The Narragansett Electric Company
d/b/a National Grid

Gas Infrastructure, Safety, and Reliability Plan FY 2023 Proposal

Book 1 of 2

December 17, 2021

Docket No. 5210

Submitted to:
Rhode Island Public Utilities Commission

Submitted by:
nationalgrid

Filing Letter & Motion

Raquel J. Webster
Senior Counsel

December 17, 2021

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 2023 Gas Infrastructure, Safety and Reliability Plan Docket No. 5210

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") 2023. 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.

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.

The Plan includes a description of the categories of work National Grid proposes to perform in FY 2023 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.

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

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Little describes the revenue requirement for the Plan; and Ryan Scheib 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, the proposed 2023 ISR factors for the period of April 1, 2022 through March 31, 2023 will result in an annual bill increase of $10.98 or 0.8 percent, as reflected in the proposed Gas ISR Plan at Section 4, Attachment 2.

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) and (4)(F). National Grid seeks protection from public disclosure of certain confidential and privileged information in its responses to Division 1-9, Attachments DIV 1-38 and 1-39. In compliance with Rule 1.3(H), National Grid has provided the PUC with one complete, unredacted copy of Attachment DIV 1-9 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 781-472-0531.

Very truly yours,

Raquel J. Webster

Enclosures

cc: Docket 5099 – Gas ISR FY2022 Service List
Leo Wold, Esq.
Al Mancini, Division
John Bell, Division
Rod Walker, Division

STATE OF RHODE ISLAND

RHODE ISLAND PUBLIC UTILITIES COMMISSION

FY 2023 Gas Infrastructure, Safety and Reliability Plan	)	Docket No. 5210

MOTION OF THE NARRAGANSETT ELECTRIC COMPANY D/B/A NATIONAL GRID FOR PROTECTIVE TREATMENT OF CONFIDENTIAL INFORMATION

National Grid[1] respectfully 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 well as certain critical energy infrastructure information as permitted by 810-RICR-00-00-1.3(H) (Rule 1.3(H)) of the PUC's Rules of Practice and Procedure and R.I. Gen. Laws § 38-2-2(4)(B) and (4)(F). The Company also respectfully requests that, pending entry of that finding, the PUC preliminarily grant the Company's request for confidential treatment pursuant to Rule 1.3(H)(2).

I. BACKGROUND

On December 17, 2021, the Company submitted its FY 2023 Gas Infrastructure, Safety and Reliability Plan (the "Plan" or "ISR Plan") filing in the above-captioned docket. The ISR Plan filing includes the Company's responses to sixty data requests propounded by the Division of Public Utilities and Carriers (the "Division") in connection with its pre-filing review of the Plan. The Company's responses to Division data requests 1-9, 1-38 and 1-39 (the "Confidential Responses") contain information that is not subject to disclosure under Rhode Island's Access to

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

Public Records Act. Specifically, the Confidential Responses contain critical energy infrastructure information ("CEII") the disclosure of which could present a threat to public safety. The CEII contained in the Company's Confidential Responses includes plans, descriptions, design standards and schematic drawings of natural gas transmission and distribution infrastructure. Additionally, the responses contain certain confidential commercial information related to the Company's contracting for construction services including pricing, product descriptions and commercial terms included in construction, operation and maintenance agreements included in the Confidential Responses.

Therefore, the Company requests that, pursuant to Rule 1.3(H), the PUC afford confidential treatment to the CEII and confidential commercial information contained in the Confidential Responses

II. LEGAL STANDARD

Rule 1.3(H) 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 the 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) and (4)(F) provide that the following types of records shall not be deemed public:

> (B) Trade secrets and commercial or financial information obtained from a person, firm, or corporation which is of a privileged or confidential nature…
>
> (F) Scientific and technological secrets and the security plans of military and law enforcement agencies, the disclosure of which would endanger the public welfare and security.

With respect to the commercial information exception to the definition of "public record," 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 v. Convention Ctr. Auth.*, 774 A.2d 40 (R.I. 2001). The first prong of the test is satisfied when information is 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.

With respect to other exceptions to the definition of public record, the Rhode Island Supreme Court has held that the agencies making determinations as to the disclosure of information under APRA may apply the balancing test established by the Court in *Providence Journal v. Kane*, 577 A.2d 661 (R.I. 1990). Under this balancing test, the PUC may protect information from public disclosure if the benefit of such protection outweighs the public interest inherent in disclosure of information pending before regulatory agencies.

III. BASIS FOR CONFIDENTIALITY

The commercial information contained in the Company's responses to Division data requests 1-38 and 1-39 is confidential and privileged information of the type that National Grid would not ordinarily make public. The information includes commercial terms such as pricing, the identities of vendors offering certain pricing and the names of certain products to which the pricing terms apply. Public disclosure of such information could impair National Grid's ability to negotiate advantageous pricing or other terms in the future, thereby causing substantial competitive harm to the detriment of the Company and its customers. Accordingly, National Grid is providing the information on a voluntary basis to assist the PUC with its decision-making in this proceeding, but respectfully requests that the PUC provide confidential treatment to the information.

With respect to the CEII contained in the Company's Confidential Responses, CEII is defined by the Federal Energy Regulatory Commission ("FERC") as:

> [S]pecific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure that:
>
> 1. Relates details about the production, generation, transmission, or distribution of energy;
> 2. Could be useful to a person planning an attack on critical infrastructure;
> 3. Is exempt from mandatory disclosure under the [Federal] Freedom of Information Act, 5 U.S.C. § 552; and
> 4. Does not simply give the general location of the critical information.

18 CFR § 388.113(c)(2). In turn, "critical infrastructure" is defined as:

> [E]xisting and proposed systems and assets, whether physical or virtual, the incapacity or destruction of which would negatively affect security, economic security, public health or safety, or any combination of those matters.

18 CFR § 388.113(c)(4). The design specifications, schematic drawings, product and project descriptions and related information contained in the Confidential Responses fall squarely within FERC's definition of CEII. Public dissemination of this information could pose a grave threat to public health and safety as it could be used to identify vulnerabilities in, and plan attacks against, natural gas transmission and distribution infrastructure. Under the Rhode Island Supreme Court's balancing test set forth in *Providence Journal v. Kane*, the public interest in access to this

information is far outweighed by the threat to the public's health and safety that could result from public dissemination of these technical details concerning natural gas infrastructure.

IV. CONCLUSION

For the foregoing reasons, National Grid respectfully requests that the PUC grant its Motion for Protective Treatment of the Confidential Responses. In accordance with Rule 1.3(H) the Company has submitted redacted versions of the Confidential Responses for the public file in this matter and unredacted confidential versions subject to this motion for protective treatment.

Respectfully submitted,

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

By its attorney,

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Dated: December 17, 2021

DIRECT JOINT TESTIMONY

OF

AMY SMITH

AND

NATHAN KOCON

December 17, 2021

Table of Contents

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, Regulatory Gas New England. 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 Chief Operating Officer Gas, New England and her staff on all local gas regulatory matters related to the Company’s 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, and Gas Business Planning and Performance. I assumed my current position on April 1, 2021. 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. I have testified before the PUC in numerous proceedings from 2011 to 2021 involving Gas Infrastructure, Safety, and Reliability Plans. I have also testified before the PUC in support of the Company's 2019-20 and 2020-21 Distribution Adjustment Clause filings in Dockets 5040 and 5165.

<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 Chief Operating Officer Gas, New England and her staff on all local gas regulatory matters related to the Company's 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. Yes. I testified before the PUC in the FY 2022 Gas Infrastructure, Safety, and Reliability Plan proceeding (Docket No. 5099), the FY 2021 Gas Infrastructure, Safety, and Reliability Plan Reconciliation proceeding (Docket No. 4996) and in the 2020-21 Distribution Adjustment Charge proceeding (Docket No. 5165).

II. <u>Purpose of Testimony</u>

Q. What is the purpose of your joint testimony?

A. The purpose of our testimony is to describe the Company's proposed FY 2023 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, the anticipated capital investments associated with that work, and the resulting plant

[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). Starting with the FY 2021 Reconciliation, in accordance with the PUC's Order in Docket 5099 (FY 2022 Gas ISR), effective as of April 1, 2021, the Company aligned the calculation of its Gas ISR revenue requirement with the Electric ISR and implemented the plant-in-service methodology to calculate the FY 2021 Gas ISR revenue requirement and the FY 2023 revenue requirement. For FY 2023, the Company's fiscal year is for the period of April 1, 2022 through March 31, 2023, so the Plan would be effective April 1, 2022.

additions. Company Witness Melissa A. Little is providing testimony on the calculation of the revenue requirement associated with the Company's Plan, and Company Witness Ryan Scheib 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.

III. Overview

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

A. Overall, the Gas ISR Plan will allow the Company to meet state and federal safety and reliability requirements and to maintain its gas distribution system in a safe and reliable condition. 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.

The Gas ISR Plan is designed to establish a spending plan, together with a reconcilable allowance for the anticipated capital additions being placed in service for the fiscal year 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.[2]

Q. Explain the review of the Gas ISR Plan that has occurred to date?

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 4, 2021.[3] On October 18, 2021 the Company met with the Division regarding the Plan and subsequently responded to sixty formal data requests from the Division regarding various components of the Plan. The Company and the Division continued to collaborate regarding the proposed Plan on several occasions, including a subsequent meeting on December 10, 2021 and various other informal conversations. The Company also responded to other informal supplemental data requests from the Division. The Division has indicated its initial concurrence with the proposed Gas ISR Plan and budget, including the programs and projects outlined in the Plan. The Company anticipates that the Division will continue to review the Plan and its costs after filing, consistent with prior Gas ISR Plan filings.

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

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 – 2020 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. Scheib is sponsoring the rate design and bill impacts included in Section 4 of the Plan.

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 Southern RI Gas Expansion. Included in the Plan document is a description of the Company’s proposed budget for capital investment for FY 2023, the capital additions projected to be placed in service in FY 2023, and a capital forecast for FY 2024 through FY 2027. 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 2023 Southern RI Gas Expansion budget separately from the overall discretionary budget under the Plan. If deviations do occur with the Southern RI Gas Expansion, the Company will neither advance nor delay other discretionary work to compensate for those changes in FY 2023 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. <u>Capital Investment Plan</u>

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

A. For FY 2023, the Company proposes to invest a total of $175.66 million, including $48.99 million for non-discretionary capital expenditures; and $126.67 million for discretionary capital expenditures, which includes $6.79 million for the Southern RI Gas Expansion Project. For FY 2023, the Company will no longer utilize an Incremental Cost category because this is now the third fiscal year in which the projected cost impacts will be incorporated into the capital spending plan to comply with 1) the Rhode Island Utility Fair Share Roadway Repair Act (the "Act") [4]; and 2) the statutory requirements to have natural gas infrastructure design plans and specifications approved by a Rhode Island registered Professional Engineer (the "PE Stamp" requirement). As such, those costs have become standard costs and are incorporated directly into the applicable ISR categories that they impact. The estimated PE Stamp costs contained throughout the FY 2023 plan total $2.45 million, and the estimated Incremental Paving costs contained throughout the FY 2023 plan total $6.76 million.

The Plan is broken down into categories of non-discretionary and discretionary 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

4 See Rhode Island Utility Fair Share Roadway Repair Act, R.I. Gen. Laws § 39-2.2.

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.

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:

- $20.60 million net investment for Public Works programs, including $22.03 million in capital spend and $1.43 million in reimbursements;
- $28.36 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, Pipeline Integrity – Integrity Verification Program; and
- $0.03 million for Damage/Failure programs.

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

A. For the discretionary programs in the Gas ISR Plan, the Company proposes the following levels of spending:

- $78.92 million for the Proactive Main Replacement program (i.e., Proactive Main Replacement, Large Diameter, and Atwells Avenue project);
- $0.60 million for the Proactive Service Replacement program;

- $40.36 million for Gas System Reliability, including work relative to System Automation, Heater Program, Wampanoag Trail and Tiverton Gate Station, Take Station Refurbishment, Pressure Regulating Facilities, Valve Installation/Replacement, Gas System Reliability Enhancement, Instrumentation and Regulation – Reactive, Distribution Station Over Pressure Protection, Liquefied Natural Gas (LNG) facilities, Replace Pipe on Bridges, Access Protection Remediation, and Tools and Equipment; and
- $6.79 million for the 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 2023.

Q. How does the Company plan to address the replacement of leak-prone pipe in Rhode Island in FY 2023?

A. To continue providing safe and reliable gas service to its Rhode Island customers, the Company's FY 2023 Plan includes the elimination or rehabilitation of a total of approximately 65.0 miles of leak-prone pipe consisting of: (1) approximately 49.4 miles of proactive main replacement, including 10.0 miles of carryover abandonment or work in progress from FY 2022, (2) 14.0 miles of public works replacement, (3) 0.1 mile of mandated work, (4) 0.1 mile of reliability work, (5) 1.0 mile of reinforcement work, and (6) 0.5 mile of rehabilitation work. This resulting abandonment target of approximately 64.5 miles for FY 2023 is a decrease of approximately 5.8 miles compared to the

FY 2022 ISR Plan, but 64.5 miles is in general alignment with the actual number of miles forecasted to be abandoned in FY 2022. Additionally, the FY 2022 plan included 6.2 miles of parallel main abandonment, whereas FY 2023 contains 2.76 miles of parallel main abandonment.

The Company believes that the FY 2023 leak prone pipe abandonment target of 64.5 miles aligns with the resources that are forecasted to be available to perform the abandonments. The total abandonment miles include FY 2022 carryover (or in progress) miles, resulting in planned abandonment miles that are greater than planned installation miles. This allows the Company to catch up on carryover abandonment work with the goal of being able to equalize abandonment and installation miles in future years. The Company notes that if the volume of remaining FY 2022 carryover miles is lower than expected, the Company will evaluate the potential to install more than the 39.1 miles in the Proactive Main Replacement – Leak Prone Pipe program for FY 2023. If the Company and its contractors experience favorable weather conditions in FY 2022 and/or FY 2023, those conditions would likely aid their ability to install more than 39.1 miles for FY 2023.

