2041	2.23%	$590,024	$199,055,346
	100.00%	$26,446,612	

1/ Capital Repairs percentage is based on a three-year average of FYs 2017, 2018 and 2019 capital repairs rates.
2/ FY 2021 estimated tax loss on retirements is tax department estimate

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2021 Incremental Capital Investments

Line No.			(a) FY22	(b) FY23
	Deferred Tax Subject to Proration			
1	Book Depreciation	Page 12 of 25 , Line 12 ,Col (b) and Col (c)	$4,667,667	$4,667,667
2	Bonus Depreciation	Page 13 of 25 , Line 12 ,Col (a)	$0	
3	Remaining MACRS Tax Depreciation	Page 13 of 25 , Col (d)	($1,909,181)	($1,765,840)
4	FY21 tax (gain)/loss on retirements	Page 13 of 25 , Line 19 ,Col (a)	$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	$2,758,486	$2,901,826
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	$579,282	$609,384
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction	Page 13 of 25 , Line 3 ,Col (a)		
9	Cost of Removal	Page 12 of 25 , Line 7 ,Col (a)		
10	Book/Tax Depreciation Timing Difference at 3/31/2021			
11	Cumulative Book / Tax Timer	Line 8 + Line 9 + Line 10		
12	Effective Tax Rate			
13	Deferred Tax Reserve	Line 11 × Line 12		
14	Total Deferred Tax Reserve	Line 7 + Line 13	$579,282	$609,384
15	Net Operating Loss	- Page 12 of 25 , Line 17 ,Col (a)		
16	Net Deferred Tax Reserve	Line 14 + Line 15	$579,282	$609,384
	Allocation of FY 2021 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	$2,758,486	$2,901,826
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	$2,758,486	$2,901,826
20	Total FY 2021 Federal NOL	- Page 12 of 25 , Line 17 ,Col (a)÷21%		
21	Allocated FY 2021 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20	$0	$0
22	Allocated FY 2021 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20	$0	$0
23	Effective Tax Rate		21%	21%
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23	$0	$0
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	$579,282	$609,384

		(h) Number of Days in Month	(i) Proration Percentage	(j) FY22	(k) FY23
	Proration Calculation				
26	April	30	91.78%	$44,306	$46,608
27	May	31	83.29%	$40,206	$42,295
28	June	30	75.07%	$36,238	$38,121
29	July	31	66.58%	$32,138	$33,808
30	August	31	58.08%	$28,038	$29,495
31	September	30	49.86%	$24,071	$25,321
32	October	31	41.37%	$19,971	$21,008
33	November	30	33.15%	$16,003	$16,835
34	December	31	24.66%	$11,903	$12,522
35	January	31	16.16%	$7,803	$8,209
36	February	28	8.49%	$4,100	$4,313
37	March	31	0.00%	$0	$0
38	Total	365		$264,777	$278,536
39	Deferred Tax Without Proration	Line 25		$579,282	$609,384
40	Average Deferred Tax without Proration	Line 39 × 0.5		$289,641	$304,692
41	Proration Adjustment	Line 38 - Line 40		($24,864)	($26,156)

Column Notes:
(i) Sum of remaining days in the year (Col (h)) divided by 365
(j) & (k) Current Year Line 25 ÷ 12 × Current Month Col (i)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
FY 2022 Revenue Requirement FY 2022 Forecasted Incremental Gas Capital Investment

Line No.				Fiscal Year 2022 (a)	Fiscal Year 2023 (b)
	Depreciable Net Capital Included in ISR Rate Base				
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 18 of 25 , Line 3 ,Col (e)		$175,462,000	$0
2	Retirements	Page 18 of 25 , Line 9 ,Col (e)	1/	$21,307,741	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$154,154,259	$154,154,259
	Change in Net Capital Included in ISR Rate Base				
4	Capital Included in ISR Rate Base	Line 1		$175,462,000	$0
5	Depreciation Expense	Page 22 of 25, Line 77(c)		$40,954,246	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$134,507,754	$134,507,754
7	Cost of Removal	Page 18 of 25 , Line 6 ,Col (e)		$4,212,654	$4,212,654
8	**Net Plant Amount**	**Line 6 + Line 7**		**$138,720,407**	**$138,720,407**
	Deferred Tax Calculation:				
9	Composite Book Depreciation Rate	Page 20 of 25, Line 86(e)	1/	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 16 of 25, Line 21, Col (a); then = Page 16 of 25, Col (d)		$149,466,469	$2,307,475
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$149,466,469	$151,773,944
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50% ; then = Line 3 × Line 9		$2,304,606	$4,609,212
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$2,304,606	$6,913,819
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$147,161,863	$144,860,126
15	Effective Tax Rate			21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$30,903,991	$30,420,626
17	Add: FY 2022 Federal NOL utilization	Page 18 of 25 , Line 12 ,Col (e)		$6,564,587	$6,564,587
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$37,468,578	$36,985,213
	ISR Rate Base Calculation:				
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$138,720,407	$138,720,407
20	Accumulated Depreciation	- Line 13		($2,304,606)	($6,913,819)
21	Deferred Tax Reserve	- Line 18		($37,468,578)	($36,985,213)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$98,947,223	$94,821,376
	Revenue Requirement Calculation:				
23	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = Current Year Line 22 ÷ 2; then = (Prior Year Line 22 + Current Year Line 22) ÷ 2		$49,473,612	$96,884,299
24	Proration Adjustment	Page 17 of 25, Line 41, Col (j) and Col. (k)		($5,998)	($20,747)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24		$49,467,613	$96,863,552
26	Pre-Tax ROR	Page 25 of 25, Line 30, Column (e)		8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26		$4,160,226	$8,146,225
28	Book Depreciation	Line 12		$2,304,606	$4,609,212
29	**Annual Revenue Requirement**	**Sum of Lines 27 through 28**		**$6,464,832**	**$12,755,437**

1/ 2.99%, Composite Book Depreciation Rate approved per RIPUC Docket No. 4770, effective on Sep 1, 2018

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2022 Incremental Capital Investments

Line No.				Fiscal Year 2022 (a)
	Capital Repairs Deduction			
1	Plant Additions	Page 15 of 25, Line 1		$175,462,000
2	Capital Repairs Deduction Rate	Per Tax Department	1/	81.78%
3	Capital Repairs Deduction	Line 1 × Line 2		$143,498,087
	Bonus Depreciation			
4	Plant Additions	Line 1		$175,462,000
5	Less Capital Repairs Deduction	Line 3		$143,498,087
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		$31,963,913
7	Percent of Plant Eligible for Bonus Depreciation	Per Tax Department		0.00%
8	Plant Eligible for Bonus Depreciation	Line 6 × Line 7		$0
9	Bonus Depreciation Rate 30%	Per Tax Department		0.00%
10	Bonus Depreciation Rate 0%	Per Tax Department		0.00%
11	Total Bonus Depreciation Rate	Line 9 + Line 10		0.00%
12	Bonus Depreciation	Line 8 × Line 11		$0
	Remaining Tax Depreciation			
13	Plant Additions	Line 1		$175,462,000
14	Less Capital Repairs Deduction	Line 3		$143,498,087
15	Less Bonus Depreciation	Line 12		$0
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		$31,963,913
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
18	Remaining Tax Depreciation	Line 16 × Line 17		$1,198,647
19	FY22 tax (gain)/loss on retirements	Per Tax Department	2/	$557,081
20	Cost of Removal	Page 15 of 25, Line 7		$4,212,654
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$149,466,469

(b)	(c)	(d)	(e)
20 Year MACRS Depreciation			
MACRS basis:		$31,963,913	
		Annual	Cumulative
Fiscal Year			
2022	3.75%	$1,198,647	$149,466,469
2023	7.22%	$2,307,475	$151,773,944
2024	6.68%	$2,134,230	$153,908,175
2025	6.18%	$1,974,411	$155,882,585
2026	5.71%	$1,826,098	$157,708,684
2027	5.29%	$1,689,293	$159,397,977
2028	4.89%	$1,562,396	$160,960,373
2029	4.52%	$1,445,408	$162,405,781
2030	4.46%	$1,426,230	$163,832,011
2031	4.46%	$1,425,910	$165,257,921
2032	4.46%	$1,426,230	$166,684,151
2033	4.46%	$1,425,910	$168,110,061
2034	4.46%	$1,426,230	$169,536,291
2035	4.46%	$1,425,910	$170,962,201
2036	4.46%	$1,426,230	$172,388,430
2037	4.46%	$1,425,910	$173,814,341
2038	4.46%	$1,426,230	$175,240,570
2039	4.46%	$1,425,910	$176,666,481
2040	4.46%	$1,426,230	$178,092,710
2041	4.46%	$1,425,910	$179,518,621
2042	2.23%	$713,115	$180,231,735
	100.00%	$31,963,913	

1/ Capital Repairs percentage is based on a three-year average of FYs 2018, 2019 and 2020 capital repairs rates.
2/ FY 2022 estimated tax loss on retirements is tax department estimate

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2022 Incremental Capital Investments

Line No.			(a) FY22	(b) FY23
	Deferred Tax Subject to Proration			
1	Book Depreciation	Page 15 of 25 , Line 12 ,Col (a) and Col (b)	$2,304,606	$4,609,212
2	Bonus Depreciation	- Page 16 of 25 , Line 12 ,Col (a)	$0	
3	Remaining MACRS Tax Depreciation	- Page 16 of 25 , Col (d)	($1,198,647)	($2,307,475)
4	FY22 tax (gain)/loss on retirements	- Page 16 of 25 , Line 19 ,Col (a)	($557,081)	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	$548,878	$2,301,737
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	$115,264	$483,365
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction	- Page 16 of 25 , Line 3 ,Col (a)	($143,498,087)	
9	Cost of Removal	- Page 15 of 25 , Line 7 ,Col (a)	($4,212,654)	
10	Book/Tax Depreciation Timing Difference at 3/31/2022			
11	Cumulative Book / Tax Timer	Line 8 + Line 9 + Line 10	($147,710,741)	
12	Effective Tax Rate		21%	
13	Deferred Tax Reserve	Line 11 × Line 12	($31,019,256)	
14	Total Deferred Tax Reserve	Line 7 + Line 13	($30,903,991)	$483,365
15	Net Operating Loss	- Page 15 of 25 , Line 17 ,Col (a)	($6,564,587)	
16	Net Deferred Tax Reserve	Line 14 + Line 15	($37,468,578)	$483,365
	Allocation of FY 2022 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	$548,878	
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	($147,710,741)	
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	($147,161,863)	
20	Total FY 2022 Federal NOL	- Page 15 of 25 , Line 17 ,Col (a)÷21%	($31,259,936)	
21	Allocated FY 2021 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20	($31,376,528)	
22	Allocated FY 2021 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20	$116,592	
23	Effective Tax Rate		21%	
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23	$24,484	
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	$139,749	$483,365

		(h) Number of Days in Month	(i) Proration Percentage	(j) FY22	(k) FY23
	Proration Calculation				
26	April	30	91.78%	$10,689	$36,970
27	May	31	83.29%	$9,699	$33,549
28	June	30	75.07%	$8,742	$30,238
29	July	31	66.58%	$7,753	$26,817
30	August	31	58.08%	$6,764	$23,396
31	September	30	49.86%	$5,807	$20,085
32	October	31	41.37%	$4,818	$16,664
33	November	30	33.15%	$3,861	$13,353
34	December	31	24.66%	$2,872	$9,932
35	January	31	16.16%	$1,882	$6,511
36	February	28	8.49%	$989	$3,421
37	March	31	0.00%	$0	$0
38	Total	365		$63,876	$220,935
39	Deferred Tax Without Proration	Line 25		$139,749	$483,365
40	Average Deferred Tax without Proration	Line 39 × 0.5		$69,874	$241,682
41	Proration Adjustment	Line 38 - Line 40		($5,998)	($20,747)

Column Notes:
(i) Sum of remaining days in the year (Col (h)) divided by 365
(j) & (k) Current Year Line 25 ÷ 12 × Current Month Col (i)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
FY 2018 - FY 2022 Incremental Capital Investment Summary

Line No.			Actual Fiscal Year 2018 (a)	Actual Fiscal Year 2019 (b)	Actual Fiscal Year 2020 (c)	Plan Fiscal Year 2021 (d)	Plan Fiscal Year 2022 (e)
	Capital Investment						
1	ISR-eligible Capital Investment	Col (a)=Docket No. 4678 FY18 Reconciliation Filing; Col (b)=Docket No. 4781 FY19 Reconciliation Filing; Col (c)=Docket No. 4916 FY20 Reconciliation Filing; Col (d)=Docket No. 4996 FY21 Plan Filing; Col(e)=Section 2, Table 1	$97,809,718	$92,263,000	$144,119,796	$179,664,487	$175,462,000
2	ISR-eligible Capital Additions included in Rate Base per RIPUC Docket No. 4770	Docket No. 4770 Schedule MAL-11-Gas Page 5, Col (a)=Lines 1(a) + 1(b); Col(b)=Lines 1(c) + 1(d); Col(c)= Line 1(e)	$93,177,000	$93,177,000	$38,823,750	$0	$0
3	Incremental ISR Capital Investment	Line 1 - Line 2	$4,632,718	($914,000)	$105,296,046	$179,664,487	$175,462,000
	Cost of Removal						
4	ISR-eligible Cost of Removal	Col (a) Docket No. 4678 FY 2018 ISR Reconciliation Filing; Col (b) Docket No. 4781 FY 2019 ISR Reconciliation Filing; Col (c) Docket No. 4916 FY 2020 ISR Reconciliation Filing; Col (d)=Docket No. 4996 FY21 Plan Filing; Col (e)=Section 2, Table 1	$8,603,224	$11,583,085	$10,161,508	$18,947,513	$4,684,000
5	ISR-eligible Cost of Removal in Rate Base per RIPUC Docket No. 4770	Schedule 6-GAS, Docket No. 4770: Col(a)=[P1]L23+L42×7÷12+Docket 4678 Page 2, Line 7x3÷12; Col(b)=[P1]L42×5÷12+[P2]L18×7÷12; Col (c)=[P2]L18×5÷12+L39×7÷12; Col (d)=[P2] L39×5÷12+L60×7÷12; Col (e)= [P2] L60×5÷12	$6,662,056	$5,956,522	$3,105,878	$1,113,515	$471,346
6	Incremental Cost of Removal	Line 4 - Line 5	$1,941,168	$5,626,564	$7,055,630	$17,833,998	$4,212,654
	Retirements						
7	ISR-eligible Retirements	Col (a) Docket No. 4678 FY 2018 ISR Reconciliation Filing; Col (b) Docket No. 4781 FY 2019 ISR Reconciliation Filing; Col (c) Docket No. 4916 FY 2020 ISR Reconciliation Filing; Col (d) Docket No. 4996 FY21 Plan Filing; Col(e)=FY22 Planned Investment x 3-year average actual retirement rate FY18 - FY20	$24,056,661	$6,531,844	$8,395,321	$25,032,041	$21,932,866
8	ISR-eligible Retirements per RIPUC Docket No. 4770	Schedule 6-GAS, Docket No. 4770: Col(a)=[P1]L24+L43×7÷12+ Docket 4678 Page 2, Line 2x3÷12; Col(b)=[P1]L43×5÷12+[P2]L19×7÷12; Col (c)=[P2]L19×5÷12+L40×7÷12; Col (d) = [P2]L40×5÷12+L61×7÷12; Col (e)= L61×5÷12	$11,997,233	$7,899,865	$4,119,186	$1,476,805	$625,125
9	Incremental Retirements	Line 7 - Line 8	$12,059,428	($1,368,021)	$4,276,135	$23,555,236	$21,307,741
	(NOL)/ NOL Utilization						
10	ISR (NOL)/NOL Utilization Per ISR	Page 19 of 25, Line 11	($6,051,855)	$1,091,119	$0	$0	$10,722,358
11	ISR NOL Utilization Per Docket 4770	Schedule 11-Gas Page 11, Docket No. 4770: Col (a)= L40×5÷12; Col (b) = L40×5÷12+L48×7÷12; Col (c) = P11,L48×5÷12+P12,L39×7÷12; Col (d) = P12,L39×5÷12+P12,L49×7÷12; Col (e)= P12,L49×5÷12	$0	$804,769	$3,063,059	$7,598,182	$4,157,771
12	Incremental (NOL)/NOL Utilization	Line 10 - Line 11	($6,051,855)	$286,350	($3,063,059)	($7,598,182)	$6,564,587

Note: The FY22 non-growth ISR capital investment of $186,155,000 is the sum of Line 1 and Line 4.

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Deferred Income Tax ("DIT") Provisions and Net Operating Losses ("NOL")

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
			Test Year July					12 Mths Aug 31	12 Mths Aug 31	12 Mths Aug 31	12 Mths Aug 31
			2016 - June 2017				Jul & Aug 2017	2018	2019	2020	2021
1	Total Base Rate Plant DIT Provision		$29,439,421				$5,223,437	$20,453,237	$16,078,372	$5,085,206	$7,746,916
2	Excess DIT amortization						$0	$0	($1,470,238)	($1,470,238)	($1,470,238)
		FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
3	Total Base Rate Plant DIT Provision						$24,514,347	$17,043,594	$8,195,454	$5,167,632	$2,615,283
4	Incremental FY 18	$2,507,039	$2,560,766	$1,773,289	$1,823,824	$1,874,066	$2,507,039	$53,728	($787,477)	$50,535	$50,242
5	Incremental FY 19	$0	$1,090,524	$1,085,911	$1,081,431	$1,077,072	$0	$1,090,524	($4,613)	($4,480)	($4,358)
6	Incremental FY 20	$0	$0	$18,484,445	$18,218,347	$17,924,604	$0	$0	$18,484,445	($266,098)	($293,743)
7	Incremental FY 21				$35,965,996	$35,386,714				$35,965,996	($579,282)
8	Incremental FY 22					$30,903,991					$30,903,991
9	TOTAL Plant DIT Provision	$2,507,039	$3,651,291	$21,343,646	$57,089,598	$87,166,448	$27,021,386	$18,187,846	$25,887,809	$40,913,585	$32,692,132
10	NOL (Utilization)						$6,051,855	($1,091,119)	$0	$0	($10,722,358)
11	Lesser of NOL or DIT Provision						$6,051,855	($1,091,119)	$0	$0	($10,722,358)

Line Notes:

1(b)	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 2 of 23, Line 29, Col (e) minus Col (b)
1(f)	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 11 of 23, Line 3 plus Line 4
1(g)	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 11 of 23, Line 7
1(h)	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 11 of 23, Line 50
1(i)	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 12 of 23, Line 41
1(j)	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 12 of 23, Line 51
1(k)	RIPUC Docket Nos. 4770/4780 third rate year ends at Aug 31, 2021
2	RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 12 of 23, Line 52
3	Col (f) = Line 1(b) × 25% + Line 1(f) + Line 1(g) × 7/12; Col (g) = Line 1(g) × 5/12 + Line 1(h) × 7/12 + Line (2(g) x 5/12 + Line 2(h) × 7/12; Col (h) = Line 1(h) × 5/12 + Line 1(i) × 7/12 + Line (2(h) x 5/12 + Line 2(i) × 7/12; Col (i) = Line 1(i) × 5/12 + Line 1(j) × 7/12 + Line (2(i) x 5/12 + Line 2(j) × 7/12;
4(a)-8(e)	Cumulative DIT plus Deferred Income Tax (Page 2, Line 16 + Line 18; Page 5, Line 16; Page 8, Line 16; Page 12, Line 16; Page 15, Line 16)
4(f)-8(j)	Year over year change in cumulative DIT shown in Cols (a) through (e)
9	Sum of Lines 3 through 8
10	Col (f)~(g) = Docket no. 4916 FY 20 ISR Rec, Att. MAL-1, p.19, L. 8; Col (h) ~Col (j) Per Tax Department
11	Lesser of Line 9 or Line 10

The Narragansett Electric Company
d/b/a National Grid
ISR Depreciation Expense per Rate Case RIPUC Docket No. 4770