The Company is proposing FY 2023 spending of $78.92 million for the Proactive Main Replacement program, which includes $2.25 million for the Large Diameter LPCI

Program and $1.46 million for the Atwells Avenue project, and $20.60 million for the Public Works program. For FY 2023, the Company has maintained the Proactive Main Replacement program cast iron abandonment target percentage of seventy percent (70%). Cast iron represents sixty seven percent (67%) of the Company’s total leak-prone main inventory in Rhode Island. As illustrated on page 27 in the attached 2020 System Integrity Report, cast iron represented eighty seven (87%) of main leak repairs in 2020, which continued to support the 2019 risk factor that impacted the decision to increase the planned percentage of cast iron to be abandoned to seventy percent (70%). 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 added the service corrosion repaired leaks to the main prioritization algorithm, which will help prioritize the area of high service failures first. The addition of the service corrosion repaired leaks to the main prioritization algorithm was factored into the development of the FY 2022 and FY 2023 workplans. This continues to enable leak-prone services to be addressed most efficiently and primarily through the Proactive Main Replacement program, but now with greater emphasis. As shown on page 4 of the 2020 System Integrity Report, the Company saw a nineteen percent (19%) decrease on the Service Leak Rate from 2019 to 2020. These rates are subject to fluctuate on an annual basis, but the Company has observed a downward trend in service leaks.

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. This may contribute to situations where the annual leak-prone pipe replacement program abandonment mileage target exceeds total installation miles. The current FY 2023 workplan contains approximately 2.76 miles of parallel main to be abandoned (the FY 2022 workplan originally contained 6.2 miles of parallel main). The lower number of parallel main abandonment miles in the FY 2023 is also a contributing factor in the reduced abandonment target in FY 2023 vs FY 2022.

Q. How do the FY 2023 leak-prone pipe replacement programs compare to the FY 2022 programs?

A. The Public Works program abandonment and installation miles will both remain at 14 miles for FY 2023 matching the FY 2022 targets. As explained above regarding the overall abandonment target, the Main Replacement – Leak Prone Pipe program abandonment target is decreasing from 55.0 miles in the FY 2022 plan to 49.1 miles in the FY 2023 plan. However, the overall FY 2023 abandonment target is in line with the Company's resources and is in general alignment with the current forecast for FY 2022 abandonment. Also as noted above, the total abandonment miles include FY 2022 carryover (or in progress) miles, resulting in planned abandonment miles that are greater than planned installation miles. This allows the Company to catch up on carryover abandonment work with the goal of being able to equalize the abandonment and installation miles in future years. If the volume of remaining FY 2022 carryover miles are lower than expected, the Company will evaluate whether it is able to install more than the 39.1 miles in the Proactive Main Replacement – Leak Prone Pipe program for FY 2023.

The table below provides a comparison of the Main Replacement – Leak Prone Pipe program between FY 2022 and FY 2023, including the estimated cost per mile for installed 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 \$1.30 million in FY 2022 to \$1.32 million in FY 2023. The average installation cost per mile for work in suburban locations is estimated to increase from \$1.32 million in FY 2022 to \$1.56 million in FY 2023. The average installation cost per mile for work in urban locations is estimated to increase from \$1.96 million in FY 2022 to \$2.33 million in FY 2023. Factors contributing to these increases include the impact of updated pricing following contract negotiations (which typically occur every three years), local paving requirements, increased use of professional engineers and a higher proportion of cast iron main replacement. Additionally, the average cost per mile may fluctuate based on the estimated costs of the actual projects planned for any given fiscal year.

FY 2022 (Plan as of 11/30/2020)		
	Installation Miles	Installation Cost/Mile
Rural	5.0	$1.30M
Suburban	21.8	$1.32M
Urban	21.7	$1.96M
Total/Average	48.5	$1.61M

FY 2023 (Plan as of 12/15/2021)		
	Installation Miles	Installation Cost/Mile
Rural	1.6	$1.32M
Suburban	19.9	$1.56M
Urban	15.7	$2.33M
Total/Average	37.3	$1.88M

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

A. Yes. When the ISR program was first implemented in FY 2012, approximately forty eight percent (48%) of the Company's gas distribution pipe in Rhode Island was leak-prone pipe. Through the FY 2021 Gas ISR Plan, the Company has abandoned a total of

537 miles of leak-prone pipe, which has contributed to an estimated leak reduction of twenty eight percent (28%) or 1,468 gas leaks in total. To monitor its system performance, the Company prepares an annual System Integrity Report. A copy of the most recent System Integrity Report (2020) 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 in leak receipts, and the Company believes that the ISR and ARP programs have contributed to this result. The System Integrity Report shows that leak receipts decreased in 2020, after experiencing a slight increase in 2017-2019, particularly on cast iron mains. There are many contributing factors to leak rates, including weather, public awareness, and overall system deterioration rates. Since the issuance of the 2019 System Integrity Report, the Company has made a targeted effort to increase the percentage of cast iron leak prone pipe abandonment in the annual workplans. As stated above, the Company is continuing to target seventy percent (70%) cast iron leak prone pipe abandonment in the FY 2023 workplan.

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

A. Yes. As indicated above, the Company maintained the Proactive Main Replacement program cast iron abandonment percentage of seventy percent (70%), which is the same as FY 2022, but this is an increase from sixty one percent (61%) in the FY 2021 workplan. Further, based on recommendations from the Division, and as ordered by PUC in Docket 4996 on August 19, 2020, the Company has maintained the adjusted weighting of risk factors that were factored into the development of the FY 2022 workplan and has carried those factors forward with the development of the FY 2023 plan. This has enabled the Company to continue addressing leak-prone services primarily through the Proactive Main Replacement program with a focus on reducing the riskiest services in the most cost-effective manner.

In addition, the FY 2023 Plan continues to include the Atwells Avenue Main Replacement project. FY 2023 will be year four of this 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 in Providence and includes a heavy concentration of restaurants. Upon completion of an integrity analysis, the initial project scope established the necessity to abandon over one mile of cast iron main and replace it with over one mile (5,505 feet) of high-density polyethylene ("HDPE") pipe.

The project was divided 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. In FY 2021 the Company completed the main installation and abandonment of Segments 1A and 1B, Throughout FY 2022 and FY 2023 the Company has and will continue to work in conjunction with the City of Providence on final restoration of Segments 1A and 1B as the City completes work on their sidewalks. The main installation and abandonment of the final segment, Segment 3, which was originally scheduled for FY 2022, will now be completed in FY 2023. Segment 3 includes the installation and abandonment of approximately 0.3 mile (1,410 feet) of main at a cost of approximately $0.82 million.

To establish an order of priority for Atwells Avenue work, the Company has been working in close conjunction with Providence Water, which is replacing pipe in the area, and the City of Providence which is seeking to repave after underground utility work has been completed, which includes the replacement of leak prone main. Based on that prioritization and the high volume of associated service and meter work, construction for Segment 3 was not started in FY 2022, and the Company decided to defer the project to FY 2023. For FY 2023, the Gas ISR plan contains $1.46 million for the Atwells Avenue Main Replacement project. From FY 2019 through the anticipated close of the project in

FY 2024, the total forecasted cost of the Atwells Avenue Main Replacement project is $9.06 million.

Q. Why do the Wampanoag Trail and Tiverton Gate Station heaters need to be replaced?

A. There are three reasons driving the need to replace the heaters at the Wampanoag Trail and Tiverton gate stations. First, both heaters have outlived their expected useful life, which is approximately 25 years. Second, the safety and controls systems for the heaters do not meet National Grid's current standards. Third, the Company has capacity concerns associated with the Wampanoag heaters. The new heaters will be sized based on current station flows.

Q. When were the heaters originally installed?

A. The Wampanoag trail heaters were installed in 1967. It is estimated that the Tiverton heater was installed between 1983 and 1989.

Q. How do National Grid's heater standards differ from Enbridge's heater standards?

A. National Grid's standards differ from Enbridge's standards in terms of heater sizing and safety controls.

Q. Please describe the difference in heater sizing.

A. National Grid's standards require adequate redundancy in the design to ensure gas is properly heated if a failure occurs. Enbridge's standards do not include this level of redundancy. Specifically, the Company's design standard uses two water bath heaters, each providing at least 75 percent of the maximum heat capacity. In contrast, Enbridge's standards only provide the customer with a gas temperature stated in its supply agreement based on design requirements but does not require redundancy in the heater design, increasing the risk of service interruption if there is failure.

Q. Please describe the difference in safety control standards between National Grid and Enbridge.

A. National Grid's heaters standards incorporate ASME CSD-1 for flame supervision and a process safety requirement for a SIS (Safety Instrumented System) Design. Some differences include: PLC (programmable logic controller) temperature control and status inputs for shutdown and annunciation purposes, SIL (Safety Integrity Level) rated components, and SIF (Safety Integrated Function) failure rate requirements for each potential failure mode. Enbridge's standards do not incorporate these safety controls.

Q. In National Grid's opinion, what, if anything, is imprudent or unreasonable with Enbridge's standards for heater design?

A. National Grid does not believe that Enbridge's standards for heater design are either unreasonable or imprudent. However, National Grid has adopted a Process Safety Management approach that the Company believes fully identifies the actual risks associated with operating a pipeline heater and provides the controls necessary to mitigate those risks and provide safe and reliable operation.

Q. What are the benefits to National Grid and its customers associated with Enbridge constructing the heaters and National Grid taking ownership after construction?

A. Generally, the benefits resulting from the work and the transfer of ownership of the assets from Enbridge to National Grid are:

- The enhancement of heating system reliability at both locations by installing fully redundant heating systems;
- The ability to perform heater maintenance and repairs without station shutdown or heater bypass, which improves overall gate station reliability;
- The creation of verifiable inspection and maintenance records for the new assets; and
- A reduction in the dependency on the pipeline operators to operate and maintain safety critical equipment.

Specifically, with respect to each gate station, the Company will realize the following benefits:

Benefits for the Tiverton Gate Station:

- A reduction of overpressure risk through the installation of three levels of overpressure protection and reliable heat;
- Allowance for greater level of proactive station maintenance that the Company will perform, including annual regulator boot replacement and monthly station checks. This will greatly mitigate outage risk of the single feed system.

Benefits for the Wampanoag Trail Gate Station:

- Improvement of heater efficiency and reduction of risks associated with Gas System Operator ("GSO") changing flows through the station by providing National Grid with the ability to control Wampanoag Trail Heater setpoints with its modern Programmable Logic Controller ("PLC") system; and.
- Reduction of the potential for overheated gas which may melt regulator soft goods by installing a National Grid Safety Integrity Level ("SIL") certified heater safety system.

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

A. As was detailed in the FY 2020 Gas ISR, the Company identified a need, and has begun to build, 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 which would present a risk of service disruption. In addition, several regulator station inlet pressures were predicted to fall below the minimum threshold, which would have resulted in problems on the downstream pressure systems if the regulator stations could not 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 and 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 has been constructed to be in-line inspected and the allowable pressure has been increased to a maximum allowable operating pressure ("MAOP") of 200 psig. As each segment was completed, growth capacity was also added. The Company estimates that approximately 1,100 dekatherms per hour of additional capacity is now available in the Southern Rhode Island service territory. The installation of the second distribution main also improves 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. The Southern RI Gas Expansion Project will include main installation, regulator station investment, and other upgrades and investments. This work will occur between FY 2019 and FY 2025. 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

$97.64 million. For FY 2023, the Company expects to spend a total of $0.60 million for remaining final restoration and closeout costs related to the main installation work.

In addition to the main installation work, the Southern RI Gas Expansion will also include activities related to regulator stations, other upgrades, and investments at a total cost of $6.19 million. In FY 2023, the Company will 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, procurement of materials, and construction related to updates at the existing Cowesett regulator station. Additionally, FY 2023 activities will include the final design, procurement of materials related to upgrades at the existing Cranston regulator station for construction commencing in FY 2024. 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 2026, the total estimated cost for activities related to regulator stations, other upgrades, and investments is currently estimated to cost $33.84 million. The total estimated cost for the Southern RI Gas Expansion Project from FY 2019 through the anticipated close of the project in FY 2026 is $131.48 million.

V. Conclusion

Q. Does the FY 2023 Gas ISR Plan fulfill the Company's statutory obligation to plan for the safe and reliable delivery of gas through the Company's distribution system in Rhode Island?

A. Yes. The FY 2023 Gas ISR Plan will permit 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.

Q. Does this conclude your testimony?

A. Yes.

Exhibit 1
Gas ISR FY2023 Plan

The Narragansett Electric Company
d/b/a National Grid

Gas Infrastructure, Safety, and Reliability Plan FY 2023 Proposal

December 17, 2021

Docket No. 5210

Submitted to:
Rhode Island Public Utilities Commission

Submitted by:
nationalgrid

Section 1
Introduction

Section 1

Introduction and Summary
FY 2023 Proposal

Introduction and Summary
FY 2023 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”) 2023[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 2023 is defined as the 12 months ending March 31, 2023.

[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 2023 Plan for the statutory categories of costs and the capital additions projected to be placed in-service in FY 2023; (3) the resulting FY 2023 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 2023 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.

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 report on the prior fiscal year's activities and the resulting plant additions. 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.

[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 Public Utilities Commission ("PUC") for review and approval within 90 days.

The FY 2023 level of capital spending provided in the Gas ISR Plan to maintain the safety and reliability of the Company's gas delivery infrastructure is $175.66 million, which would contribute to plant additions of $162.92 million. As described in more detail below, this amount includes $6.79 million to continue the Southern Rhode Island Gas Expansion Project, which the Company manages as a distinct spending portfolio. For FY 2023, the Company will no longer utilize an Incremental Cost category for certain paving and professional engineer costs because this is now the third fiscal year in which the projected cost impacts will be incorporated into the capital spending plan to comply with 1) the Rhode Island Utility Fair Share Roadway Repair Act (the "Act") [5]; and 2) the statutory requirements to have natural gas infrastructure design plans and specifications approved by a Rhode Island registered Professional Engineer ("PE Stamp"). As such, those costs have become standard costs and are incorporated directly into the applicable ISR categories that they impact. In addition to the $175.66 million included in the FY 2023 ISR budget, the Company also plans to have non-ISR capital spending of $1.00 million for the Old Mill Lane project and $2.50 million for the LNG – Cumberland Tank Replacement project.

A description of the Company's proposed capital investment plan and capital additions projected to be placed in-service for FY 2023 is included 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.

[5] See Rhode Island Utility Fair Share Roadway Repair Act, R.I. Gen. Laws § 39-2.2.