	Account No.	Account Title	Test Year June 30, 2017 (a)	1/ ARO Adjustment (b)	Adjustments June 30, 2017 (c)	Adjusted Balance (d) = (a) + (b) + (c)	Proposed Rate (e)	Depreciation Expense (f) = (d) x (e)
		Intangible Plant						
1	302.00	Franchises And Consents	$213,499	$0	$0	$213,499	0.00%	$0
2	303.00	Misc. Intangible Plant	$25,427	$0	$0	$25,427	0.00%	$0
3	303.01	Misc. Int Cap Software	$19,833,570	$0	$9,991,374	$29,824,944	0.00%	$0
4								
5		Total Intangible Plant	$20,072,496	$0	$9,991,374	$30,063,870		$0
6								
7		Production Plant						
8								
9	304.00	Production Land Land Rights	$364,912	$0	$0	$364,912	0.00%	$0
10	305.00	Prod. Structures & Improvements	$2,693,397	$0	$0	$2,693,397	15.05%	$405,356
11	307.00	Production Other Power	$46,159	$0	$0	$46,159	7.16%	$3,305
12	311.00	Production LNG Equipment	$3,167,445	$0	$0	$3,167,445	11.40%	$361,089
13	320.00	Prod. Other Equipment	$1,106,368	$0	$0	$1,106,368	6.69%	$74,016
14								
15		Total Production Plant	$7,378,281	$0	$0	$7,378,281		$843,766
16								
17		Storage Plant						
18								
19	360.00	Stor. Land & Land Rights	$261,151	$0	$0	$261,151	0.00%	$0
20	361.03	Storage Structures Improvements	$3,385,049	$0	$0	$3,385,049	0.99%	$33,512
21	362.04	Storage Gas Holders	$4,606,338	$0	$0	$4,606,338	0.04%	$1,843
22	363.00	Stor. Purification Equipment	$13,891,210	$0	$0	$13,891,210	3.37%	$468,134
23								
24		Total Storage Plant	$22,143,748	$0	$0	$22,143,748		$503,488
25								
26		Distribution Plant						
27								
28	374.00	Dist. Land & Land Rights	$956,717	$0	$0	$956,717	0.00%	$0
29	375.00	Gas Dist Station Structure	$10,642,632	$0	$0	$10,642,632	1.15%	$122,390
30	376.00	Distribution Mains	$46,080,760	$0	$0	$46,080,760	3.61%	$1,663,515
31	376.03	Dist. River Crossing Main	$695,165	$0	$0	$695,165	3.61%	$25,095
32	376.04	Mains - Steel And Other - Sl	$4,190	$0	$0	$4,190	0.00%	$0
33	376.06	Dist. District Regulator	$14,213,837	$0	$0	$14,213,837	3.61%	$513,120
34	376.11	Gas Mains Steel	$57,759,572	$0	$0	$57,759,572	3.31%	$1,908,954
35	376.12	Gas Mains Plastic	$382,797,443	$0	$0	$382,797,443	2.70%	$10,316,391
36	376.13	Gas Mains Cast Iron	$5,556,209	$0	$0	$5,556,209	8.39%	$465,888
37	376.14	Gas Mains Valves	$222,104	$0	$0	$222,104	3.61%	$8,018
38	376.15	Propane Lines	$0	$0	$0	$0	3.61%	$0
39	376.16	Dist. Cathodic Protect	$1,569,576	$0	$0	$1,569,576	3.61%	$56,662
40	376.17	Dist. Joint Seals	$63,067,055	$0	$0	$63,067,055	4.63%	$2,920,005
41	377.00	T&D Compressor Sta Equipment	$248,656	$0	$0	$248,656	1.07%	$2,661
42	377.62	1/ 5360-Tanks ARO	$299	($299)	$0	$0	0.00%	$0
43	378.10	Gas Measure & Reg Sta Equipment	$19,586,255	$0	$0	$19,586,255	2.08%	$407,394
44	378.55	Gas M&Reg Sta Eqp RTU	$372,772	$0	$0	$372,772	6.35%	$23,671
45	379.00	Dist. Measure. Reg. Gs	$11,033,164	$0	$0	$11,033,164	2.22%	$244,936
46	379.01	Dist. Meas. Reg. Gs Eq	$1,399,586	$0	$0	$1,399,586	0.00%	$0
47	380.00	Gas Services All Sizes	$331,205,854	$0	$0	$331,205,854	3.05%	$10,101,779
48	381.10	Sml Meter& Reg Bare Co	$26,829,565	$0	$0	$26,829,565	1.76%	$472,200
49	381.30	Lrg Meter& Reg Bare Co	$15,779,214	$0	$0	$15,779,214	1.76%	$277,714
50	381.40	Meters	$9,332,227	$0	$0	$9,332,227	0.96%	$89,589
51	382.00	Meter Installations	$675,201	$0	$0	$675,201	3.66%	$24,712
52	382.20	Sml Meter& Reg Installation	$43,145,998	$0	$0	$43,145,998	3.66%	$1,579,144
53	382.30	Lrg Meter&Reg Installation	$2,524,025	$0	$0	$2,524,025	3.66%	$92,379
54	383.00	Dist. House Regulators	$937,222	$0	$0	$937,222	0.67%	$6,279
55	384.00	T&D Gas Reg Installs	$1,216,551	$0	$0	$1,216,551	1.56%	$18,978
56	385.00	Industrial Measuring And Regulating Station Equipment	$540,187	$0	$0	$540,187	4.18%	$22,580
57	385.01	Industrial Measuring And Regulating Station Equipment	$255,921	$0	$0	$255,921	0.00%	$0
58	386.00	Other Property On Customer Premises	$271,765	$0	$0	$271,765	0.23%	$625
59	386.02	Dist. Consumer Prem Equipment	$110,131	$0	$0	$110,131	0.00%	$0
60	387.00	Dist. Other Equipment	$930,079	$0	$0	$930,079	2.15%	$19,997
61	388.00	1/ ARO	$5,736,827	($5,736,827)	$0	$0	0.00%	$0
62								
63		Total Distribution Plant	$1,055,696,761	($5,737,126)	$0	$1,049,959,635	2.99%	$31,384,677
64								
65		General Plant						
66								
67	389.01	General Plant Land Lan	$285,357	$0	$0	$285,357	0.00%	$0
68	390.00	Structures And Improvements	$7,094,532	$0	$0	$7,094,532	3.12%	$221,349
69	391.01	Gas Office Furniture & Fixture	$274,719	$0	$0	$274,719	6.67%	$18,324
70	394.00	General Plant Tools Shop (Fully Dep)	$26,487	$0	$0	$26,487	0.00%	$0
71	394.00	General Plant Tools Shop	$5,513,613	$0	$0	$5,513,613	5.00%	$275,681
72	395.00	General Plant Laboratory	$221,565	$0	$0	$221,565	6.67%	$14,778
73	397.30	Communication Radio Site Specific	$387,650	$0	$0	$387,650	5.00%	$19,383
74	397.42	Communication Equip Tel Site	$63,481	$0	$0	$63,481	20.00%	$12,696
75	398.10	Miscellaneous Equipment (Fully Dep)	$1,341,386	$0	$0	$1,341,386	0.00%	$0
76	398.10	Miscellaneous Equipment	$2,789,499	$0	$0	$2,789,499	6.67%	$186,060
77	399.10	1/ ARO	$342,146	($342,146)	$0	$0	0.00%	$0
78								
79		Total General Plant	$18,340,436	($342,146)	$0	$17,998,289	4.16%	$748,271
80								
81		Grand Total - All Categories	$1,123,631,722	($6,079,273)	$9,991,374	$1,127,543,823	3.05%	$33,480,202
82							2.97%	
83		Other Utility Plant Assets						
84			Line 63		Total Distribution Plant	$1,049,959,635	2.99%	$31,384,677
85			Line 73 + Line 74		Communication Equipment	$451,132	7.11%	$32,079
86					Total ISR Tangible Plant	$1,050,410,767	2.99%	$31,416,756
					Non ISR Assets	$77,133,057		

Lines 1 through 81 - per RIPUC Docket No. 4770 Compliance filing dated August 16, 2018 , Compliance Attachment 2, Schedule 6-GAS, Pages 3 & 4

THE NARRAGANSETT ELECTRIC COMPANY
d/b/a NATIONAL GRID
RIPUC Docket Nos. 4770/4780
Compliance Attachment 2
Schedule 6-GAS
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The Narragansett Electric Company d/b/a National Grid
Depreciation Expense - Gas
For the Test Year Ended June 30, 2017 and the Rate Year Ending August 31, 2019

The Narragansett Electric Company
d/b/a National Grid
Gas ISR Depreciation Expense

Line No	Description		Reference	Amount	Less non-ISR eligible Plant	ISR Amount
				(a)	(b)	(c)
1	Total Company Rate Year Depreciation		Sum of Page 2, Line 16 and Line 17	$39,136,909		
2	Total Company Test Year Depreciation		Per Company Books	$33,311,851		
3	Less: Reserve adjustments		Page 4, Line 29, Col (b) + Col (c)	($15,649)		
4	Adjusted Total Company Test Year Depreciation Expense		Line 2 + Line 3	$33,296,202		
5	Depreciation Expense Adjustment		Line 1 - Line 4	$5,840,707		
6						
7				Per Book		
8	Test Year Depreciation Expense 12 Months Ended 06/30/17:			Amount		
9	Total Gas Utility Plant 06/30/17		Page 4, Line 27, Col (d)	$1,405,994,678	($77,133,057)	$1,328,861,622
10	Less Non Depreciable Plant		Sum of Page 3, Line 5, Col (d) and Page 4, Line 25, Col (e)	($308,514,725)		($308,514,725)
11	Depreciable Utility Plant 06/30/17		Line 9 + Line 10	$1,097,479,953	($77,133,057)	$1,020,346,897
12						
13	Plus: Added Plant 2 Mos Ended 08/31/17		Schedule 11-GAS, Page 3, Line 4	$19,592,266		$19,592,266
14	Less: Retired Plant 2 Months Ended 08/31/17	1/	Line 13 x Retirement Rate	($1,345,989)		($1,345,989)
15	Depreciable Utility Plant 08/31/17		Line 11 + Line 13 + Line 14	$1,115,726,231	($77,133,057)	$1,020,346,897
16						
17	Average Depreciable Plant for Year Ended 08/31/17		(Line 11 + Line 15)/2	$1,106,603,092		$1,106,603,092
18						
19	Composite Book Rate %		As Approved in RIPUC Docket No. 4323	3.38%		
20						
21	Book Depreciation Reserve 06/30/17		Page 5, Line 72, Col (d)	$357,576,825		$357,576,825
22	Plus: Book Depreciation Expense		Line 17 x Line 19	$6,233,864		$6,233,864
23	Less: Net Cost of Removal/(Salvage)	2/	Line 13 x Cost of Removal Rate	($1,014,879)		($1,014,879)
24	Less: Retired Plant		Line 14	($1,345,989)		($1,345,989)
25	Book Depreciation Reserve 08/31/17		Sum of Line 21 through Line 24	$361,449,821		
26						
27	Depreciation Expense 12 Months Ended 08/31/18					
28	Total Utility Plant 08/31/17		Line 9 + Line 13 + Line 14	$1,424,240,956	($77,133,057)	$1,347,107,900
29	Less Non Depreciable Plant		Line 10	($308,514,725)		($308,514,725)
30	Depreciable Utility Plant 08/31/17		Line 28 + Line 29	$1,115,726,231		$1,038,593,175
31						
32	Plus: Plant Added in 12 Months Ended 08/31/18		Schedule 11-GAS, Page 3, Line 11	$115,710,016		$115,710,016
33	Less: Plant Retired in 12 Months Ended 08/31/18		Line 32 x Retirement rate	($7,949,278)		($7,949,278)
34	Depreciable Utility Plant 08/31/18		Sum of Line 30 through Line 33	$1,223,486,969		$1,146,353,912
35						
36	Average Depreciable Plant for 12 Months Ended 08/31/18		(Line 30 + Line 34)/2	$1,169,606,600		$1,092,473,543
37						
38	Composite Book Rate %		As Approved in RIPUC Docket No. 4323	3.38%		3.38%
39						
40	Book Depreciation Reserve 08/31/17		Line 25	$361,449,821		
41	Plus: Book Depreciation 08/31/18		Line 36 x Line 38	$39,532,703		$36,925,606
42	Less: Net Cost of Removal/(Salvage)		Line 32 x Cost of Removal Rate	($5,993,779)		
43	Less: Retired Plant		Line 33	($7,949,278)		
44	Book Depreciation Reserve 08/31/18		Sum of Line 40 through Line 43	$387,039,467		

1/ 3 year average retirement over plant addition in service FY 15 ~ FY17 — 6.87% Retirements
2/ 3 year average Cost of Removal over plant addition in service FY 15 ~ FY17 — 5.18% COR

THE NARRAGANSETT ELECTRIC COMPANY
d/b/a NATIONAL GRID
RIPUC Docket Nos. 4770/4780
Compliance Attachment 2
Schedule 6-GAS
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The Narragansett Electric Company d/b/a National Grid
Depreciation Expense - Gas
For the Test Year Ended June 30, 2017 and the Rate Year Ending August 31, 2021

The Narragansett Electric Company
d/b/a National Grid
Gas ISR Depreciation Expense