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. Starting with the FY 2021 Reconciliation, in accordance with the PUC's Order in Docket 5099 (FY 2022 Gas ISR), effective as of April 1, 2021, the Company aligned "the calculation of its Gas ISR revenue requirement with the Electric ISR[6]" and implemented the plant-in-service methodology to calculate the FY 2021 Gas ISR revenue requirement as well as the FY 2023 revenue requirement. From FY 2012 to FY 2021,

[6] PUC Order 24042, Docket No. 5099 Final Order, dated May 6, 2021.

the Company has invested a total of $981 million through the Gas ISR program. This includes a total of $574 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 forty eight percent (48%) of the Company's gas distribution system in Rhode Island was comprised of leak-prone pipe. The table below highlights a total of 537 miles of leak-prone pipe abandoned through the FY 2021 ISR Plan that has contributed to an estimated reduction of 1,468 leaks.

Description	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	Total
Total ISR Abandonment Miles	46	47	53	55	59	63	62	60	62	30	537
Gas Leaks Eliminated	191	186	140	121	150	103	178	160	160	79	1,468

To monitor its system performance, the Company prepares an annual System Integrity Report. A copy of the most recent System Integrity Report (2020) 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 indicates that the ISR and ARP programs have contributed to this result. The System Integrity Report shows that there was a slight increase in leak receipts from 2017-2019, but the volume decreased in 2020. Notably, variability in year-to-year annual leaks per mile will occur. Contributing factors include weather, public awareness, and overall system deterioration rates. In FY 2021, the Company noticed the increase in cast iron leak activity and increased the target abandonment percentage of cast iron main in the FY 2022 workplan to seventy percent (70%), which has been carried forward into the FY 2023 workplan.

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 and capital additions projected to be placed in-service for the following key Discretionary[7] and Non-Discretionary[8] categories.

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 and capital additions projected to be placed-in service for each sub-category. The Company has included its capital budget, identified the relevant projects that would be part of the Gas ISR Plan, provided its rationale for the need for and benefit of performing such work to provide safe

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

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

and reliable service to its customers, and the resulting capital additions that would be added to the revenue requirement. The Company has also provided a five-year ISR capital plan to provide a longer-term approach to infrastructure, safety, and reliability and to demonstrate how the FY 2023 Plan would be incorporated into that longer-term planning approach. Finally, the Company has also provided the most recent five-year history of ISR capital spend for reference.

The Company's FY 2023 Plan includes the elimination or rehabilitation of a total of approximately 65.0 miles of leak-prone pipe (approximately 49.4 miles of proactive main replacement, including 10.0 miles of carryover or in-process abandonment from FY 2022, 14.0 miles of public works replacement, 0.1 mile of mandated work, 0.1 mile of reliability work, 1.0 mile of reinforcement work, and 0.5 mile of rehabilitation work). This resulting abandonment target of approximately 64.5 miles for FY 2023 is a decrease of approximately 5.8 miles compared to the FY 2022 ISR Plan, but 64.5 miles is in general alignment with the actual number of miles forecasted to be abandoned in FY 2022. Additionally, the FY 2022 plan included 6.2 miles of parallel main abandonment, whereas FY 2023 contains 2.76 miles of parallel main. The Company believes that the FY 2023 leak prone pipe abandonment target of 64.5 miles aligns with the resources the Company forecasts will be available to perform the abandonments. For FY 2023, the Company has maintained the Proactive Main Replacement program cast iron abandonment target percentage of seventy percent (70%). Cast iron represents sixty seven percent (67%) of the Company's total leak-prone pipe inventory. In addition, 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 added the service corrosion repaired leaks to the main prioritization algorithm, which will help prioritize the area of high service failures first.

The addition of the service corrosion repaired leaks to the main prioritization algorithm was factored into the development of the FY 2022 and 2023 workplans. This has enabled the Company to continue addressing leak-prone services primarily through the Proactive Main Replacement program, with a focus on reducing the riskiest services in the most cost-effective manner.

The FY 2023 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 2022 Gas ISR Plan, the Southern RI 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 Southern RI Gas Expansion Project, the forecasted spend in FY 2023, and in future fiscal years, may change as risks occur and/or cost savings are achieved. If the Southern RI Gas Expansion Project were 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 Southern RI Gas Expansion Project as a distinct portfolio of spend and not advance or delay other projects if over- or under-spend occurs on the Southern RI Gas Expansion Project.

Section 3: Revenue Requirement

The Company has provided a calculation of the cumulative revenue requirement resulting from the proposed FY 2023 capital investment plan. Section 3 of the Plan contains a description of the revenue requirement model for FY 2023 and an illustrative calculation for FY 2024. This calculation will form the basis for the Plan rate adjustment, which would become effective on

April 1, 2022 upon the PUC's 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. The bill impact of the Gas ISR Plan for the average Residential Heating customer, using 846 therms annually, for the period April 1, 2022 through March 31, 2023 would be an annual increase of $10.98, or 0.8%, from last year's bills.

Section 2

Gas Capital Investment Plan
FY 2023 Proposal

Gas Capital Investment Plan
FY 2023 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 2023 along with capital assets that are forecasted to be placed in service in FY2023. At the end of this section, Table 1 contains a description of the proposed budget for the FY 2023 Plan and the resulting Plant Additions; Table 2 contains a

[9] The Company delivers natural gas to approximately 273,000 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 194,000 gas services.

proposed five-year spending forecast for FY 2023 through FY 2027; and Table 3 contains actual spending based on the prior five-year period, FY 2017 through FY 2021. In FY 2023, the Company proposes to invest a total of $175.66 million of ISR investments[10], which includes $48.99 million for Non-Discretionary capital expenditures and $126.67 million for Discretionary capital expenditures, which includes $6.79 million for the Southern RI Gas Expansion Project. The total of $175.66 million includes $4.39 million related to Cost of Removal. The capital additions projected to be placed in-service for FY 2023 is projected to be $162.92 million, which is included in the FY 2023 Gas ISR recovery mechanism. For FY 2023, the Company will no longer utilize an Incremental Cost category for certain paving and professional engineer costs as this is now the third fiscal year that the projected cost impacts will be incorporated into the capital spending plan for 1) the Rhode Island Utility Fair Share Roadway Repair Act (the "Act"); and 2) the statutory requirements to have PE Stamps for natural gas infrastructure design plans and specifications. As such, PE Stamp-related costs have become standard costs and are incorporated directly into the applicable ISR categories that they impact. The estimated PE Stamp costs in the FY 2023 plan total $2.45 million, and the estimated Incremental Paving costs in the FY 2023 plan total $6.76 million.

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 $175.66 million that the Company proposes for its FY 2023 Gas ISR Plan spending:

[10] For FY 2023, the Company plans to spend $231.52 million of total capital investment. Of this total, $55.86 million is associated with projected growth and other non-ISR spending, which is not included for recovery in the FY 2023 Gas ISR Plan.

Non-Discretionary:

- $20.60 million net investment for Public Works programs, including $22.03 million in capital spend and $1.43 million in reimbursements;
- $28.36 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, Pipeline Integrity – Integrity Verification Program; and
- $0.03 million for Damage/Failure programs.

Discretionary:

- $78.92 million for the Proactive Main Replacement Program (i.e., Proactive Main Replacement, Large Diameter, and Atwells Avenue project);
- $0.60 million for the Proactive Service Replacement program;
- $40.36 million for Gas System Reliability, including work relative to System Automation, Heater Program, Wampanoag Trail and Tiverton Gate Station, Take Station Refurbishment, Pressure Regulating Facilities, Valve Installation/Replacement, Gas System Reliability Enhancement, Instrumentation and Regulation – Reactive, Distribution Station Over Pressure Protection, Liquefied Natural Gas (LNG) facilities, Replace Pipe on Bridges, Access Protection Remediation, and Tools and Equipment; and
- $6.79 million for the Southern Rhode Island Gas Expansion Project (Gas Expansion Project).

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 2023, the Plan incorporates a net of $20.60 million in spending under the Public Works category, which includes $22.03 million in capital spend and $1.43 million, which the Company anticipates will 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. The forecasted plant additions for this category in FY 2023 total $20.18 million.

B. Mandated Programs

Spending for Mandated Programs falls into the following eight 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, (7) Transmission Station Integrity and (8) Pipeline 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 2023, the Company proposes to spend $1.31 million on this program, which would contribute to plant additions of $1.50 million.

2. **Purchase Meter Replacement** – Capital costs for the Purchase Meter Replacement program are required for the procurement of replacement meters. For FY 2023, the Company will require approximately 19,945 meters (18,640 mandated and 1,305 miscellaneous). The meter replacements are part of a multi-year plan and 19,945 meters represents approximately 7.35 percent of the existing meter population in Rhode Island. The Company is planning to purchase 18,045 meters in FY 2023. In FY 2023, the Company forecasts that it will spend $5.25 million on the Purchase Meter Replacement program, which would contribute to plant additions of approximately $5.12 million.

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 2023, the Company proposes to spend $10.10 million for this work, which aligns with the FY 2022 forecast and includes funding for current final restoration paving

requirements. The forecasted plant additions for this category in FY 2023 total $9.79 million.

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 2023, the Company proposes to spend $1.70 million in connection with this program, which includes funding for current final restoration paving requirements. The forecasted plant additions for this category in FY 2023 total $1.63 million.

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 typically dictate immediate replacement and/or gas facilities are subject to water intrusion or exposure and require remedy. The Company proposes to spend $3.00 million in this area in FY 2023, of which $1.19 million is budgeted for reactive work that is not yet known and $1.81 million is budgeted for reactive main replacement at the Oxbow Farms project in Middletown. The forecasted plant additions for this category in FY 2023 total $2.61 million.

6. **Proactive Low Pressure System Elimination** – This will be the second year of this ISR program, which was implemented to systematically replace low pressure ("LP") gas systems with high pressure ("HP") gas systems to enhance gas system safety. National Grid 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. In FY 2023, the Company will continue a multi-year (began in FY 2022) LP System Elimination project in Middletown which will allow for the eventual abandonment of the Walcott Avenue near Briarwood Avenue LP regulator station. Work on Phase 1 of the project has begun on Tuckerman Avenue in Middletown and is forecasted to result in 1.6 miles of gas main installation and 0.1 miles of abandonment of leak prone pipe. For FY 2023, the Company proposes to spend $2.00 million for this program, which would contribute to plant additions of $1.56 million.

7. **Transmission Station Integrity** – 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 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 by 2035. 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 ongoing scope of this multi-year program consists of retesting, and, where necessary, replacing equipment that will not meet the PHSMA documentation requirements; the work is prioritized by a standard risk-based evaluation. Following the completion of the Allens Avenue Station Rebuild, 11 of the 24 Transmission Stations on the Company's system are now in scope for re-testing and/or replacing equipment. The Wallum Lake Road station in Burrillville will be one of the focus stations for review in FY 2023, along with initial discussions to upgrade the Westerly take station. The FY 2023 budget proposal also includes \$3.50 million related to the Transmission Station Integrity work for Scott Road Take Station, which is a multi-year station replacement project forecasted to cost approximately \$15.05 million in total and be placed in service in FY 2024-2025. The FY 2023 planned activities for Scott Road include the purchase of long lead materials, finalizing the station design, beginning the contractor bidding process, and engagement with the station's transmission company, Kinder Morgan. In total, for FY 2023, the Company proposes to spend \$4.51 million in this overall category, which would contribute to plant additions of \$0.98 million.

8. **Pipeline Integrity – Integrity Verification Program – Wampanoag Trail Pipeline Replacement** – Project work related to the Integrity Verification Program ("IVP") was lasted included in the FY 2019 ISR related to pipeline replacement at Veterans Memorial Boulevard in Providence. In FY 2023, the Company will begin work on a multi-year project, expected to be completed over five years, to replace approximately two miles of main in East Providence that runs from the Providence River Crossing to the Wampanoag Trail Take Station. This section of 12-inch to 16-inch coated steel piping is some of the oldest mains operating at 200 psig (installed before 1971) on the Rhode Island Gas System and is a critical piece of infrastructure for the Rhode Island gas supply. The new line will be designed to be in-line inspected ("piggable") to take advantage of industry preferred means of inspection and in line with Company standards. For FY 2023, the Company proposes to spend $0.50 million for this project, which would contribute to plant additions of $0.37 million.

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 2023 budget of $0.025 million for such work, which would contribute to plant additions of $0.024 million.

In total, for FY 2023, the Gas ISR Plan contains $48.99 million for Non-Discretionary work, which would contribute to plant additions of $42.88 million for the fiscal year.

Discretionary Work:

A. <u>Proactive Main Replacement Program</u>

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 2023, the Company forecasts spending $78.92 million on its Proactive Main Replacement and Rehabilitation programs, which will abandon or rehabilitate approximately 49.9 miles of leak-prone gas main and approximately 3,810 service relays, inserts, or tie-ins. The 49.9 miles is comprised of 49.4 miles of abandonment through proactive main replacement, which includes 10.0 miles of FY 2022 carryover or in-progress work, 0.3 miles of abandonment with Atwells Avenue, and 0.5 miles of rehabilitation with Cast-Iron Sealing Robot ("CISBOT"). Outside of these programs, the Company also plans for 14.0 miles of abandonment through the Public Works programs, 0.1 mile through the Mandated program, 0.1 mile through the Reliability program, and additional 1.0 mile of abandonment through Reinforcement projects. This results in a FY 2023 total abandonment of approximately 64.5 miles and 0.5 miles of rehabilitation.

1. <u>Proactive Main Replacement (<16-inch)</u>

The Proactive Main Replacement (<16-inch) program consists of the installation of 39.1 miles and the abandonment of approximately 49.1 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. The total abandonment miles include FY 2022 carryover (or in progress) miles, resulting in planned abandonment miles that are greater than planned installation miles. This allows the Company to catch up on carryover abandonment work with the goal of being able to equalize the abandonment and installation miles in future years. The Company notes that if the volume of remaining FY 2022 carryover miles are lower than expected, the Company will evaluate if it is able to install more than 39.1 miles in this program in FY 2023. If the Company and its contractors experience favorable weather conditions in FY 2022 and/or FY 2023, those conditions would likely aid their ability to install more than 39.1 miles for FY 2023.

Proactive Main Replacement program costs have continued to increase over the past several years. Factors contributing to these increases include the impact of updated pricing following contract negotiations, which typically occur every three years, local paving requirements, increased use of professional engineers and a higher proportion of cast iron main replacement. The costs for replacing cast iron main is typically greater than the cost of replacement for unprotected bare steel due to several 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. For FY 2023, Company has maintained the Proactive Main Replacement program cast iron abandonment target percentage of seventy percent (70%). Cast iron represents approximately sixty seven percent (67%) of the Company's total leak-prone main inventory in Rhode Island. As illustrated on page 27 in the attached 2020 System Integrity Report, cast iron represented eighty seven percent (87%) of main leak repairs in 2020, which continued to support the 2019 risk factor that impacted the decision to increase the planned percentage of cast iron to be abandoned to seventy percent (70%). 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 added the service corrosion repaired leaks on main prioritization algorithm, which will help prioritize the area of high service failures first; this was factored into the development of the FY 2022 and 2023 workplans. 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. As shown on page 4 of the 2020 System Integrity Report, the Company saw a nineteen percent (19%) decrease on the Service Leak Rate from 2019 to 2020. These rates are subject to fluctuate on an annual basis, but it is a positive trend.

The Company has analyzed recent historic costs and has developed budget projections based on project specific main replacement candidates identified for completion in the program. For FY 2023, the Company proposes to spend $75.20 million on the Proactive Main Replacement (<16-inch) program, which would contribute to plant additions of $71.05 million for the fiscal year.

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 2023, the Company proposes to spend a total of $2.25 million on this overall category. Of this total, $0.25 million is budgeted for the development of a Cast Iron ("CI") Lining project and $2.00 million is budgeted for two Cast-Iron Sealing Robot ("CISBOT") projects located in Providence and Newport. The CISBOT projects which will address approximately 0.50 miles of 16-inch cast iron main. This would contribute to plant additions of $2.38 million for the fiscal year. 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.

3. **<u>Proactive - Atwells Avenue Main Replacement</u>**

The Company forecasts that FY 2023 is the final year of construction for the multi-year Atwells Avenue Main Replacement project in Providence. As noted in the Company's FY 2022 first quarter update report, the Company is continuing to work in conjunction with the City of Providence on the final restoration of Segments 1A and 1B as the City completes work on their sidewalks. A portion of this work, primarily with Segment 1B, which has several segments of pavers, will carry into FY

2023. This work is reflected in the FY 2023 budget. The FY 2023 budget also includes the completion of installation and abandonment of the final segment, Segment 3, which includes the installation and abandonment of approximately 0.3 mile (1,410 feet) of main at a cost of approximately $0.82 million. For FY 2023, the Company proposes to spend $1.46 million for this project overall, which would contribute to plant additions of $1.43 million. From FY 2019 through the anticipated close of the project in FY 2024, the total forecasted cost of the Atwells Avenue Main Replacement project is $9.06 million.

B. Proactive Service Replacement Program

FY 2023 will be the third year of the Proactive Service Replacement Program. At the start of FY 2021, there were 181 copper services that needed to be replaced as part of this program. In FY 2021, 52 copper services were replaced in Cumberland, another 56 have been replaced in FY 2022, and the Company forecasts that the remaining 25 will be replaced in FY 2023, which will complete the Cumberland copper services list.

Regarding the remaining 48 copper services in the Town of Warren, within the past few years, the Company performed a risk assessment on those copper services and decided not to replace the services, prior to the town completing a restoration project on Water Street that consisted of an asphalt mill and pave and sidewalk work. The Company did complete repairs to several leaks after the milling was completed. The Company continues to monitor the gas pipes on Water Street like any other leak prone pipe on the Rhode Island gas system. Because there has been no new leak activity on the Water Street copper services, which is a guaranteed street, and other mains and services on the Rhode Island gas system are currently presenting a higher risk, the Company does not have any short term plans to replace those copper services.

In total, for FY 2023, the Company plans to replace 100 services through this program, and the budget has been increased to an average of $6,000 per service, or $0.60 million, to account for anticipated final restoration costs. The Company will continue to work with the Division and its Consultant to prioritize the services with the highest risk to be replaced through this program. As mentioned above in the Proactive Main Replacement section, the Company saw a nineteen percent (19%) decrease in the Service Leak Rate between 2019 and 2020, which was a positive trend.

Percent Change 2019 To 2020	RI
Leak Receipts	-17.5%
Workable Leak Backlog	-5.5%
LPP Main Inventory	-5.9%
LPP Service Inventory	-2.2%
Overall Main Leak Rate	-24.4%
Cast Iron Main Break Rate	-74.3%
Steel Main Corrosion Leak Rate	4.3%
Service Leak Rate	-19.1%

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. <u>Reliability</u>

Reliability spending includes 13 programs to address the following: system automation, heater installations, Wampanoag Trail and Tiverton Gate Stations, take stations, pressure regulation, valve installation/replacement, gas system reliability, instrumentation and regulation, distribution station over pressure protection, LNG facilities, replacement pipe on bridges, access protection remediation, and capital tools and equipment. The FY 2023 Gas ISR Plan contains $40.36 million in spending for Gas System Reliability, which would contribute to plant additions of $39.94 million for the fiscal year.

1. <u>System Automation</u>

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 189 gas pressure regulator stations disbursed throughout its Rhode Island gas service territory. Although a portion of these regulator stations have full system telemetry (all stations in the RI Northern Region now have telemetry) and control capability, additional stations require the installation of new telemetry equipment, and FY 2023 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 2023, the Company is proposing spending of $0.80 million, which would contribute to plant additions of $0.83 million, for its System Automation program. The Company's FY 2023 work will provide alternating current power, telemetry, and/or remote control to approximately 20 locations.

2. <u>Heater Installation Program</u>

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. The FY 2023 proposal includes funding for the Heater Installation Program Blanket of $275,000 for miscellaneous fuel train upgrades and burner management/safety system upgrades. Materials purchasing and installation are completed the same year; funding for Dey St at $67,000 for engineering related to a planned FY 2024 replacement of one water bath heater; funding for Diamond Hill at $450,000 for engineering and materials purchasing for a hydronic boiler system; and funding for Smithfield at $450,000 for engineering and materials for a hydronic boiler system. For FY 2023, the Company is proposing spending of $1.24 million, which would contribute to plant additions of $1.08 million, for its Heater Installation Program.

3. <u>Wampanoag Trail & Tiverton Gate Station – Heaters Replacement and Ownership Transfer</u>

In FY 2023, Enbridge will replace heaters at its Wampanoag Trail and Tiverton gate stations. The new heaters are designed to meet National Grid's reliability standards, which exceed Enbridge's standards for heater design. Once the work is complete, Enbridge will transfer ownership of the heaters to the National Grid. National Grid is forecasted to spend approximately $1.37 million in FY 2022 related to down payments and project development for the projects and plans to spend $8.88 million for this program in FY 2023. The combined FY 2022 and FY 2023 spend would contribute to plant additions of $10.02 million in FY 2023. The final $0.05 million of plant additions will occur in FY 2024 from $0.05 million of forecasted spend in FY 2024 for project closeout costs. The benefits resulting from the work and the transfer of ownership of the assets from Enbridge to National Grid are listed below:

For both locations:

- Enhancement of heating system reliability at both locations by installing fully redundant heating systems.

- Allowance of heater maintenance and repairs without station shutdown or heater bypass improves overall gate station reliability.
- Creation of verifiable inspection and maintenance records for the new assets.
- Reduction in dependency on the pipeline operators to operate and maintain safety critical equipment.

For the Tiverton Gate Station:

- Reduction in overpressure risk by installation of three levels of overpressure protection and reliable heat.
- Allowance for a greater level of proactive station maintenance that the Company will perform, including annual regulator boot replacement and monthly station checks, which will greatly mitigate outage risk of the single feed system.

For the Wampanoag Trail Gate Station:

- Improvement of heater efficiency and reduction of risks associated with Gas System Operator ("GSO") changing flows through the station by providing the Company with the ability to control Wampanoag Trail Heater setpoints with its modern Programmable Logic Controller ("PLC") system.
- Reduction of the potential for overheated gas which may melt regulator soft goods by installing Company Safety Integrity Level ("SIL") certified heater safety system.

4. 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 $1.15 million for this program during FY 2023, which would contribute to plant additions of $1.07 million.

5. Pressure Regulating Facilities

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 2023 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 2023, work is planned at six regulator stations of which two are carryover work from the FY 2022 plan and four are new for the FY 2023 plan. Additionally, work will be done to install a second bypass valve at five stations to prevent a failure of a single bypass valve resulting in over pressurization. The Company plans to spend $7.59 million, which would contribute to plant additions of $7.35 million, for this category in FY 2023.

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 2023, the Company has budgeted $0.99 million for reactive valve work, with approximately $0.85 million for sectionalizing valve work in Newport and Middletown. The Company forecasts plant additions of $0.77 million in FY 2023.

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 2023 budget includes continued funding for ongoing multi-year projects designed to eliminate single-feed systems in Newport, Cranston, Warwick, and East Providence. This program is forecasted to install 2.6 miles of new gas main and abandon 0.1 mile of leak prone pipe. For FY 2023, the Company proposes to spend approximately $3.26 million for this program, which would contribute to plant additions of $2.59 million.

8. <u>Instrumentation and Regulation (I&R) Reactive Program</u>

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. In FY 2023, the Company proposes to spend $1.37 million for this program, which would contribute to plant additions of $1.46 million.

9. <u>Distribution Station Over Pressure Protection</u>

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. To ensure that potential abnormal operating conditions at regulator stations do not result in over pressurization scenarios, in FY 2023, the Company plans to:

- Install 3 sensing headers – Middletown, Woonsocket, and East Providence;
- Install 12 override pilots – Cranston, Providence, North Providence, Lincoln, North Kingstown, Newport, Middletown, and West Warwick;
- Install 6 new relief valves on the system – Pawtucket, Woonsocket, and Middletown (each will be carryover from FY 2022). Along with new projects in Warren, Lincoln, and a second location in Woonsocket.

For FY 2023, the Company proposes to spend \$3.00 million for this program, which would contribute to plant additions of \$3.00 million.

10. <u>LNG</u>

The LNG program is established to address specific and blanket capital project requirements to support the Company's LNG operations. This program includes \$9.19 million of funding, which incorporates deferrals from FY 2022, for specific projects associated with the Exeter LNG facility, including the installation of two new boil-off compressors that will replace two compressors that were originally commissioned in the early 1970's. The program also includes the installation of an automated emergency shutdown system, installation of a high expansion foam system, planning for the replacement of the existing septic system, and the purchase of critical spares (for items that are not readily available due to long lead times). Additional funding of \$0.60 million is associated with the blanket program for the Exeter LNG plant and the existing Cumberland portable LNG plant, 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 $0.20 million for the existing Old Mill Lane site related to additional noise mitigation work and support for site's Energy Facility Siting Board ("EFSB") filing. For FY 2023, the Company plans to spend $10.09 million for the overall LNG program, which would contribute to plant additions of $10.03 million.

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

For FY 2023, the planned activities for the Replace Pipe on Bridges program include project development for the replacement of two mains located next to the Glenbridge Avenue bridge in Providence. The existing 36-inch cast iron main and the 16-inch cast iron main next to the bridge will be abandoned and replaced with new mains on the bridge. Program activities will also include development for the Admiral Street bridge project in Providence and an Old River Road bridge project in Lincoln. The budget also includes $0.10 million for development of the Goat Island bridge project, although the timing of that project will primarily be determined by the Rhode Island Department of Transportation ("RIDOT"). Finally, the FY 2023 budget includes $0.50 million for construction on the Lonsdale Avenue bridge project in Pawtucket. In FY 2023, the Company expects to spend $0.90 million for the Replace Pipe on Bridges program, which would contribute to plant additions of $0.68 million.

12. <u>Access Protection Remediation</u>

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

2023, the Company expects to spend $0.27 million for the identification and execution of projects for this program, which would contribute to plant additions of $0.27 million.

13. 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 $0.82 million to spend on capital tools and equipment during FY 2023, which would contribute to plant additions of $0.80 million.

E. Gas Expansion – Southern Rhode Island Project

As was detailed in the FY 2020 Gas ISR, the Company identified a need and is building 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”). In 2018, growth forecasts indicated the maximum vaporization capacity at the Exeter LNG facility would be exceeded by calendar year 2019. This may have resulted in approximately 3,750 customers with below minimum pressures 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 has been constructed to allow for in-line inspections and the pressure has been increased to its maximum allowable operating pressure ("MAOP") of 200 psig. As each segment was completed, growth capacity was also added. The Company estimates that approximately 1,100 dekatherms per hour of additional capacity is now available. The installation of the second distribution main also improves 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. Between FY 2020 and FY 2023, the total estimated cost for the main installation work is currently $97.64 million. For FY 2023, the Company expects to spend a total of $0.60 million for final restoration related to the main installation work and project closeout costs.

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 $6.19 million. In FY 2023, the Company will 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, procurement of materials, and construction related to updates at the existing Cowesett regulator station. Additionally, FY 2023 activities will include the final design, procurement of materials related to upgrades at the existing Cranston regulator station for construction commencing in FY 2024. 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 2023, the Company estimates that it will spend a total of $6.79 million for the Southern RI Gas Expansion, with $4.70 million projected to close to plant in service. This includes $0.60 million in spending for main installation and $6.19 million in spending for activities related to regulator stations, other upgrades, and investments. From FY 2019 through the anticipated close of the project in FY 2026, the total forecasted cost of the Southern RI Gas Expansion is approximately $131.48 million.

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

($000)	FY 2019 Actual	FY 2020 Actual	FY 2021 Actual	FY 2022 Forecast	FY 2023 Proposed	FY 2024 Proposed	FY 2025 Proposed	FY 2026 Proposed	Total
Southern RI Gas Expansion	$2.39	$42.73	$41.76	$15.45	$6.79	$7.90	$14.12	$0.35	$131.48

Excluding the Gas Expansion category, the proposed Gas ISR Plan contains $119.88 million in base spending for Discretionary work in FY 2023, with $115.34 million projected to be placed in service in FY 2023. Including the Gas Expansion category, the proposed plan contains a total of $126.67 million in spending for Discretionary work with $120.04 projected to be placed in service in FY 2023.