Line No		Description		Reference		Amount	Less non-ISR eligible Plant	ISR Amount
						(a)	(b)	(c)
1		Rate Year Depreciation Expense 12 Months Ended 08/31/19:						
2		Total Utility Plant 08/31/18		Page 1, Line 28 + Line 32 + Line 33		$1,532,001,694	($77,133,057)	$1,454,868,637
3		Less Non-Depreciable Plant		Page 1, Line 10		($308,514,725)		($308,514,725)
4		Depreciable Utility Plant 08/31/18		Line 2 + Line 3		$1,223,486,969		$1,146,353,912
5								
6		Plus: Added Plant 12 Months Ended 08/31/19		Schedule 11-GAS, Page 3, Line 35		$114,477,000	($1,348,000)	$113,129,000
7		Less: Depreciable Retired Plant	1/	Line 6 x Retirement rate		($7,864,570)	$92,608	($7,771,962)
8								
9		Depreciable Utility Plant 08/31/19		Sum of Line 4 through Line 7		$1,330,099,399	($78,388,449)	$1,251,710,950
10								
11		Average Depreciable Plant for Rate Year Ended 08/31/19		(Line 4 + Line 9)/2		$1,276,793,184		$1,199,032,431
12								
13		Proposed Composite Rate %		Page 4, Line 17, Col (e)		3.05%		2.99%
14								
15		Book Depreciation Reserve 08/31/18		Page 1, Line 44		$387,039,467		$0
16		Plus: Book Depreciation Expense		Line 11 x Line 13		$38,950,409		$35,851,070
17		Plus: Unrecovered Reserve Adjustment		Schedule NWA-1-GAS, Part VI, Page 6		$186,500		$186,500
18		Less: Net Cost of Removal/(Salvage)	2/	Line 6 x Cost of Removal Rate		($5,929,909)		$0
19		Less: Retired Plant		Line 7		($7,864,570)		$0
20		Book Depreciation Reserve 08/31/19		Sum of Line 15 through Line 19		$412,381,898		$36,037,570
21								
22		Rate Year Depreciation Expense 12 Months Ended 08/31/20:						
23		Total Utility Plant 08/31/19		Line 2 + Line 6 + Line 7		$1,638,614,124	($78,388,449)	$1,560,225,675
24		Less Non-Depreciable Plant		Page 1, Line 10		($308,514,725)		($308,514,725)
25		Depreciable Utility Plant 08/31/19		Line 23 + Line 24		$1,330,099,399		$1,251,710,950
26								
27		Plus: Added Plant 12 Months Ended 08/31/20		Schedule 11-GAS, Page 5, Line 11(i)		$21,017,630	($750,000)	$20,267,630
28		Less: Depreciable Retired Plant	1/	Line 27 x Retirement rate		($1,443,911)	$51,525	($1,392,386)
29								$0
30		Depreciable Utility Plant 08/31/20		Sum of Line 25 through Line 28		$1,349,673,118	($79,086,924)	$1,270,586,194
31								
32		Average Depreciable Plant for Rate Year Ended 08/31/20		(Line 25 + Line 30)/2		$1,339,886,258		$1,261,148,572
33								
34		Proposed Composite Rate %		Page 4, Line 17, Col (e)		3.05%		2.99%
35								
36		Book Depreciation Reserve 08/31/20		Line 20		$412,381,898		$0
37		Plus: Book Depreciation Expense		Line 32 x Line 34		$40,875,154		$37,708,342
38		Plus: Unrecovered Reserve Adjustment		Schedule NWA-1-GAS, Part VI, Page 6		$186,500		$186,500
39		Less: Net Cost of Removal/(Salvage)	2/	Line 27 x Cost of Removal Rate		($1,088,713)		$0
40		Less: Retired Plant		Line 28		($1,443,911)		$0
41		Book Depreciation Reserve 08/31/20		Sum of Line 36 through Line 40		$450,910,927		$37,894,842
42								
43		Rate Year Depreciation Expense 12 Months Ended 08/31/21:						
44		Total Utility Plant 08/31/20		Line 23 + Line 27 + Line 28		$1,658,187,843	($79,086,924)	$1,579,100,919
45		Less Non-Depreciable Plant		Page 1, Line 10		($308,514,725)		($308,514,725)
46		Depreciable Utility Plant 08/31/20		Line 44 + Line 45		$1,349,673,118		$1,270,586,194
47								
48		Plus: Added Plant 12 Months Ended 08/31/21		Schedule 11-GAS, Page 5, Line 11(l)		$21,838,436	($750,000)	$21,088,436
49		Less: Depreciable Retired Plant	1/	Line 48 x Retirement rate		($1,500,301)	$51,525	($1,448,776)
50								
51		Depreciable Utility Plant 08/31/21		Sum of Line 46 through Line 49		$1,370,011,253	($79,785,399)	$1,290,225,854
52								
53		Average Depreciable Plant for Rate Year Ended 08/31/21		(Line 46 + Line 51)/2		$1,359,842,185		$1,280,406,024
54								
55		Proposed Composite Rate %		Page 4, Line 17, Col (e)		3.05%		2.99%
56								
57		Book Depreciation Reserve 08/31/20		Line 41		$450,910,927		$0
58		Plus: Book Depreciation Expense		Line 53 x Line 55		$41,483,938		$38,284,140
59		Plus: Unrecovered Reserve Adjustment		Schedule NWA-1-GAS, Part VI, Page 6		$186,500		$186,500
60		Less: Net Cost of Removal/(Salvage)	2/	Line 48 x Cost of Removal Rate		($1,131,231)		$0
61		Less: Retired Plant		Line 49		($1,500,301)		$0
62		Book Depreciation Reserve 08/31/21		Sum of Line 57 through Line 61		$489,949,834		$38,470,640
63								
64	1/	3 year average retirement over plant addition in service FY 15 ~ FY17			0.0687	Retirements		
65	2/	3 year average Cost of Removal over plant addition in service FY 15 ~ FY17			0.0518	COR		
66								
67		Book Depreciation RY2		Line 37 (a) + Line 38 (b)				$41,061,654
68		Less: General Plant Depreciation (assuming add=retirement)		Page 10, Line 79(f)				($748,271)
69		Plus: Comm Equipment Depreciation		Page 10, Line 73 + Line 74				$32,079
70		Total						$40,345,462
71		7 Months						x7/12
72		FY 2020 Depreciation Expense						$23,534,853
73								
74		Book Depreciation RY3		Line 58 (a) + Line 59 (b)				$41,670,438
75		Less: General Plant Depreciation		Page 10, Line 79(f)				($748,271)
76		Plus: Comm Equipment Depreciation		Page 10, Line 73 + Line 74				$32,079
77		Total						$40,954,246
78		FY 2021 Depreciation Expense		5 Months of RY 2 and 7 Months of RY 3				$40,700,586

The Narragansett Electric Company
d/b/a National Grid
Forecasted FY 2022 ISR Property Tax Recovery Adjustment
(000s)

Line		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		End of FY 2018	**ISR Additions**	**Non-ISR Add's**	**Total Add's**	**Bk Depr**	**Retirements**	**COR**	**End of FY 2019**
1	Plant In Service	$1,195,705	$92,263	$24,845	$117,108		($6,844)		$1,305,969
2	Accumulated Depr	$414,713				$40,858	($6,844)	($6,123)	$442,604
3	Net Plant	$780,992							$863,364
4	Property Tax Expense	$22,678							$23,283
5	Effective Prop tax Rate	2.90%							2.70%
		End of FY 2019	**ISR Additions**	**Non-ISR Add's**	**Total Add's**	**Bk Depr**	**Retirements**	**COR**	**End of FY 2020**
6	Plant In Service	$1,305,969	$144,120	$22,074	$166,193		($8,567)		$1,463,595
7	Accumulated Depr	$442,604				$41,588	($8,567)	($10,162)	$465,463
8	Net Plant	$863,364							$998,132
9	Property Tax Expense	$23,283							$25,959
10	Effective Prop tax Rate	2.70%							2.60%
		End of FY 2020	**ISR Additions**	**Non-ISR Add's**	**Total Add's**	**Bk Depr**	**Retirements**	**COR**	**End of FY 2021**
11	Plant In Service	$1,463,595	$179,664	$24,845	$204,509		($25,032)		$1,643,072
12	Accumulated Depr	$465,463				$46,666	($25,032)	($18,948)	$468,150
13	Net Plant	$998,132							$1,174,923
14	Property Tax Expense	$25,959							$31,685
15	Effective Prop tax Rate	2.60%							2.70%
		End of FY 2021	**ISR Additions**	**Non-ISR Add's**	**Total Add's**	**Bk Depr**	**Retirements**	**COR**	**End of FY 2022**
16	Plant In Service	$1,643,072	$175,462	$22,074	$197,536		($21,933)		$1,818,675
17	Accumulated Depr	$468,150				$52,123	($21,933)	($4,684)	$493,656
18	Net Plant	$1,174,923							$1,325,019
19	Property Tax Expense	$31,685							$34,450
20	Effective Prop tax Rate	2.70%							2.60%

			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
			Cumulative Increm. ISR Prop. Tax for FY2018				**Cumulative Increm. ISR Prop. Tax for FY2019 1st 5 month**				**Cumulative Increm. ISR Prop. Tax for FY2019 7 months**		
21	Incremental ISR Additions			$97,810				$92,263				($914)	
22	Book Depreciation: base allowance on ISR eligible plant			($24,356)				($24,356)				$0	
23	Book Depreciation: current year ISR additions			($1,246)				($1,449)				($7)	
24	COR			$8,603				$11,583				$5,627	
25	Net Plant Additions			$80,811				$78,041				$4,705	
26	RY Effective Tax Rate			3.06%				3.06%				2.92%	
	Property Tax Recovery on Growth and non-ISR										7 mos	1.70%	
27	ISR Year Effective Tax Rate		2.90%				2.70%				2.70%		
28	RY Effective Tax Rate		3.06%	-0.15%			3.06%	-0.36%			2.92%	-0.22%	
29	RY Effective Tax Rate 5 mos for FY 2019						5 month	-0.15%				-0.13%	7 mos
30	RY Net Plant times 5 mo rate	7 months	$458,057	-0.15%	($694)		$458,057	-0.15%	($684)		$919,892	* -0.13%	($1,203)
31	FY 2014 Net Adds times ISR Year Effective Tax rate	7 months	$6,343	2.90%	$184		$5,950	1.12%	$67				0
32	FY 2015 Net Adds times ISR Year Effective Tax rate	7 months	$42,913	2.90%	$1,246		$39,920	1.12%	$449				
33	FY 2016 Net Adds times ISR Year Effective Tax rate		$59,527	2.90%	$1,729		$55,693	1.12%	$626				
34	FY 2017 Net Adds times ISR Year Effective Tax rate		$58,883	2.90%	$1,710		$56,076	1.12%	$630				
35	FY 2018 Net Adds times ISR Year Effective Tax rate		$80,810	2.90%	$2,347		$77,664	1.12%	$873		$6,934	1.57%	$109
36	FY 2019 Net Adds times ISR Year Effective Tax rate						$78,041	1.12%	$877		$4,705	1.57%	$74
37	Total ISR Property Tax Recovery				$6,521				$2,837				($1,020)

The Narragansett Electric Company
d/b/a National Grid
Forecasted FY 2022 ISR Property Tax Recovery Adjustment
Forecasted FY 2022 ISR Property Tax Recovery Adjustment (Continued) 1

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
		Cumulative Increm. ISR Prop. Tax for FY2020				Cumulative Increm. ISR Prop. Tax for FY2021				Cumulative Increm. ISR Prop. Tax for FY2022		
38	Incremental ISR Additions		$105,296				$179,664				$175,462	
39	Book Depreciation: base allowance on ISR eligible plant		$0				$0				($23,890)	
40	Book Depreciation: current year ISR additions		($1,510)				($2,334)				($2,305)	
41	COR		$7,056				$17,834				$4,213	
42	Net Plant Additions		$110,841				$195,165				$153,480	
43												
44	RY Effective Tax Rate		2.96%				3.02%				3.05%	
45	ISR Year Effective Tax Rate	2.60%				2.70%				2.60%		
46	RY Effective Tax Rate	2.96%	-0.36%			3.02%	-0.32%			3.05%	-0.45%	
47	RY Effective Tax Rate 7 mos for FY 2019		-0.36%				-0.32%				-0.45%	
48	RY Net Plant times Rate Difference	$908,586	* -0.36%	($3,246)		$889,353	* -0.32%	($2,886)		$881,383	* -0.45%	($3,957.412)
49	Growth and non-ISR Incremental times rate difference	($20,407)	* -0.36%	$73		($41,336)	* -0.32%	$134		($51,615)	* -0.45%	$231.752
50	FY 2018 Net Incremental times rate difference	7,156	* 2.6%	$186		$7,378	* 2.7%	$199		$7,600	* 2.6%	$197.592
51	FY 2019 Net Incremental times rate difference	4,692	* 2.6%	$122		$4,678	* 2.7%	$126		$4,665	* 2.6%	$121.282
52	FY 2020 Net Incremental times rate difference	$110,841	* 2.6%	$2,882		$107,821	* 2.7%	$2,908		$104,800	* 2.6%	$2,724.811
53	FY 2021 Net Adds times rate difference					$195,165	* 2.7%	$5,263		$190,497	* 2.6%	$4,952.922
54	FY 2022 Net Adds times rate difference									$153,480	* 2.6%	$3,990
55	Total ISR Property Tax Recovery			$17				$5,744				$8,261

Line	Notes
1(a) - 10(h)	Docket No. 4916 Attachment MAL-1, Page 17 of 20, 1(a) to 10(h)
11(a) - 15(a)	Per Line 6(h) ~ 10(h)
11(b)	Page 18 of 25 , Line 1 ,Col (d)÷1000
11(c)	Per Company's Book
11(d)	Line 11(b) + Line 11(c)
11(f)	Page 18 of 25 , Line 7 ,Col (d)÷1000
11(h)	Line 11(a) + (d) + (f)
12(e)	Page 22 of 25 , (Line 16 + Line 17 ,Col (a))×5÷12 + Page 22 of 25 , (Line 37 + Line 38 ,Col (a))×7÷12 + (Page 2 of 25 , Line 3, Col (a) + Page 5 of 25 , Line 3, Col (a))÷1000 * 3.05% + Page 8 of 25 , Line 3, Col (a)×0.5×3.05%÷1000
12(f)	=11(f)
12(g)	Page 18 of 25 , Line 4 ,Col (d)÷1000
12(h)	Line 12(a) + (e) + (f) + (g)
13(h)	Line 11(h) - 12(h)
14(h)	Per Company's Book
15(h)	Line 14(h) ÷ 13(h)
16(a) - 20(a)	Per Line 11(h) ~ 15(h)
16(b)	Page 18 of 25 , Line 1 ,Col (e)÷1000
16(c)	Estimated based on FY2020 actual non-ISR addition
16(d)	Line 16(b) + Line 16(c)
16(f)	Page 18 of 25 , Line 7 ,Col (e)÷1000
16(h)	Line 16(a) + (d) + (f)
17(e)	Page 22 of 25 , (Line 58 + Line 59) + (Page 2 of 25 , Line 3, Col (a) + Page 5 of 25 , Line 3, Col (a) + Page 8 of 25 , Line 3, Col (a) + Page 12 of 25 , Line 3, Col (a))÷1000 × 3.05%+ (L1(c)+L6(c)+L11(c))×0.0416 + Page 15 of 25 , Line 3, Col (a)×0.5×3.05%÷1000 + L16(c)×0.5×0.0416
17(f)	=16(f)
17(g)	Page 18 of 25 , Line 4 ,Col (e)÷1000
17(h)	Line 17(a) + (e) + (f) + (g)
18(h)	Line 16(h) - 17(h)
19(h)	Line 18(h) × 20(h)

Line	Notes
20(h)	Estimated based on FY2020 actual property rate
21(a) - 37(g)	Docket No. 4916 Attachment MAL-1, Page 17 of 20, 11(a) to 27(g)
21(i) - 55(c)	Docket No. 4916 Attachment MAL-1, Page 18 of 20, 28(a) to
38(f)	Page 12 of 25, Line 4(a)÷1000
38(j)	Page 15 of 25, Line 4(a)÷1000
39(f)	FY21 depreciation is reflected in the NBV at 48(e)
39(j)	- (Page 22 of 25, Line 77(c) ×7÷12)÷1000
40(f)	- Page 12 of 25, Line 12(a)÷1000
40(j)	- Page 15 of 25, Line 12(a)÷1000
41(f)	Page 12 of 25, Line 7(a)÷1000
41(j)	Page 15 of 25, Line 7(a)÷1000
42(f)	Sum of Lines 38(f) through 41(f)
42(j)	Sum of Lines 38(j) through 41(j)
44(f)	=Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att. 1, Sch 1-G, P2, L15, Col (c) ÷
44(j)	=Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att. 1, Sch 1-G, P2, L15, Col (c) ÷
45(e)	=15(h)
45(i)	=20(h)
46(e)	=44(f)
46(f)	45(e) -46(e)
46(i)	=44(j)
46(j)	45(i)-46(i)
47(f)	=46(f)
47(j)	=46(j)
48(e)	=Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att.1, Sch 6-G: (P2, L30 - L41 + P3, L5(d) - P5, L4(d) - Sch 5-G, P1, L1(e) + L1(g)) × 5÷12000+(P2, L51 - L62 + P3, L5(d) - P5, L4(d) - Sch 5-G, P1, L1(e) × 3) × 7÷12000

Line	Notes
48(g)	48(e) ×47(f)
48(i)	=Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att. 1: (Sch 6-G, P2, L51 - L62 + P3, L5(d) - P5, L4(d) - Sch 5-G, P1, L1(e) × 3 ÷1000
48(j)	=47(j)
48(k)	48(i)×47(j)
49(e)	= - Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att. 1: Sch 11-G, P5, L3(h)+L3(i)+L7(h)+L7(i)
49(g)	49(e) ×47(f)
49(i)	Revised Rebuttal. Att. 1: Sch 11-G, P5, L3(h)+L3(i)+L7(h)+L7(i)+L3(k)+L7(k)
49(j)	=47(j)
49(k)	49(i)×47(j)
50(e)	Line 50(a) - Page 2 of 25, Line 12(d))÷1000
50(g)	=50(e) ×45(e)
50(i)	Line 50(e) - Page 2 of 25, Line 12(e))÷1000
51(e)	Line 51(a) - Page 5 of 25, Line 12(c))÷1000
51(g)	=51(e) ×45(e)
51(i)	Line 51(e) - Page 5 of 25, Line 12(d))÷1000
52(e)	Line 52(a) - Page 8 of 25, Line 12(b))÷1000
52(g)	=52(e) ×45(e)
52(i)	Line 52(e) - Page 8 of 25, Line 12(c))÷1000
53(e)	=42(f)
53(g)	=53(e) ×45(e)
53(i)	Line 53(e) - Page 12 of 25, Line 12(b))÷1000
54(i)	=42(j)
54(k)	=54(i)×45(i)
55(g)	sum of 48(g) through 53(g)
55(k)	sum of 48(k) through 54(k)

The Narragansett Electric Company
d/b/a National Grid
FY 2022 Gas ISR Revenue Requirement Plan
Calculation of Weighted Average Cost of Capital

Line No.

Weighted Average Cost of Capital as approved in RIPUC Docket No. 4323 at 35% income tax rate effective April 1, 2013

	(a)	(b)	(c)	(d)	(e)
			Weighted		
	Ratio	Rate	Rate	Taxes	Return
Long Term Debt	49.95%	5.70%	2.85%		2.85%
Short Term Debt	0.76%	0.80%	0.01%		0.01%
Preferred Stock	0.15%	4.50%	0.01%		0.01%
Common Equity	49.14%	9.50%	4.67%	2.51%	7.18%
	100.00%		7.54%	2.51%	10.05%

(d) - Column (c) x 35% divided by (1 - 35%)

Weighted Average Cost of Capital as approved in RIPUC Docket No. 4323 at 21% income tax rate effective January 1, 2018

	(a)	(b)	(c)	(d)	(e)
			Weighted		
	Ratio	Rate	Rate	Taxes	Return
Long Term Debt	49.95%	5.70%	2.85%		2.85%
Short Term Debt	0.76%	0.80%	0.01%		0.01%
Preferred Stock	0.15%	4.50%	0.01%		0.01%
Common Equity	49.14%	9.50%	4.67%	1.24%	5.91%
	100.00%		7.54%	1.24%	8.78%

(d) - Column (c) x 21% divided by (1 - 21%)

Weighted Average Cost of Capital as approved in RIPUC Docket No. 4770 effective September 1, 2018

	(a)	(b)	(c)	(d)	(e)
			Weighted		
	Ratio	Rate	Rate	Taxes	Return
Long Term Debt	48.35%	4.98%	2.41%		2.41%
Short Term Debt	0.60%	1.76%	0.01%		0.01%
Preferred Stock	0.10%	4.50%	0.00%		0.00%
Common Equity	50.95%	9.28%	4.73%	1.26%	5.99%
	100.00%		7.15%	1.26%	8.41%

(d) - Column (c) x 21% divided by (1 - 21%)

FY18 Blended Rate	Line 8(e) × 75% + Line 20(e) × 25%	9.73%
FY19 Blended Rate	Line 20 x 5 ÷ 12 + Line 30 x 7 ÷ 12	8.56%

Section 4
Rate Design & Bill Impacts

Section 4

Rate Design and Bill Impacts
FY 2022 Proposal

Rate Design and Bill Impacts
FY 2022 Proposal

Like the revenue requirement, the proposed Gas ISR Plan rate design for FY 2022 is designed to recover cumulative incremental capital investment in excess of capital investment that has been reflected in the rate base in the Company's last general rate case in Docket No. 4770 and the property tax described in Section 3. For purposes of rate design, the revenue requirement associated with cumulative capital investment and property tax recovery is allocated to rate classes based upon a rate base allocator derived from the approved Allocated Cost of Service Study ("ACOSS") included in the Amended Settlement Agreement in Docket No. 4770.

The throughput for the April 2021 through March 2022 period is from the Company's most recent forecast filed in the Company's Gas Cost Recovery filing in Docket No. 5066. Attachment 1 of this section provides the proposed ISR factors by rate class. Attachment 2 of this section provides the Plan's bill impacts[1] associated with the rate design in Attachment 1 by rate class.

The Company is proposing to combine the allocated revenue requirements for the Residential Non-Heating and Residential Heating rate classes, thereby deriving one ISR factor applicable to all residential customers. The Company is proposing this change to the higher bill impacts that would have existed for Residential Non-Heating customers absent the Company's proposal. Without the Company's proposal, a separate FY2022 ISR factor calculated for the Residential Non-Heating classes would be $0.3269 per therm,[2] which would be an increase of

[1] Bill impacts are provided using rates currently in effect as of November 1, 2020.
[2] See Section 4: Attachment 1, Page 3, Line 2, Column (i).

$0.1606 per therm, or 97%, over the currently-effective ISR factor, resulting in a total bill increase of 7.3%. Under the Company's proposal for a single ISR factor applicable to all residential customers, the proposed FY 2022 ISR factor for Residential Non-Heating customers is $0.1306 per therm, compared to a separate factor of $0.3269 per therm, which is lower by $0.1963 per therm.[3] The Company's proposal slightly increases the FY 2022 ISR factor for Residential Heating customers by $0.0030 per therm, from $0.1276 per therm to $0.1306 per therm. This represents $2.62 annually (including gross earnings tax).[4] For an average Residential Heating customer using 845 therms per year, the proposed FY 2022 Gas ISR factor results in an annual bill increase of $49.12, or 3.7%, from the annual bill based on the FY 2021 ISR factor. For the first six months that the proposed FY 2022 ISR factor would be in effect (April 2021 through September 2021), an average Residential Heating customer would experience an increase of less than $2 per month.

[3] See Section 4: Attachment 1, Page 1, Line 4, Column (i).
[4] See Section 4: Attachment 1, Page 3, Line 3, Column (i).