Table 1
Narragansett Gas - FY 2023
($000)

Categories	Budget	Projected Capital Additions Placed In-Service for FY 2023	Leak-Prone Pipe Abandonment Miles	Main Replacement Installation Miles
NON-DISCRETIONARY				
Public Works				
CSC/Public Works - Non-Reimbursable	$ 20,596	$ 19,772		
CSC/Public Works - Reimbursable	$ 1,437	$ 1,818		
CSC/Public Works - Reimbursements	$ (1,433)	$ (1,411)		
Public Works Total	**$ 20,600**	**$ 20,179**	14.0	14.0
Mandated Programs				
Corrosion	$ 1,305	$ 1,503		
Purchase Meters (Replacement)	$ 5,248	$ 5,117		
Reactive Leaks (CI Joint Encapsulation/Service Replacement)	$ 10,100	$ 9,794		
Service Replacements (Reactive) - Non-Leaks/Other	$ 1,697	$ 1,635		
Main Replacement (Reactive) - Maintenance (incl Water Intrusion)	$ 3,000	$ 2,605		
Low Pressure System Elimination (Proactive)	$ 2,000	$ 1,560	0.1	1.6
Transmission Station Integrity	$ 4,510	$ 98		
Pipeline Integrity - IVP - Wampanoag Trail Pipeline Replacement	$ 500	$ 366		
Mandated Total	**$ 28,360**	**$ 22,678**		
Damage / Failure (Reactive)				
Damage / Failure (Reactive)	**$ 25**	**$ 24**		
NON-DISCRETIONARY TOTAL	**$ 48,985**	**$ 42,881**		
DISCRETIONARY				
Proactive Main Replacement				
Main Replacement (Proactive) - Leak Prone Pipe	$ 75,204	$ 71,046	49.1	39.1
Main Replacement (Proactive) - Large Diameter LPCI Program	$ 2,250	$ 2,382		
Atwells Avenue	$ 1,464	$ 1,427	0.3	0.3
Proactive Main Replacement Total	**$ 78,918**	**$ 74,856**		
Proactive Service Replacement				
Proactive Service Replacement Total	**$ 600**	**$ 544**		
Reliability				
System Automation	$ 800	$ 829		
Heater Installation Program	$ 1,242	$ 1,076		
Wampanoag Trail & Tiverton GS - Heaters Replacement and Ownership Transfer	$ 8,878	$ 10,021		
Take Station Refurbishment	$ 1,150	$ 1,066		
Pressure Regulating Facilities	$ 7,585	$ 7,354		
Valve Installation/Replacement - Primary Valve Program & Aquidneck Island Low Pressure Valves	$ 988	$ 769		
Gas System Reliability	$ 3,260	$ 2,587	0.1	2.6
I&R - Reactive	$ 1,375	$ 1,456		
Distribution Station Over Pressure Protection	$ 3,000	$ 2,998		
LNG	$ 10,089	$ 10,026		
Replace Pipe on Bridges	$ 900	$ 683		
Access Protection Remediation	$ 272	$ 274		
Tools & Equipment	$ 824	$ 803		
Reliability Total	**$ 40,363**	**$ 39,943**		
SUBTOTAL DISCRETIONARY (Without Gas Expansion)	**$ 119,881**	**$ 115,342**		
Southern RI Gas Expansion Project				
Pipeline	$ 600	$ 585		
Other Upgrades/Investments	$ 396	$ 45		
Regulator Station Investment	$ 5,793	$ 4,071		
Southern RI Gas Expansion Project Total	**$ 6,789**	**$ 4,700**		
DISCRETIONARY TOTAL (With Gas Expansion)	**$ 126,670**	**$ 120,043**		
CAPITAL ISR TOTAL (Base Capital - Without Gas Expansion)	**$ 168,866**	**$ 158,223**		
CAPITAL ISR TOTAL (With Gas Expansion)	**$ 175,655**	**$ 162,924**	**64.5**	**57.5**
Notable Capital Projects Not Currently Included in the ISR				
Old Mill Lane	$ 1,000	$ -		
LNG - Cumberland Tank Replacement	$ 2,500	$ -		
Total	**$ 3,500**	**$ -**		

*Total miles of abandonment will be 64.5 miles. 1 mile will come from Reinforcement work.

Table 2
RI Gas ISR Spending Forecast
($000)

Categories	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
NON-DISCRETIONARY					
Public Works	$ 20,600	$ 21,012	$ 21,432	$ 21,861	$ 22,298
Mandated Programs	$ 28,360	$ 39,772	$ 46,440	$ 40,787	$ 63,578
Damage / Failure (Reactive)	$ 25	$ 25	$ 25	$ 25	$ 25
NON-DISCRETIONARY TOTAL	**$ 48,985**	**$ 60,809**	**$ 67,897**	**$ 62,672**	**$ 85,901**
DISCRETIONARY					
Proactive Main Replacement	$ 78,918	$ 102,008	$ 111,417	$ 108,961	$ 108,590
Proactive Service Replacement	$ 600	$ 612	$ 624	$ 637	$ 649
Reliability	$ 40,363	$ 47,307	$ 44,947	$ 33,960	$ 46,434
SUBTOTAL DISCRETIONARY (Without Gas Expansion)	**$ 119,881**	**$ 149,926**	**$ 156,988**	**$ 143,557**	**$ 155,673**
Southern RI Gas Expansion Project	$ 6,789	$ 7,900	$ 14,123	$ 350	$ -
DISCRETIONARY TOTAL (With Gas Expansion)	**$ 126,670**	**$ 157,826**	**$ 171,111**	**$ 143,907**	**$ 155,673**
CAPITAL ISR TOTAL (Base Capital - Without Gas Expansion)	**$ 168,866**	**$ 210,736**	**$ 224,885**	**$ 206,229**	**$ 241,574**
CAPITAL ISR TOTAL (With Gas Expansion)	**$ 175,655**	**$ 218,636**	**$ 239,008**	**$ 206,579**	**$ 241,574**

Notable Capital Projects Not Currently Included in the ISR					
Old Mill Lane	$ 1,000	$ 1,000	$ 21,000	$ 16,000	$ 100
LNG - Cumberland Tank Replacement	$ 2,500	$ 2,500	$ 500	$ 1,500	$ 9,000
Smart Gas Meter - IS Integration	$ -	$ 3,000	$ -	$ -	$ -
Total	**$ 3,500**	**$ 6,500**	**$ 21,500**	**$ 17,500**	**$ 9,100**

Table 3
RI Gas ISR Historical Spend
($000)

Categories	FY 2017 Actual	FY 2018 Actual	FY 2019 Actual	FY 2020 Actual	FY 2021 Actual	FY 2022 Budget
NON-DISCRETIONARY						
Public Works	$ 8,597	$ 14,590	$ 13,575	$ 16,523	$ 12,997	$ 19,202
Mandated Programs	$ 16,370	$ 22,110	$ 18,868	$ 19,043	$ 17,518	$ 22,203
Damage / Failure (Reactive)	$ -	$ 1,610	$ -	$ -	$ -	$ 250
Special Projects	$ 5,020	$ 1,780	$ 8,486	$ -	$ -	$ -
NON-DISCRETIONARY TOTAL	**$ 29,987**	**$ 40,080**	**$ 40,928**	**$ 35,566**	**$ 30,516**	**$ 41,655**
DISCRETIONARY						
Proactive Main Replacement	$ 48,872	$ 51,210	$ 52,548	$ 58,032	$ 60,896	$ 70,019
Proactice Main Replacement - Large Diameter LPCI	$ -	$ 1,180	$ -	$ 1,115	$ 1,419	$ 3,852
Atwells Avenue	$ -	$ -	$ 81	$ 906	$ 5,612	$ 4,000
Service Replacement - Proactive	$ -	$ -	$ -	$ -	$ 240	$ 350
Reliability	$ 8,403	$ 13,950	$ 10,290	$ 15,933	$ 24,836	$ 33,932
SUBTOTAL DISCRETIONARY (Without Gas Expansion)	**$ 57,275**	**$ 66,330**	**$ 62,918**	**$ 75,986**	**$ 93,003**	**$ 112,153**
Southern RI Gas Expansion Project	$ -	$ -	$ 2,390	$ 42,729	$ 41,755	$ 19,438
DISCRETIONARY TOTAL (With Gas Expansion)	**$ 57,275**	**$ 66,330**	**$ 65,308**	**$ 118,715**	**$ 134,758**	**$ 131,591**
CAPITAL ISR TOTAL (Base Capital - Without Gas Expansion)	**$ 87,262**	**$ 106,410**	**$ 103,846**	**$ 111,552**	**$ 123,519**	**$ 153,808**
CAPITAL ISR TOTAL (With Gas Expansion)	**$ 87,262**	**$ 106,410**	**$ 106,236**	**$ 154,281**	**$ 165,274**	**$ 173,246**
O&M Total	$ 488	$ 560	$ 179	$ -	$ -	$ -
GAS ISR GRAND TOTAL	**$ 87,750**	**$ 106,970**	**$ 106,415**	**$ 154,281**	**$ 165,274**	**$ 173,246**

Schedule 1

2020 System Integrity Report

2020 System Integrity Report RI

Enterprise Gas Distribution Systems Trend-Based Integrity Analysis

07-26-2021

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Gas Distribution Engineering

Gas Asset Management - Gas Process & Engineering

Region	Name	Title	Phone
RI	Michael Tupper	Director	1 (508) 654-3134
	Leomary Bader	Manager	1 (781) 907-2785
	Madeline Blaisdell	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 RI has 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 decreased in RI and there has been a decrease in Cast Iron Inventory.

- Below is a summary of the individual key integrity measure results for the NECO federal (PHMSA) filing entity that as part of National Grid-US.

Percent Change 2019 To 2020	RI
Leak Receipts	-17.5%
Workable Leak Backlog	-5.5%
LPP Main Inventory	-5.9%
LPP Service Inventory	-2.2%
Overall Main Leak Rate	-24.4%
Cast Iron Main Break Rate	-74.3%
Steel Main Corrosion Leak Rate	4.3%
Service Leak Rate	-19.1%

Color Code Ranges								
	-999.9%	0.0%	0.1%	5.0%	5.1%	10.0%	10.1%	

02

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

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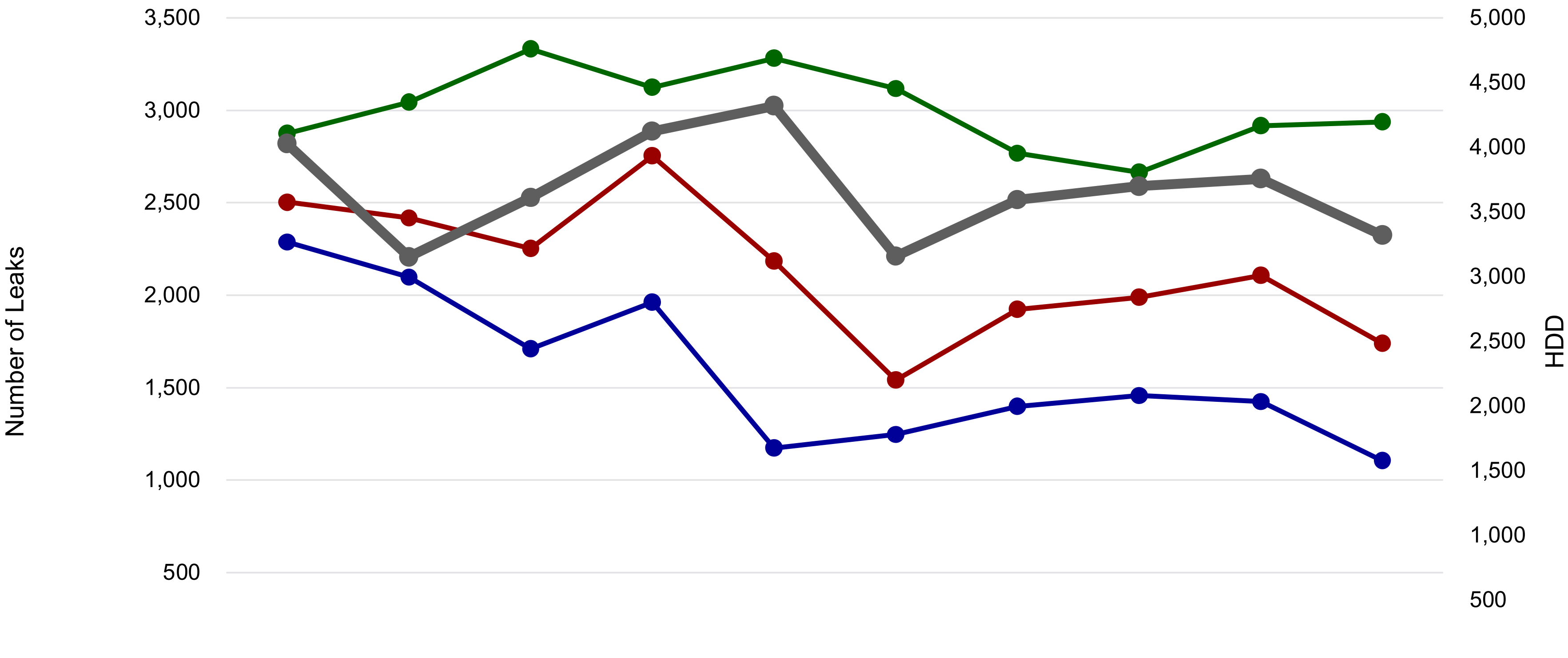
Total Leak Receipts, Repairs & Backlog

(Excluding Damages)