	FY 2022 Revenue Requirement	Rate Class	Rate Base Allocator (%)	Allocation to Rate Class ($)	Throughput (dth)	ISR Factor (dth)	ISR Factor (therm)	Uncollectible %	ISR Factor (therm)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
(1)	$39,525,779								
(2)		Res-NH							$0.1306
(3)		Res-H							$0.1306
(4)		Residential Total	66.59%	$26,320,216	20,516,304	$1.2828	$0.1282	1.91%	$0.1306
(5)		Small	8.04%	$3,177,873	2,631,906	$1.2074	$0.1207	1.91%	$0.1230
(6)		Medium	12.23%	$4,834,003	6,239,985	$0.7746	$0.0774	1.91%	$0.0789
(7)		Large LL	5.57%	$2,201,586	2,953,321	$0.7454	$0.0745	1.91%	$0.0759
(8)		Large HL	2.25%	$889,330	1,228,858	$0.7237	$0.0723	1.91%	$0.0737
(9)		XL-LL	0.97%	$383,400	1,350,832	$0.2838	$0.0283	1.91%	$0.0288
(10)		XL-HL	4.35%	$1,719,371	5,496,959	$0.3127	$0.0312	1.91%	$0.0318
(11)		Total	100.00%	$39,525,779	40,418,166				

(a) Line 1: Proposed Capital Revenue Requirement & Forecasted Annual Property Tax Recovery Mechanism (Section 3, Attachment 1, Page 1, Line 10)
(c) Docket 4770, RI 2017 Rate Case, Compliance Attachment 14, Schedule 2, Page 1 & 2, Line 15 (Rate Class divided by Total Company)
(d) Column (a) Line 1 * Column (c)
(e) Page 2, Column (m), Line 9
(f) Column (d) / Column (e), truncated to 4 decimal places
(g) Column (d) / (Column (e)*10), truncated to 4 decimal places
(h) Docket 4770, RI 2017 Rate Case, Compliance Attachment 2, Schedule 22, Page 7, Line 15
(i) Column (g) / (1- Column (h)), truncated to 4 decimal places

Forecasted Throughput April 2020 - March 2021

		Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
(1)	Res-NH	33,754	14,313	16,613	13,587	12,979	13,211	16,397	21,443	35,414	46,545	51,514	38,465	314,233
(2)	Res-H	2,285,288	835,249	586,155	460,711	440,051	454,182	613,380	1,455,414	2,620,973	3,544,275	3,971,556	2,934,837	20,202,071
(3)	Small	320,918	119,748	70,449	48,243	44,594	45,059	49,175	150,580	329,910	492,497	561,403	399,331	2,631,906
(4)	Medium	701,158	342,868	262,123	192,110	179,556	183,508	232,264	447,002	751,694	990,828	1,117,497	839,377	6,239,985
(5)	Large LL	339,119	145,105	77,380	47,486	44,688	45,850	91,291	241,047	401,845	516,995	563,453	439,062	2,953,321
(6)	Large HL	108,630	88,553	81,843	71,311	72,940	79,582	79,091	94,197	125,373	145,918	152,254	129,166	1,228,858
(7)	X-Large LL	125,930	58,041	31,247	24,195	21,503	27,423	72,477	153,789	191,730	222,688	223,606	198,203	1,350,832
(8)	X-Large HL	460,785	411,048	414,414	399,214	409,743	396,000	412,069	442,115	507,164	554,863	554,688	534,856	5,496,959
(9)		4,375,583	2,014,924	1,540,223	1,256,856	1,226,054	1,244,814	1,566,144	3,005,588	4,964,104	6,514,609	7,195,970	5,513,297	40,418,166

Source: Company Forecast

Illustrative Example calculating FY21 Factors for Residential Non-Heating and Residential Heating on a Standalone Basis

	FY 2022 Revenue Requirement	Rate Class	Rate Base Allocator (%)	Allocation to Rate Class ($)	Throughput (dth)	ISR Factor (dth)	ISR Factor (therm)	Uncollectible %	ISR Factor (therm)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
(1)	$39,525,779								
(2)		Res-NH	2.55%	$1,007,907	314,233	$3.2075	$0.3207	1.91%	$0.3269
(3)		Res-H	64.04%	$25,312,309	20,202,071	$1.2529	$0.1252	1.91%	$0.1276
(4)		Residential Total	66.59%	$26,320,216	20,516,304	$1.2828	$0.1282	1.91%	$0.1306
(5)		Small	8.04%	$3,177,873	2,631,906	$1.2074	$0.1207	1.91%	$0.1230
(6)		Medium	12.23%	$4,834,003	6,239,985	$0.7746	$0.0774	1.91%	$0.0789
(7)		Large LL	5.57%	$2,201,586	2,953,321	$0.7454	$0.0745	1.91%	$0.0759
(8)		Large HL	2.25%	$889,330	1,228,858	$0.7237	$0.0723	1.91%	$0.0737
(9)		XL-LL	0.97%	$383,400	1,350,832	$0.2838	$0.0283	1.91%	$0.0288
(10)		XL-HL	4.35%	$1,719,371	5,496,959	$0.3127	$0.0312	1.91%	$0.0318
(11)		Total	100.00%	$39,525,779	40,418,166				

(a) Line 1: Proposed Capital Revenue Requirement & Forecasted Annual Property Tax Recovery Mechanism (Section 3, Attachment 1, Page 1, Line 10)
(c) Docket 4770, RI 2017 Rate Case, Compliance Attachment 14, Schedule 2, Page 1 & 2, Line 15 (Rate Class divided by Total Company)
(d) Column (a) Line 1 * Column (c)
(e) Page 2, Column (m), Line 9
(f) Column (d) / Column (e), truncated to 4 decimal places
(g) Column (d) / (Column (e)*10), truncated to 4 decimal places
(h) Docket 4770, RI 2017 Rate Case, Compliance Attachment 2, Schedule 22, Page 7, Line 15
(i) Column (g) / (1- Column (h)), truncated to 4 decimal places

National Grid - RI Gas
Infrastructure, Safety, and Reliability (ISR) Filing
Bill Impact Analysis with Various Levels of Consumption:

Residential Heating:

						Difference due to:					
							DAC				
Annual Consumption (Therms)	Proposed Rates	Current Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
548	$962.00	$930.14	$31.87	3.4%	$0.00	$0.00	$30.91	$0.00	$0.00	$0.96
608	$1,047.30	$1,011.94	$35.36	3.5%	$0.00	$0.00	$34.30	$0.00	$0.00	$1.06
667	$1,131.17	$1,092.40	$38.77	3.5%	$0.00	$0.00	$37.61	$0.00	$0.00	$1.16
726	$1,215.08	$1,172.87	$42.21	3.6%	$0.00	$0.00	$40.94	$0.00	$0.00	$1.27
785	$1,298.85	$1,253.20	$45.65	3.6%	$0.00	$0.00	$44.28	$0.00	$0.00	$1.37
845	$1,384.15	$1,335.02	$49.12	3.7%	$0.00	$0.00	$47.65	$0.00	$0.00	$1.47
905	$1,469.45	$1,416.83	$52.62	3.7%	$0.00	$0.00	$51.04	$0.00	$0.00	$1.58
964	$1,553.28	$1,497.23	$56.05	3.7%	$0.00	$0.00	$54.37	$0.00	$0.00	$1.68
1,023	$1,637.12	$1,577.64	$59.47	3.8%	$0.00	$0.00	$57.69	$0.00	$0.00	$1.78
1,082	$1,720.99	$1,658.09	$62.91	3.8%	$0.00	$0.00	$61.02	$0.00	$0.00	$1.89
1,142	$1,806.33	$1,739.92	$66.41	3.8%	$0.00	$0.00	$64.42	$0.00	$0.00	$1.99

Residential Heating Low Income:

						Difference due to:					
							DAC				
Annual Consumption (Therms)	Proposed Rates	Current Rates	Difference	% Chg	GCR	Low Income Discount	Base DAC	ISR	EE	LIHEAP	GET
548	$715.05	$691.15	$23.90	3.5%	$0.00	($7.73)	$0.00	$30.91	$0.00	$0.00	$0.72
608	$778.33	$751.81	$26.52	3.5%	$0.00	($8.57)	$0.00	$34.30	$0.00	$0.00	$0.80
667	$840.54	$811.46	$29.08	3.6%	$0.00	($9.40)	$0.00	$37.61	$0.00	$0.00	$0.87
726	$902.77	$871.12	$31.65	3.6%	$0.00	($10.24)	$0.00	$40.94	$0.00	$0.00	$0.95
785	$964.91	$930.67	$34.24	3.7%	$0.00	($11.07)	$0.00	$44.28	$0.00	$0.00	$1.03
845	$1,028.17	$991.33	$36.84	3.7%	$0.00	($11.91)	$0.00	$47.65	$0.00	$0.00	$1.11
905	$1,091.45	$1,051.98	$39.46	3.8%	$0.00	($12.76)	$0.00	$51.04	$0.00	$0.00	$1.18
964	$1,153.62	$1,111.58	$42.04	3.8%	$0.00	($13.59)	$0.00	$54.37	$0.00	$0.00	$1.26
1,023	$1,215.82	$1,171.22	$44.61	3.8%	$0.00	($14.42)	$0.00	$57.69	$0.00	$0.00	$1.34
1,082	$1,278.03	$1,230.84	$47.18	3.8%	$0.00	($15.25)	$0.00	$61.02	$0.00	$0.00	$1.42
1,142	$1,341.33	$1,291.53	$49.81	3.9%	$0.00	($16.11)	$0.00	$64.42	$0.00	$0.00	$1.49

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2020

National Grid - RI Gas
Infrastructure, Safety, and Reliability (ISR) Filing
Bill Impact Analysis with Various Levels of Consumption:

Residential Non-Heating:

						Difference due to:					
							DAC				
Annual Consumption (Therms)	Proposed Rates	Current Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
144	$386.29	$391.60	($5.31)	-1.4%	$0.00	$0.00	($5.15)	$0.00	$0.00	($0.16)
158	$406.02	$411.85	($5.82)	-1.4%	$0.00	$0.00	($5.65)	$0.00	$0.00	($0.17)
172	$425.80	$432.15	($6.35)	-1.5%	$0.00	$0.00	($6.16)	$0.00	$0.00	($0.19)
189	$449.80	$456.76	($6.96)	-1.5%	$0.00	$0.00	($6.75)	$0.00	$0.00	($0.21)
202	$468.16	$475.61	($7.44)	-1.6%	$0.00	$0.00	($7.22)	$0.00	$0.00	($0.22)
220	$493.56	$501.64	($8.08)	-1.6%	$0.00	$0.00	($7.84)	$0.00	$0.00	($0.24)
238	$518.97	$527.71	($8.74)	-1.7%	$0.00	$0.00	($8.48)	$0.00	$0.00	($0.26)
251	$537.33	$546.56	($9.23)	-1.7%	$0.00	$0.00	($8.95)	$0.00	$0.00	($0.28)
268	$561.27	$571.12	($9.85)	-1.7%	$0.00	$0.00	($9.55)	$0.00	$0.00	($0.30)
282	$581.03	$591.40	($10.37)	-1.8%	$0.00	$0.00	($10.06)	$0.00	$0.00	($0.31)
297	$602.19	$613.14	($10.95)	-1.8%	$0.00	$0.00	($10.62)	$0.00	$0.00	($0.33)

Residential Non-Heating Low Income:

						Difference due to:					
							DAC				
Annual Consumption (Therms)	Proposed Rates	Current Rates	Difference	% Chg	GCR	Low Income Discount	Base DAC	ISR	EE	LIHEAP	GET
144	$288.03	$292.01	($3.98)	-1.4%	$0.00	$1.29	$0.00	($5.15)	$0.00	$0.00	($0.12)
158	$302.66	$307.03	($4.37)	-1.4%	$0.00	$1.41	$0.00	($5.65)	$0.00	$0.00	($0.13)
172	$317.32	$322.09	($4.76)	-1.5%	$0.00	$1.54	$0.00	($6.16)	$0.00	$0.00	($0.14)
189	$335.11	$340.33	($5.22)	-1.5%	$0.00	$1.69	$0.00	($6.75)	$0.00	$0.00	($0.16)
202	$348.76	$354.34	($5.58)	-1.6%	$0.00	$1.81	$0.00	($7.22)	$0.00	$0.00	($0.17)
220	$367.58	$373.64	($6.06)	-1.6%	$0.00	$1.96	$0.00	($7.84)	$0.00	$0.00	($0.18)
238	$386.41	$392.96	($6.56)	-1.7%	$0.00	$2.12	$0.00	($8.48)	$0.00	$0.00	($0.20)
251	$400.04	$406.96	($6.92)	-1.7%	$0.00	$2.24	$0.00	($8.95)	$0.00	$0.00	($0.21)
268	$417.82	$425.20	($7.38)	-1.7%	$0.00	$2.39	$0.00	($9.55)	$0.00	$0.00	($0.22)
282	$432.46	$440.23	($7.78)	-1.8%	$0.00	$2.52	$0.00	($10.06)	$0.00	$0.00	($0.23)
297	$448.16	$456.37	($8.21)	-1.8%	$0.00	$2.66	$0.00	($10.62)	$0.00	$0.00	($0.25)

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2020

National Grid - RI Gas
Infrastructure, Safety, and Reliability (ISR) Filing
Bill Impact Analysis with Various Levels of Consumption:

C & I Small:

						Difference due to:					
	Annual	Proposed	Current				DAC				
Consumption (Therms)		Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
830		$1,407.65	$1,363.85	$43.80	3.2%	$0.00	$0.00	$42.49	$0.00	$0.00	$1.31
919		$1,524.30	$1,475.78	$48.52	3.3%	$0.00	$0.00	$47.06	$0.00	$0.00	$1.46
1,010		$1,643.66	$1,590.33	$53.33	3.4%	$0.00	$0.00	$51.73	$0.00	$0.00	$1.60
1,099		$1,760.38	$1,702.35	$58.03	3.4%	$0.00	$0.00	$56.29	$0.00	$0.00	$1.74
1,187		$1,875.84	$1,813.18	$62.66	3.5%	$0.00	$0.00	$60.78	$0.00	$0.00	$1.88
1,277		$1,993.82	$1,926.42	$67.40	3.5%	$0.00	$0.00	$65.38	$0.00	$0.00	$2.02
1,367		$2,111.81	$2,039.65	$72.15	3.5%	$0.00	$0.00	$69.99	$0.00	$0.00	$2.16
1,456		$2,228.53	$2,151.68	$76.86	3.6%	$0.00	$0.00	$74.55	$0.00	$0.00	$2.31
1,544		$2,343.98	$2,262.48	$81.51	3.6%	$0.00	$0.00	$79.06	$0.00	$0.00	$2.45
1,635		$2,463.29	$2,376.99	$86.30	3.6%	$0.00	$0.00	$83.71	$0.00	$0.00	$2.59
1,725		$2,581.31	$2,490.23	$91.08	3.7%	$0.00	$0.00	$88.35	$0.00	$0.00	$2.73

C & I Medium:

						Difference due to:					
	Annual	Proposed	Current				DAC				
Consumption (Therms)		Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
6,907		$8,741.04	$8,506.77	$234.27	2.8%	$0.00	$0.00	$227.24	$0.00	$0.00	$7.03
7,650		$9,567.32	$9,307.87	$259.45	2.8%	$0.00	$0.00	$251.67	$0.00	$0.00	$7.78
8,391		$10,390.88	$10,106.29	$284.59	2.8%	$0.00	$0.00	$276.05	$0.00	$0.00	$8.54
9,136		$11,219.19	$10,909.32	$309.88	2.8%	$0.00	$0.00	$300.58	$0.00	$0.00	$9.30
9,880		$12,046.47	$11,711.37	$335.10	2.9%	$0.00	$0.00	$325.05	$0.00	$0.00	$10.05
10,623		$12,872.72	$12,512.44	$360.29	2.9%	$0.00	$0.00	$349.48	$0.00	$0.00	$10.81
11,366		$13,699.02	$13,313.50	$385.53	2.9%	$0.00	$0.00	$373.96	$0.00	$0.00	$11.57
12,111		$14,527.30	$14,116.52	$410.78	2.9%	$0.00	$0.00	$398.46	$0.00	$0.00	$12.32
12,855		$15,354.55	$14,918.56	$435.99	2.9%	$0.00	$0.00	$422.91	$0.00	$0.00	$13.08
13,596		$16,178.15	$15,716.98	$461.16	2.9%	$0.00	$0.00	$447.33	$0.00	$0.00	$13.83
14,340		$17,005.39	$16,519.01	$486.38	2.9%	$0.00	$0.00	$471.79	$0.00	$0.00	$14.59

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2020

National Grid - RI Gas
Infrastructure, Safety, and Reliability (ISR) Filing
Bill Impact Analysis with Various Levels of Consumption:

C & I LLF Large:

						Difference due to:					
	Annual	Proposed	Current				DAC				
Consumption (Therms)		Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
37,587		$45,071.03	$43,834.92	$1,236.11	2.8%	$0.00	$0.00	$1,199.03	$0.00	$0.00	$37.08
41,634		$49,656.03	$48,286.83	$1,369.21	2.8%	$0.00	$0.00	$1,328.13	$0.00	$0.00	$41.08
45,683		$54,243.67	$52,741.30	$1,502.37	2.8%	$0.00	$0.00	$1,457.30	$0.00	$0.00	$45.07
49,731		$58,830.35	$57,194.89	$1,635.46	2.9%	$0.00	$0.00	$1,586.40	$0.00	$0.00	$49.06
53,777		$63,414.32	$61,645.80	$1,768.53	2.9%	$0.00	$0.00	$1,715.47	$0.00	$0.00	$53.06
57,825		$68,001.02	$66,099.35	$1,901.67	2.9%	$0.00	$0.00	$1,844.62	$0.00	$0.00	$57.05
61,873		$72,587.65	$70,552.86	$2,034.78	2.9%	$0.00	$0.00	$1,973.74	$0.00	$0.00	$61.04
65,920		$77,172.65	$75,004.75	$2,167.90	2.9%	$0.00	$0.00	$2,102.86	$0.00	$0.00	$65.04
69,967		$81,758.34	$79,457.35	$2,300.99	2.9%	$0.00	$0.00	$2,231.96	$0.00	$0.00	$69.03
74,016		$86,345.97	$83,911.82	$2,434.14	2.9%	$0.00	$0.00	$2,361.12	$0.00	$0.00	$73.02
78,063		$90,930.96	$88,363.73	$2,567.23	2.9%	$0.00	$0.00	$2,490.21	$0.00	$0.00	$77.02

C & I HLF Large:

						Difference due to:					
	Annual	Proposed	Current				DAC				
Consumption (Therms)		Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
41,956		$42,144.65	$40,397.22	$1,747.43	4.3%	$0.00	$0.00	$1,695.01	$0.00	$0.00	$52.42
46,471		$46,412.80	$44,477.32	$1,935.47	4.4%	$0.00	$0.00	$1,877.41	$0.00	$0.00	$58.06
50,991		$50,685.29	$48,561.52	$2,123.77	4.4%	$0.00	$0.00	$2,060.06	$0.00	$0.00	$63.71
55,507		$54,954.24	$52,642.41	$2,311.84	4.4%	$0.00	$0.00	$2,242.48	$0.00	$0.00	$69.36
60,028		$59,227.50	$56,727.39	$2,500.11	4.4%	$0.00	$0.00	$2,425.11	$0.00	$0.00	$75.00
64,545		$63,497.38	$60,809.11	$2,688.27	4.4%	$0.00	$0.00	$2,607.62	$0.00	$0.00	$80.65
69,062		$67,767.22	$64,890.83	$2,876.39	4.4%	$0.00	$0.00	$2,790.10	$0.00	$0.00	$86.29
73,583		$72,040.49	$68,975.78	$3,064.71	4.4%	$0.00	$0.00	$2,972.77	$0.00	$0.00	$91.94
78,099		$76,309.47	$73,056.69	$3,252.78	4.5%	$0.00	$0.00	$3,155.20	$0.00	$0.00	$97.58
82,619		$80,581.88	$77,140.84	$3,441.04	4.5%	$0.00	$0.00	$3,337.81	$0.00	$0.00	$103.23
87,137		$84,853.52	$81,224.31	$3,629.22	4.5%	$0.00	$0.00	$3,520.34	$0.00	$0.00	$108.88

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2020

National Grid - RI Gas
Infrastructure, Safety, and Reliability (ISR) Filing
Bill Impact Analysis with Various Levels of Consumption:

C & I LLF Extra-Large:

						Difference due to:					
	Annual	Proposed	Current				DAC				
Consumption (Therms)		Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
233,835		$206,148.12	$203,062.47	$3,085.65	1.5%	$0.00	$0.00	$2,993.08	$0.00	$0.00	$92.57
259,019		$227,682.74	$224,264.75	$3,417.99	1.5%	$0.00	$0.00	$3,315.45	$0.00	$0.00	$102.54
284,197		$249,212.92	$245,462.70	$3,750.22	1.5%	$0.00	$0.00	$3,637.71	$0.00	$0.00	$112.51
309,381		$270,747.52	$266,664.94	$4,082.58	1.5%	$0.00	$0.00	$3,960.10	$0.00	$0.00	$122.48
334,562		$292,279.88	$287,865.04	$4,414.84	1.5%	$0.00	$0.00	$4,282.39	$0.00	$0.00	$132.45
359,745		$313,813.77	$309,066.64	$4,747.13	1.5%	$0.00	$0.00	$4,604.72	$0.00	$0.00	$142.41
384,928		$335,347.68	$330,268.21	$5,079.47	1.5%	$0.00	$0.00	$4,927.09	$0.00	$0.00	$152.38
410,110		$356,880.77	$351,469.01	$5,411.76	1.5%	$0.00	$0.00	$5,249.41	$0.00	$0.00	$162.35
435,293		$378,414.64	$372,670.55	$5,744.09	1.5%	$0.00	$0.00	$5,571.77	$0.00	$0.00	$172.32
460,471		$399,944.80	$393,868.47	$6,076.33	1.5%	$0.00	$0.00	$5,894.04	$0.00	$0.00	$182.29
485,655		$421,479.39	$415,070.76	$6,408.64	1.5%	$0.00	$0.00	$6,216.38	$0.00	$0.00	$192.26

C & I HLF Extra-Large:

						Difference due to:					
	Annual	Proposed	Current				DAC				
Consumption (Therms)		Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
486,528		$374,091.65	$365,615.01	$8,476.64	2.3%	$0.00	$0.00	$8,222.34	$0.00	$0.00	$254.30
538,924		$413,712.03	$404,322.55	$9,389.48	2.3%	$0.00	$0.00	$9,107.80	$0.00	$0.00	$281.68
591,320		$453,331.62	$443,029.28	$10,302.34	2.3%	$0.00	$0.00	$9,993.27	$0.00	$0.00	$309.07
643,718		$492,953.32	$481,738.03	$11,215.29	2.3%	$0.00	$0.00	$10,878.83	$0.00	$0.00	$336.46
696,109		$532,569.52	$520,441.45	$12,128.07	2.3%	$0.00	$0.00	$11,764.23	$0.00	$0.00	$363.84
748,506		$572,190.54	$559,149.58	$13,040.97	2.3%	$0.00	$0.00	$12,649.74	$0.00	$0.00	$391.23
800,903		$611,811.61	$597,857.75	$13,953.87	2.3%	$0.00	$0.00	$13,535.25	$0.00	$0.00	$418.62
853,294		$651,427.79	$636,561.09	$14,866.70	2.3%	$0.00	$0.00	$14,420.70	$0.00	$0.00	$446.00
905,692		$691,049.50	$675,269.90	$15,779.60	2.3%	$0.00	$0.00	$15,306.21	$0.00	$0.00	$473.39
958,088		$730,669.07	$713,976.59	$16,692.47	2.3%	$0.00	$0.00	$16,191.70	$0.00	$0.00	$500.77
1,010,485		$770,290.10	$752,684.72	$17,605.37	2.3%	$0.00	$0.00	$17,077.21	$0.00	$0.00	$528.16

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2020

Testimony of
Melissa Little

DIRECT TESTIMONY

OF

MELISSA A. LITTLE

December 18, 2020

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I. INTRODUCTION

Q. Please state your full name and business address.

A. My name is Melissa A. Little, and my business address is 40 Sylvan Road, Waltham, Massachusetts 02451.

Q. Please state your position at National Grid and your responsibilities within that position.

A. I am a Director for New England Revenue Requirements in the Regulation and Pricing department of National Grid USA Service Company, Inc. ("Service Company"). The Service Company provides engineering, financial, administrative, and other technical support to subsidiary companies of National Grid USA ("National Grid"). My current duties include revenue requirement responsibilities for National Grid's gas and electric distribution activities in New England, including the gas operations of The Narragansett Electric Company d/b/a National Grid ("Narragansett" or the "Company").

Q. Please describe your education and professional experience.

A. In 2000, I received a Bachelor of Science degree in Accounting Information Systems from Bentley College (now Bentley University). In September 2000, I joined PricewaterhouseCoopers LLP in Boston, Massachusetts, where I worked as an associate in the Assurance practice. In November 2004, I joined National Grid in the Service Company as an Analyst in the General Accounting group. After the merger of National

Grid and KeySpan in 2007, I joined the Regulation and Pricing department as a Senior Analyst in the Regulatory Accounting function, also supporting the Niagara Mohawk Power Corporation Revenue Requirement team. I was promoted to Lead Specialist in July 2011 and moved to the New England Revenue Requirement team. In August 2017, I was promoted to my current position.