RI



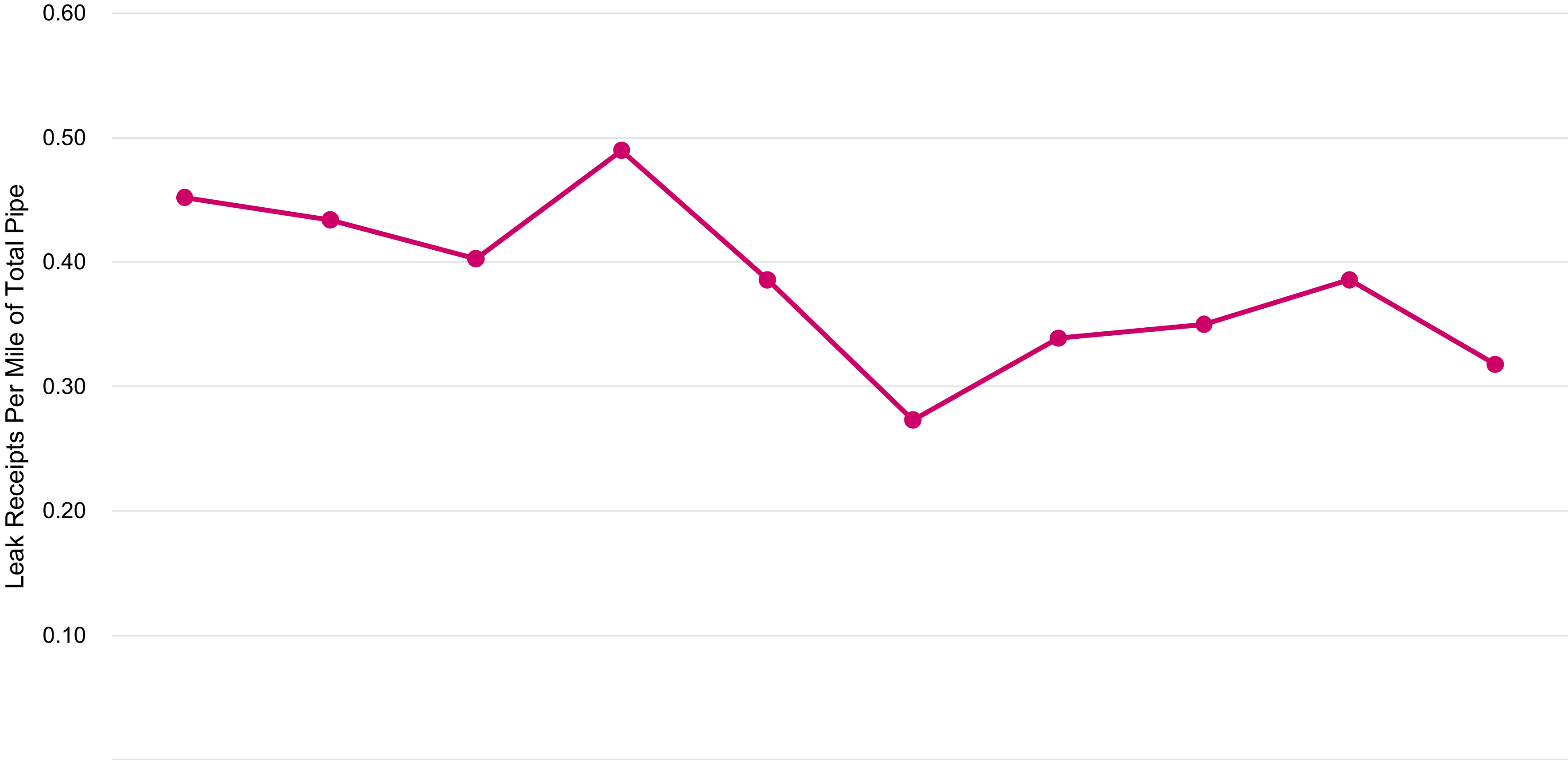
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Leak Repairs	2,286	2,096	1,709	1,961	1,173	1,245	1,398	1,456	1,424	1,104
Leak Receipts	2,502	2,417	2,252	2,753	2,183	1,541	1,924	1,989	2,107	1,738
Leak Backlogs	2,874	3,042	3,332	3,125	3,281	3,116	2,766	2,664	2,915	2,936
HDD	4,026	3,151	3,608	4,123	4,318	3,156	3,593	3,699	3,757	3,319

Years

Leak Receipt Rate By Region

(Excluding Damages)

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	0.45	0.43	0.40	0.49	0.39	0.27	0.34	0.35	0.39	0.32

Years

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

Overall Regional Distribution Integrity Assessment Summary

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

03 PHMSA Reported Incidents

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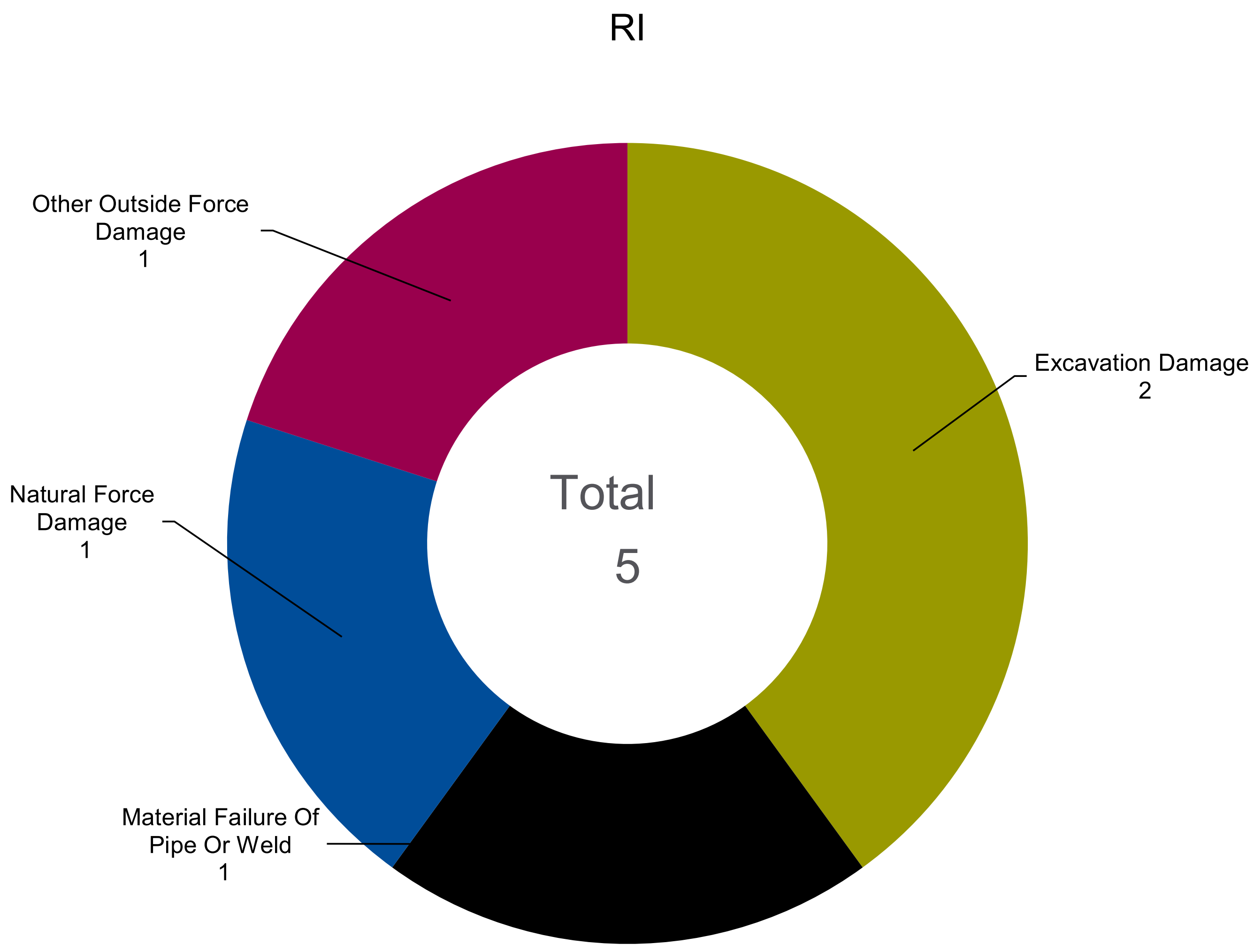
PHMSA Reported Incidents
(Previous 10 years)

RI



RI 2020: 1 Material Failure Of Pipe Or Weld

04

Leaks Management Analysis (Mains & Services)

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Leak Receipts As A Function Of Total System Pipe Mileage

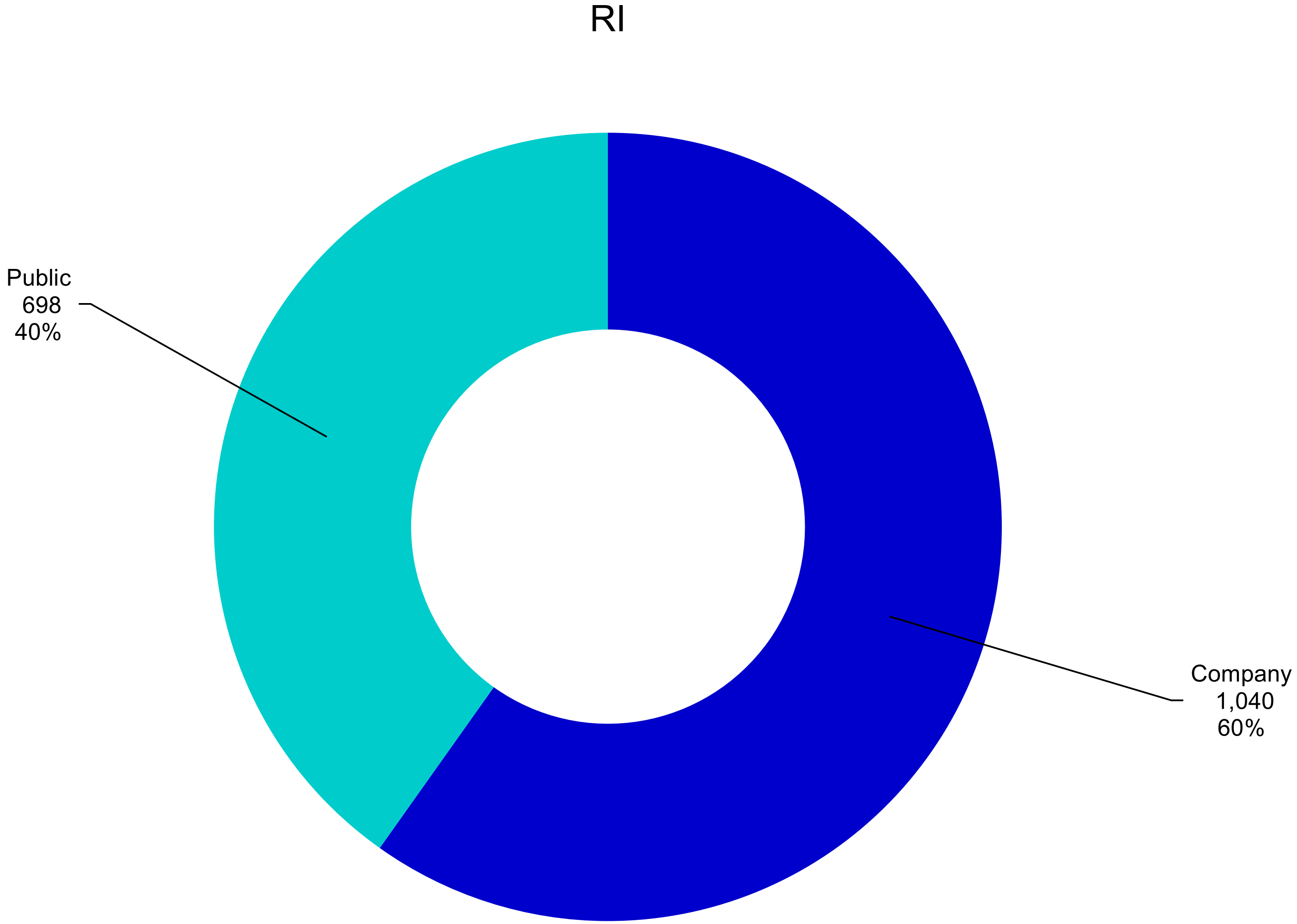
RI

- 1,738 Leak Receipts
- 3,209 miles of Main
  193,946 #'s of Services
  (2,262 miles)
- 5,472 total miles of pipe
- 0.32 Leak Receipts per Mile of Pipe

Leak Receipts By Discovery Source

(Excluding Damages)

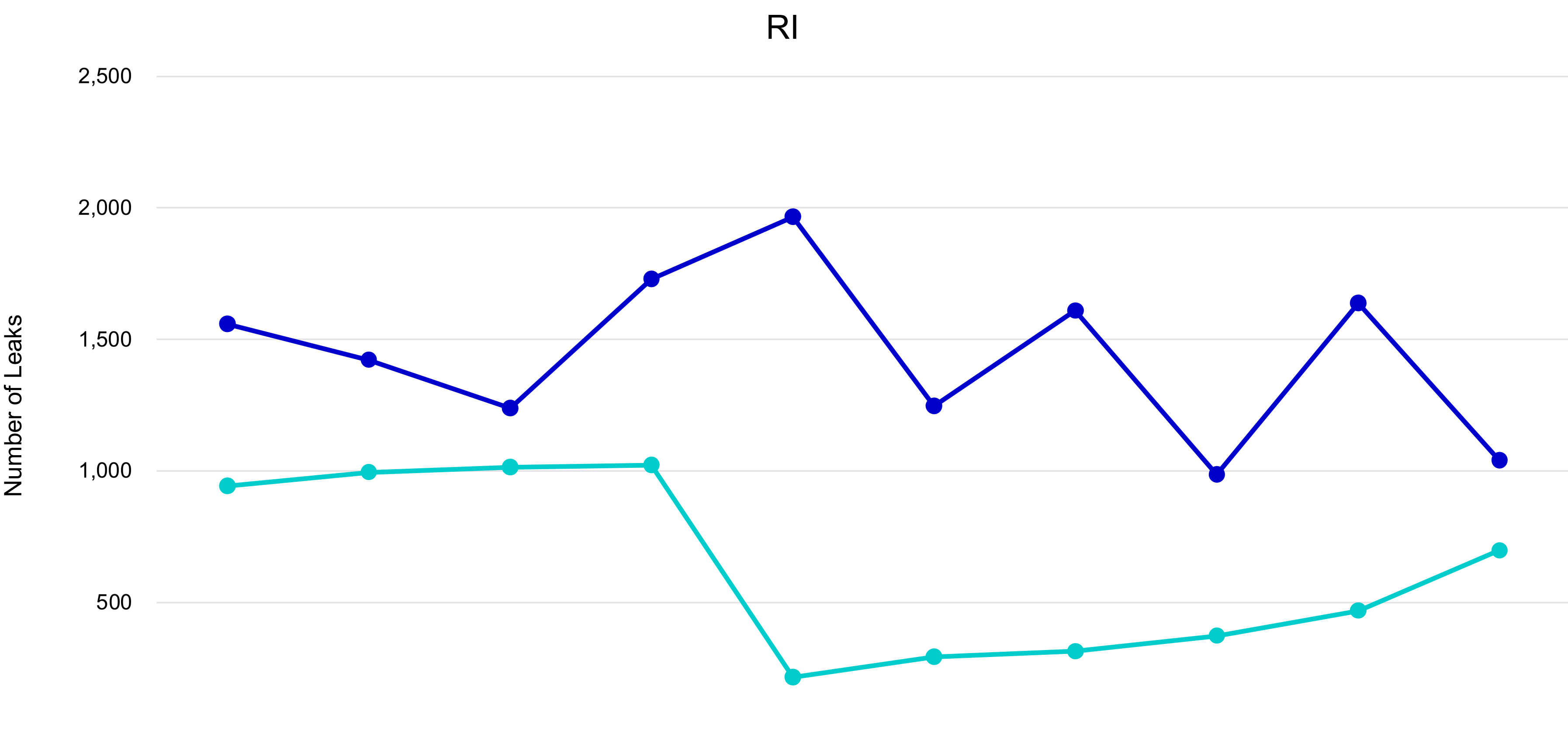
RI



Leak Receipts By Discovery Source

(Excluding Damages)

RI



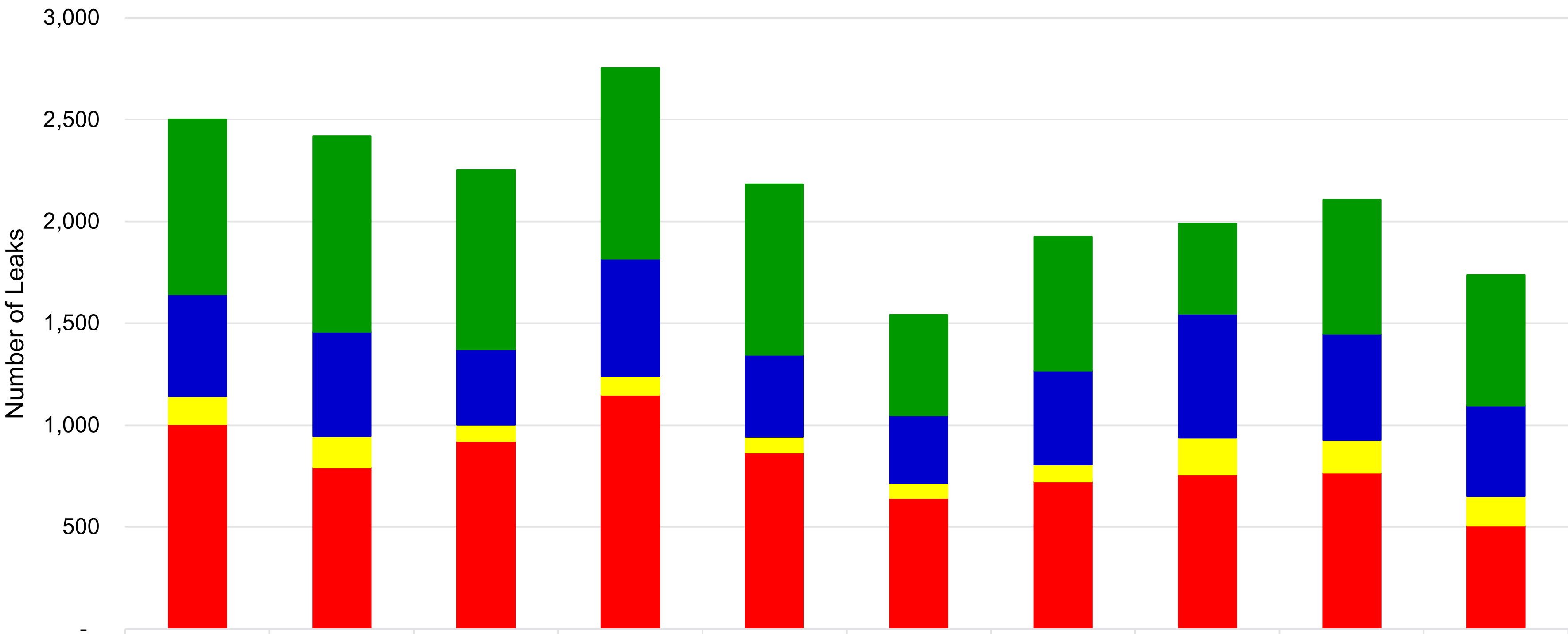
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Company	1,559	1,422	1,238	1,730	1,966	1,247	1,609	987	1,638	1,040
Public	943	995	1,014	1,023	217	294	315	374	469	698

Years

Leak Receipts By Type

(Excluding Damages)

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Type 3	859	959	881	937	838	494	658	444	659	642
Type 2	503	512	370	577	401	331	459	609	522	446
Type 2A	135	154	79	89	80	72	83	178	159	143
Type 1	1,005	792	922	1,150	864	644	724	758	767	507
Total	2,502	2,417	2,252	2,753	2,183	1,541	1,924	1,989	2,107	1,738

Years

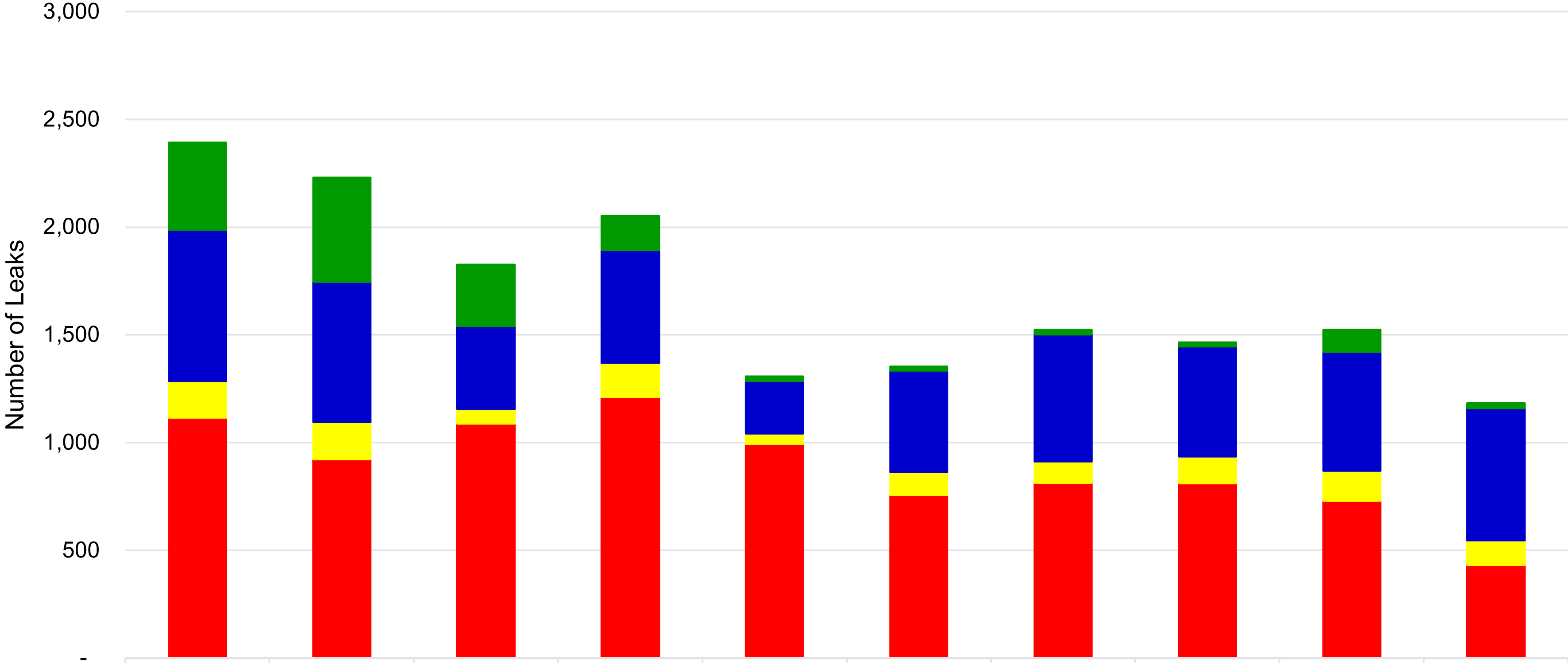
05

Leaks Repaired Analysis (Mains & Services)

Leaks Repaired By Type

(Including Damages)

RI

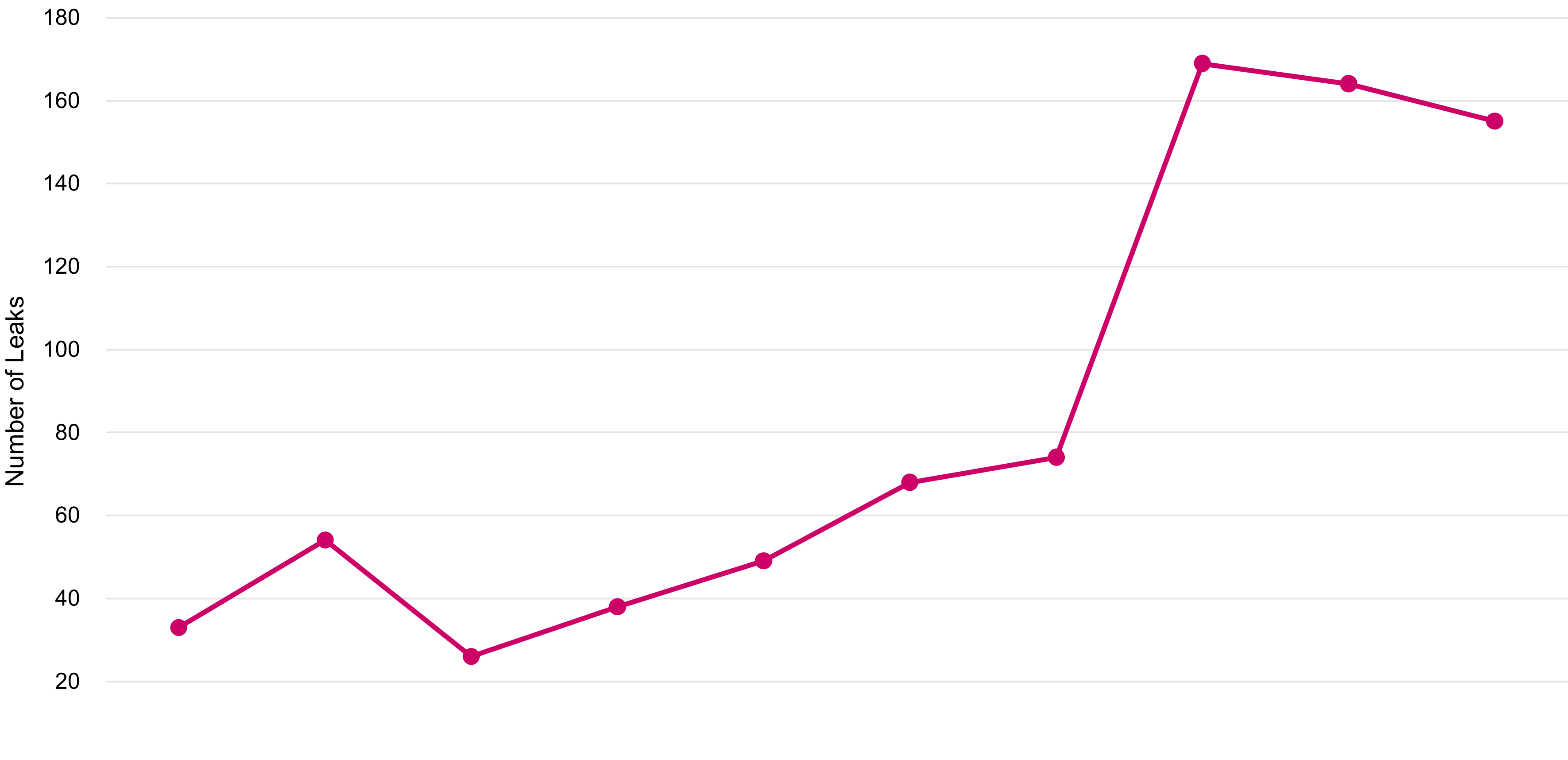


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Type 3	407	486	286	162	24	21	24	21	103	24
Type 2	702	651	383	522	244	469	588	513	551	612
Type 2A	171	172	68	160	49	106	99	123	140	116
Type 1	1,113	921	1,087	1,209	991	756	812	809	728	429

Workable Leak Backlog By Region

(Year-End)