Q. Have you previously filed testimony or testified before the Rhode Island Public Utilities Commission ("PUC")?

A. Yes. Among other testimony, I testified in support of the Company's revenue requirement (1) for Narragansett, in the 2017 general rate case filing in Docket No. 4770; (2) for Narragansett Gas, in the Gas ISR Plan and reconciliation filings for Fiscal Year ("FY") 2016 in Docket No. 4540, FY 2017 in Docket No. 4590, FY 2018 in Docket No. 4678, FY 2019 in Docket No. 4781, and FY 2020 in Docket No. 4916, and the Gas ISR Plan filing for FY 2021 in Docket No. 4996; and (3) for Narragansett Electric, in the FY 2018 Electric Infrastructure, Safety, and Reliability ("ISR") Plan and reconciliation filing in Docket No. 4682, FY 2019 in Docket No. 4783, and FY 2020 in Docket No. 4915, and the Electric ISR Plan filing for FY 2021 in Docket No. 4995.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to sponsor Section 3 of the FY 2022 Gas ISR Plan (Gas ISR Plan or Plan), which describes the calculation of the Company's revenue requirement

for FY 2022 in Attachment 1 of that section. The revenue requirement is based on the FY 2022 Gas ISR Plan capital investment described in the testimony of Company Witness Amy Smith.

II. GAS ISR PLAN REVENUE REQUIREMENT

Q. Please summarize the revenue requirement for the Company's FY 2022 Gas ISR Plan.

A. As demonstrated in Attachment 1, Page 1, Column (b), the Company's FY 2022 Gas ISR Plan revenue requirement amounts to $39,525,779, or an incremental $16,764,250 over the amount currently being billed for the Gas ISR Plan. The Plan's revenue requirement consists of the following elements: (1) the revenue requirement of $6,464,832 comprised of the Company's return, taxes, and depreciation expense associated with FY 2022 proposed non-growth ISR incremental capital investment in gas utility infrastructure of $175,462,000[1], as calculated on Attachment 1, Page 15; (2) the FY 2022 revenue requirement on incremental non-growth ISR capital investment for FY 2018 through FY 2021 totaling $24,799,518; and (3) FY 2022 property tax expense of $8,261,429, as shown on Attachment 1 at Page 24, in accordance with the property tax recovery mechanism included in the Amended Settlement Agreement in Docket No. 4323 and continued under the Amended Settlement Agreement in Docket No. 4770. Importantly,

[1] The total of ISR capital investment of $175,462,000 plus cost of removal of $4,684,000 reflects total FY 2022 budgeted capital spending of $180,146,000, as referenced in the pre-filed testimony of Ms. Amy Smith (Section 2, Page 33, Table 1).

the incremental capital investment for the FY 2022 ISR revenue requirement excludes capital investment embedded in base rates in Docket No. 4770 for FY 2018 through FY 2022. Incremental non-growth capital investment for this purpose is intended to represent the net change in net plant for non-growth infrastructure investments during the relevant fiscal year and is defined as capital additions plus cost of removal, less annual depreciation expense ultimately embedded in the Company's base rates (excluding depreciation expense attributable to general plant, which is not eligible for inclusion in the Gas ISR Plan).

For illustration purposes only, Attachment 1, Page 1, Column (c) provides the FY 2023 revenue requirement for the respective vintage year capital investments. Notably, these amounts will be trued up to actual investment activity after the conclusion of the fiscal year, with rate adjustments for the revenue requirement differences incorporated in future ISR filings. A detailed description of the calculation of the Company's revenue requirement for FY 2022 is provided in Section 3 of the Gas ISR Plan.

Q. Did the Company calculate the FY 2022 Gas ISR Plan revenue requirement in the same fashion as calculated in the previous ISR factor submissions?

A. Yes. The Company calculated the FY 2022 Gas ISR Plan revenue requirement in the same fashion as calculated in its previous ISR factor submissions.

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Q. Please explain the increase of FY 2022 Gas ISR Plan revenue requirement over the amount currently being billed for Gas ISR Plan?

A. As mentioned above, the Company's FY 2022 Gas ISR Plan revenue requirement is $16,764,250 higher than the FY 2021 Gas ISR Plan revenue requirement. Of the total $39,525,779 FY 2022 revenue requirement, $24,799,518 in capital investment revenue requirement and $4,270,947 in property tax recovery adjustment are associated with incremental non-growth ISR capital investment for FY 2018 through FY 2021, which have been approved in previous Gas ISR plan or reconciliation filings. The increase in the FY 2022 revenue requirement associated with previous fiscal years' capital investments compared to the approved FY 2021 Plan revenue requirement on that same investment totals $6,749,155 and is mainly due to the half-year convention applied in the year of spend. As a result, the FY 2022 revenue requirement on vintage year FY 2021 incremental non-growth ISR capital investment increased by $7.5 million from the FY 2021 revenue requirement on the same investment. The remainder of the FY 2022 increase, or $10,015,095, is related to the FY 2022 proposed non-growth ISR incremental capital investment and the resulting increase in property tax expense due to that incremental investment.

Q. Does the Company plan to update the FY 2022 Gas ISR Plan revenue requirement calculation subsequent to the date of this filing?

A. Yes. The Company will file its FY 2020 federal income tax return in December 2020,

coincident with the submission of this filing. The Company will compare the results of the actual FY 2020 federal tax return with the FY 2020 tax assumptions used to calculate deferred federal income taxes included in incremental rate base in the FY 2020, FY 2021 and FY 2022 vintage revenue requirement calculations and assess any impact to the FY 2022 Gas ISR Plan revenue requirement. The Company will then file a revised FY 2022 Gas ISR Plan revenue requirement prior to the hearing in this docket, which will quantify the impact of any revisions to accumulated deferred income taxes on the FY 2022 Gas ISR Plan revenue requirement.

III. CONCLUSION

Q. Does this conclude your testimony?

A. Yes.

Testimony of
Tomi Uyehara

DIRECT TESTIMONY

OF

TOMI A. UYEHARA

December 18, 2020

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I. INTRODUCTION

Q. Please state your names and business address.

A. My name is Tomi A. Uyehara and my business address is 40 Sylvan Road, Waltham, Massachusetts 02451.

Q. By whom are you employed and in what capacity?

A. I am a Senior Analyst in the New England Gas Pricing group of the Strategy and Regulation department of the Service Company. In this position, I am responsible for the preparing and submitting various regulatory filings with the Rhode Island Public Utilities Commission ("PUC") on behalf of The Narragansett Electric Company d/b/a National Grid (the "Company").

Q. Please provide your educational background and professional experience.

A. I received a Bachelor of the Arts in Economics and East Asian Studies from Wesleyan University in 2008.

From 2009 to 2010, I worked for AmeriCorps Financial Support Services as a Site Coordinator. From 2010 to 2014, I worked at WORK, Inc. as a Financial Assistant and Operations Manager. From 2014 to 2017, I worked at Boston Modern Furniture as a Business Analyst. In March 2017, I joined National Grid as an Analyst, and in 2019 I was promoted to Senior Analyst.

Q. Have you previously testified before the PUC or any other regulatory commissions?

A. I have not previously testified before the PUC. Although I have not testified before the PUC, I have submitted pre-filed testimony to the Massachusetts Department of Public Utilities in support of Gas System Enhancement Plan ("GSEP") and reconciliation filings, specifically in D.P.U. 20-GREC-03, D.P.U. 19-GSEP-03, and D.P.U. 19-GREC-03.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to sponsor Section 4 of the Fiscal Year ("FY") 2022 Gas Infrastructure, Safety, and Reliability ("ISR") Plan ("Gas ISR Plan" or "Plan"), which describes the calculation of the proposed FY 2022 ISR factors and the customer bill impacts of the proposed ISR factors.

II. RATE DESIGN

Q. Please summarize the rate design used to develop the ISR factors presented as part of this filing.

A. Like the revenue requirement, the proposed Gas ISR Plan rate design for FY 2022 is based on the revenue requirement of cumulative incremental capital investment in excess of capital investment that has been reflected in rate base in the Company's most recent general rate case in Docket No. 4770 and property tax expense as described in Section 3 of the ISR Plan. The Company has allocated the revenue requirement associated with the

capital investment to each rate class based on the rate base allocator approved by the PUC in the Amended Settlement Agreement in Docket No. 4770. The Company also utilized the most recently available forecasted throughput for the period April 2021 through March 2022 that had been developed for the Company's 2020-21 Gas Cost Recovery filing in Docket No. 5066. That data was compiled by rate class and summarized as set forth in Section 4, Attachment 1, Page 2 of the proposed Gas ISR Plan. As shown in Section 4, Attachment 1, Page 1, the Company divided the allocated rate class revenue requirement, as multiplied by the rate base allocator, by the forecasted throughput for each rate class to develop separate ISR factors per rate class on a per-therm basis. The Company then adjusted each rate class' ISR factor to reflect the 1.91 percent uncollectible factor from the Amended Settlement Agreement in Docket No. 4770.

Q. Is the Company proposing any changes to the calculation of the Residential Non-Heating and Residential Heating ISR factors?

A. Yes, the Company is proposing one ISR factor applicable to all residential customers. The Company is proposing this change to mitigate the higher bill impacts to the Residential Non-Heating rate class as compared to the bill impacts indicated for the other rate classes. Absent this adjustment, the bill impacts for Residential Non-Heating customers would be higher than bill impacts for Residential Heating customers. This is because the rate base allocator used to allocate the revenue requirement to the Residential

Non-Heating rate classes is no longer representative of the number of customers receiving service on those rate classes due to the continued migration of Residential Non-Heating customers to the Residential Heating rate classes. The Company is proposing to combine the allocated revenue requirements of the Residential Non-Heating and the Residential Heating rate classes into one revenue requirement for all residential customers and calculate one ISR factor applicable to all residential customers. The PUC approved an identical approach in approving the FY 2019 ISR factors in Docket No. 4781. If the Company did not propose this change, the bill impact for Residential Non-Heating customers would be in excess of 7 percent. Therefore, to reduce the impact significantly, the Company has proposed a single ISR factor for its residential customers. This proposal has minimal impact on Residential Heating customers, slightly increasing the FY 2022 ISR factor for Residential Heating customers.

III. ISR FACTORS

Q. What are the ISR factors proposed by the Company?

A. The ISR factors proposed by the Company are shown in the table below and in the Gas ISR Plan at Section 4, Attachment 1.

Table 3-1 FY 2021 ISR factors per rate class

Rate Class	ISR Rate ($/therm)
Res-Non-Heating	$0.1306
Res-Heating	$0.1306
Small C&I	$0.1230
Medium C&I	$0.0789
Large LL	$0.0759
Large HL	$0.0737
XL-LL	$0.0288
XL-HL	$0.0318

*Rates include uncollectible allowance.

The same factors noted above for Residential Heating and Residential Non-Heating customers would also apply to each of the Low-Income rate classes.

IV. BILL IMPACTS

Q. What is the impact of the proposed ISR factors on customers' bills?

A. For the average Residential Heating customer using 845 therms annually, the proposed FY 2022 ISR factors results in an annual bill increase of $49.12 or 3.7 percent,[1] as shown in the proposed Gas ISR Plan at Section 4, Attachment 2. During the first six months that the proposed ISR factors would be in effect (April 2021 through September 2021), the bill increase for an average Residential Heating customer would be less than $2 per

[1] The bill impact includes the Rhode Island Gross Earnings Tax of three percent.

month. The annual impact of the proposed ISR factors for all rate classes is set forth in Section 4 (Rate Design and Bill Impacts) of the Plan.

Q. Does this conclude your testimony?

A. Yes.