RI



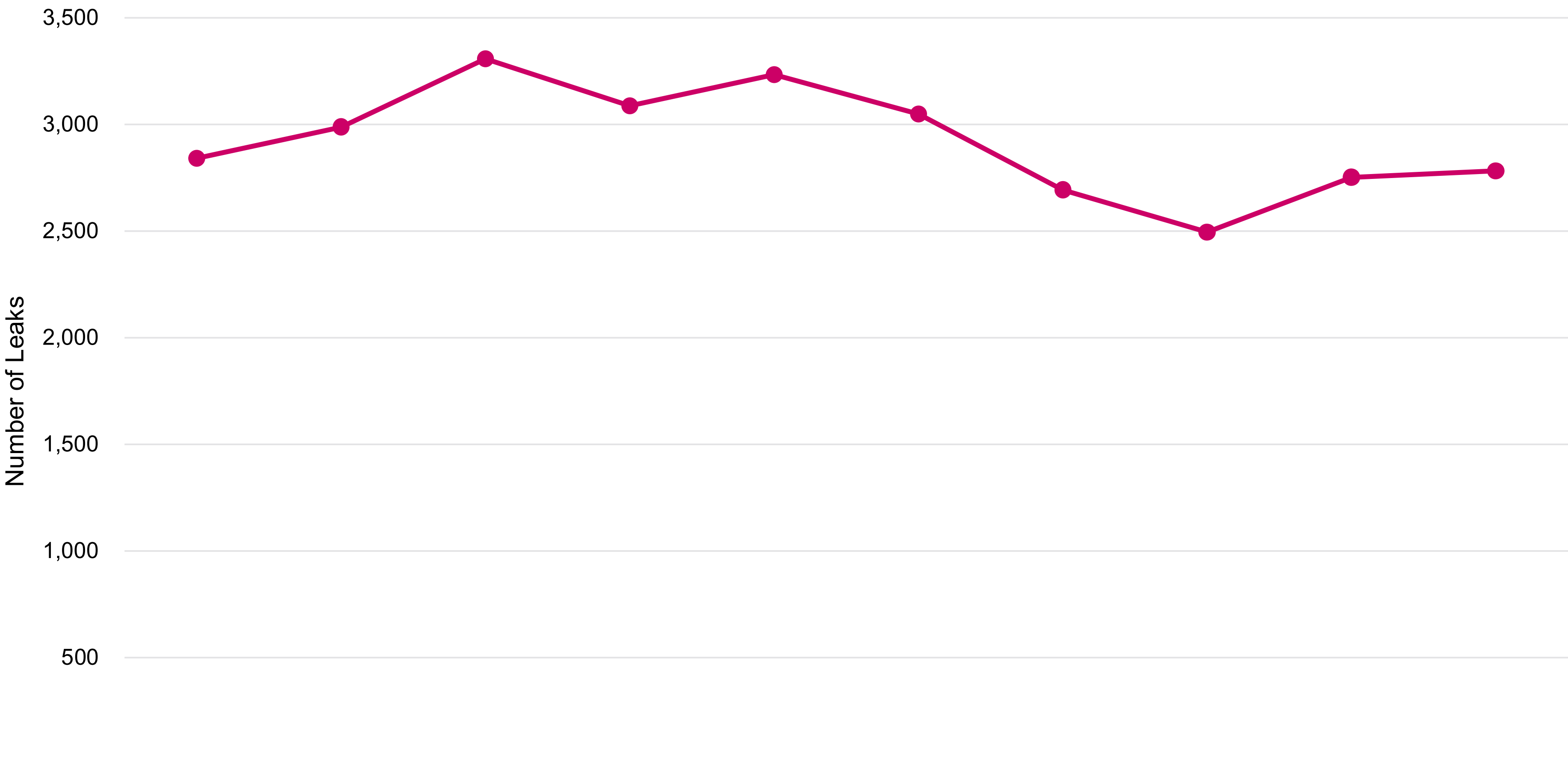
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	33	54	26	38	49	68	74	169	164	155

- 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



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	2,841	2,988	3,306	3,087	3,232	3,048	2,692	2,495	2,751	2,781

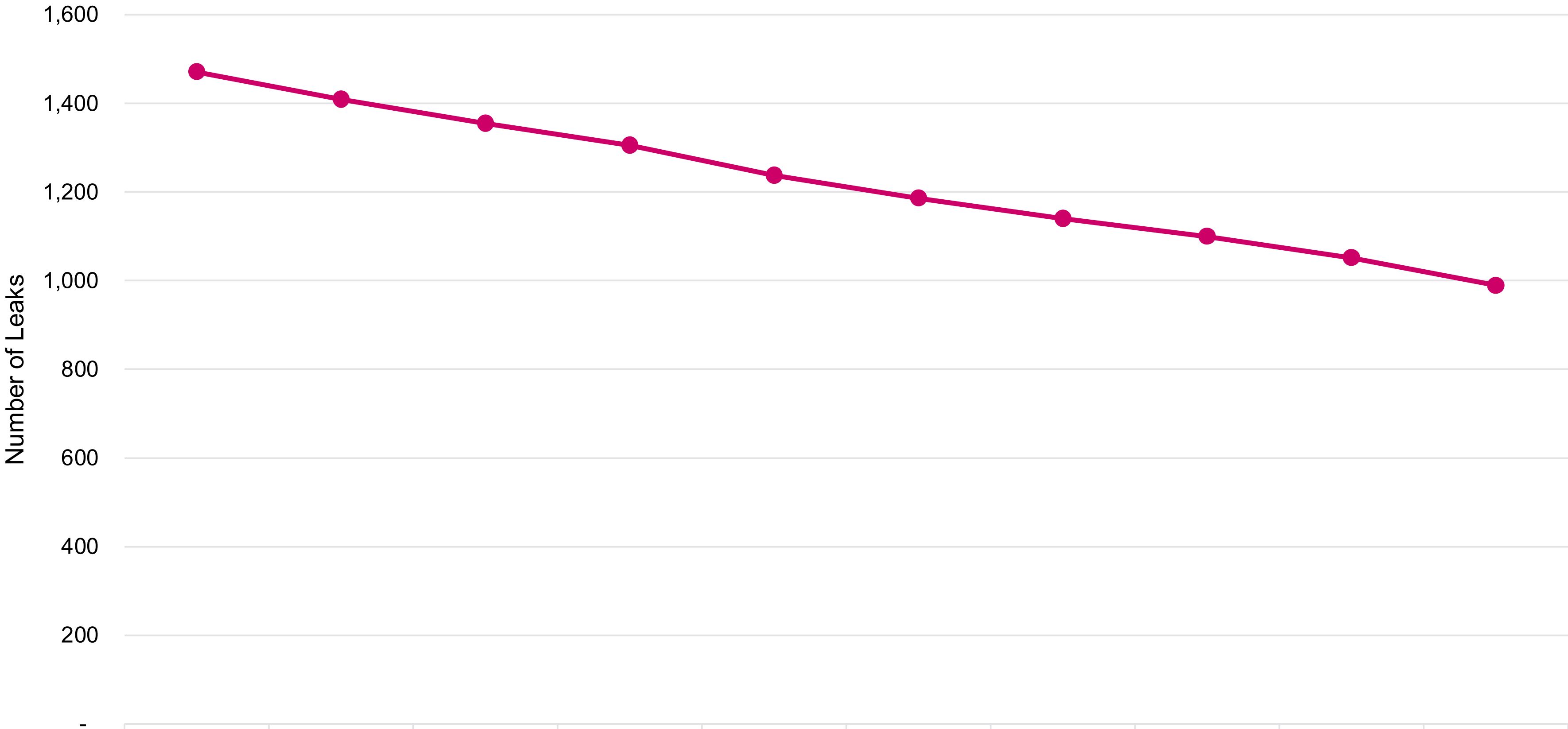
06

Main Inventory Analysis

Main Inventory LPP Trend By Region

(Miles)

RI



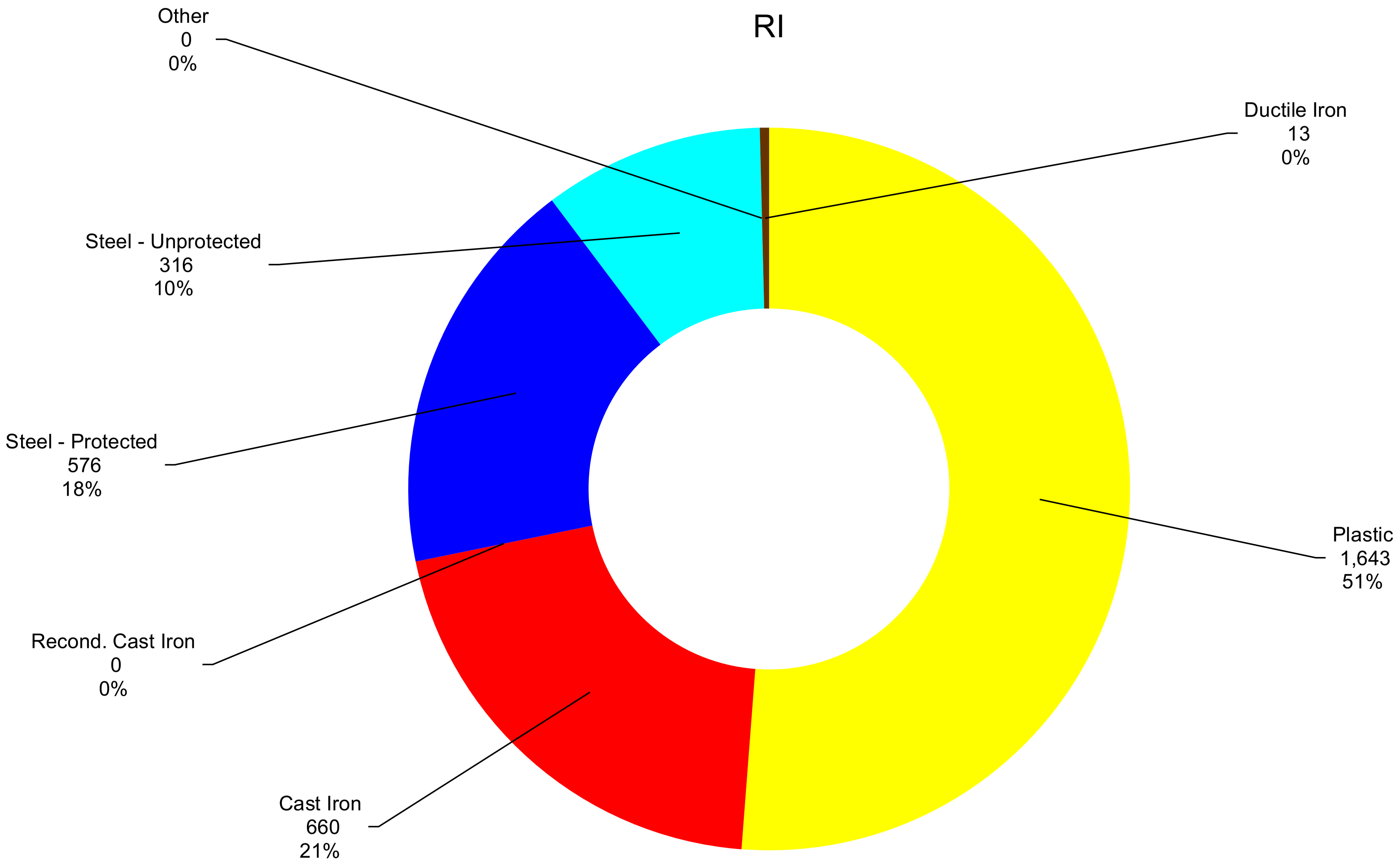
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	1,472	1,409	1,355	1,305	1,237	1,186	1,140	1,100	1,052	989

Years

Main Inventory

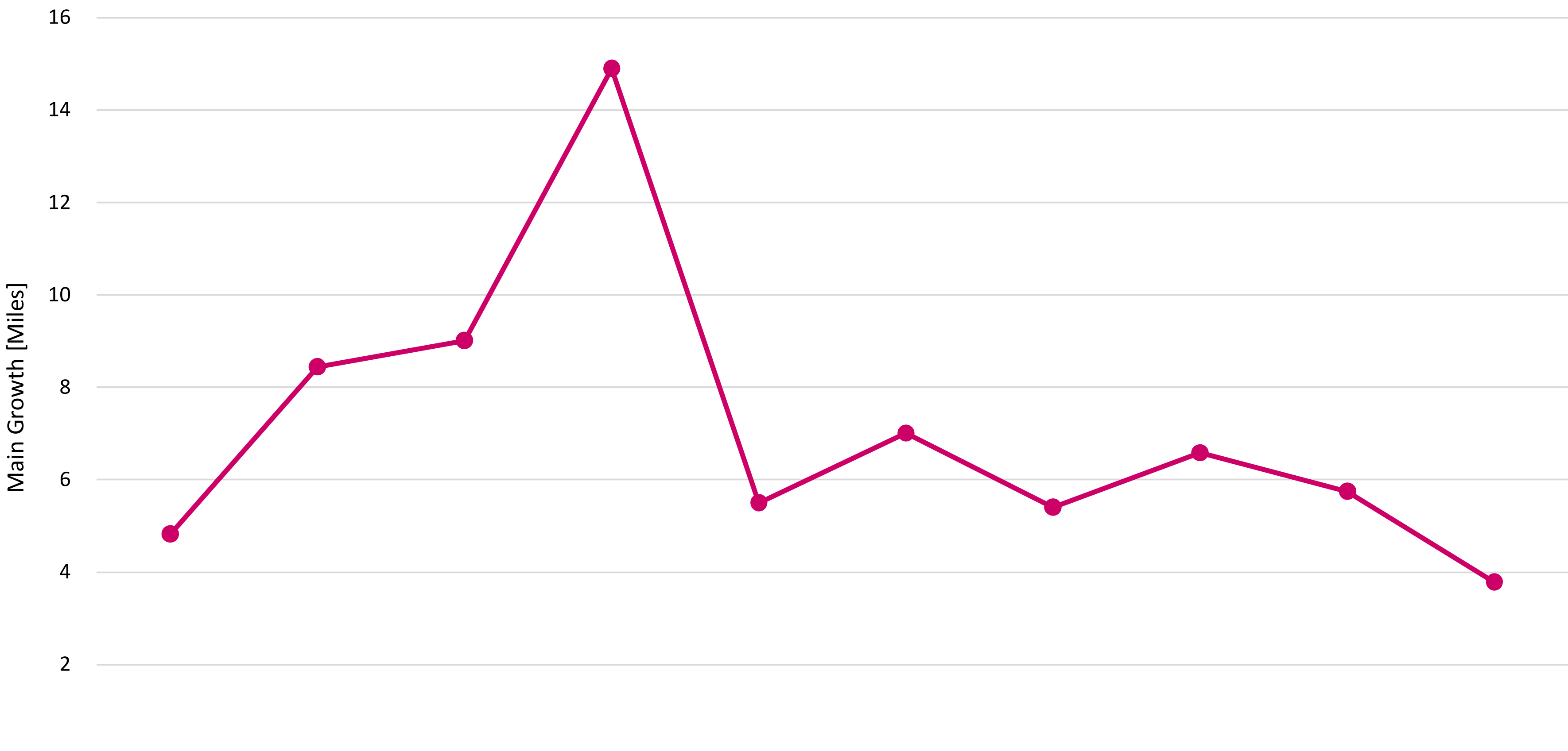
2020

RI



Main Growth By Region

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	5	8	9	15	6	7	5	7	6	4

Main Replacement

RI

Rate Case Supported "Leak-Prone" Main Replacement Levels										
Region	2020 Total Main (Miles)	2020 Leak Prone Main (Miles)	Leaks/Miles of Total Main (Repair rate)	Leaks/Miles of Leak Prone Main (Repair rate)	(5)2020 Annual "Planned" Replacement (Miles)	Planned Replacement % of Leak prone system	(5)2020 Annual "Actual" Replacement (Miles)	Actual Replacement % of Leak prone system	(5)2021 Annual "Planned" Replacement (Miles)	Years to LPP Main Elimination based on "Current" annual plan
RI	3,209	989	0.23	0.74	52	4.9%	34	3.2%	65	14

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

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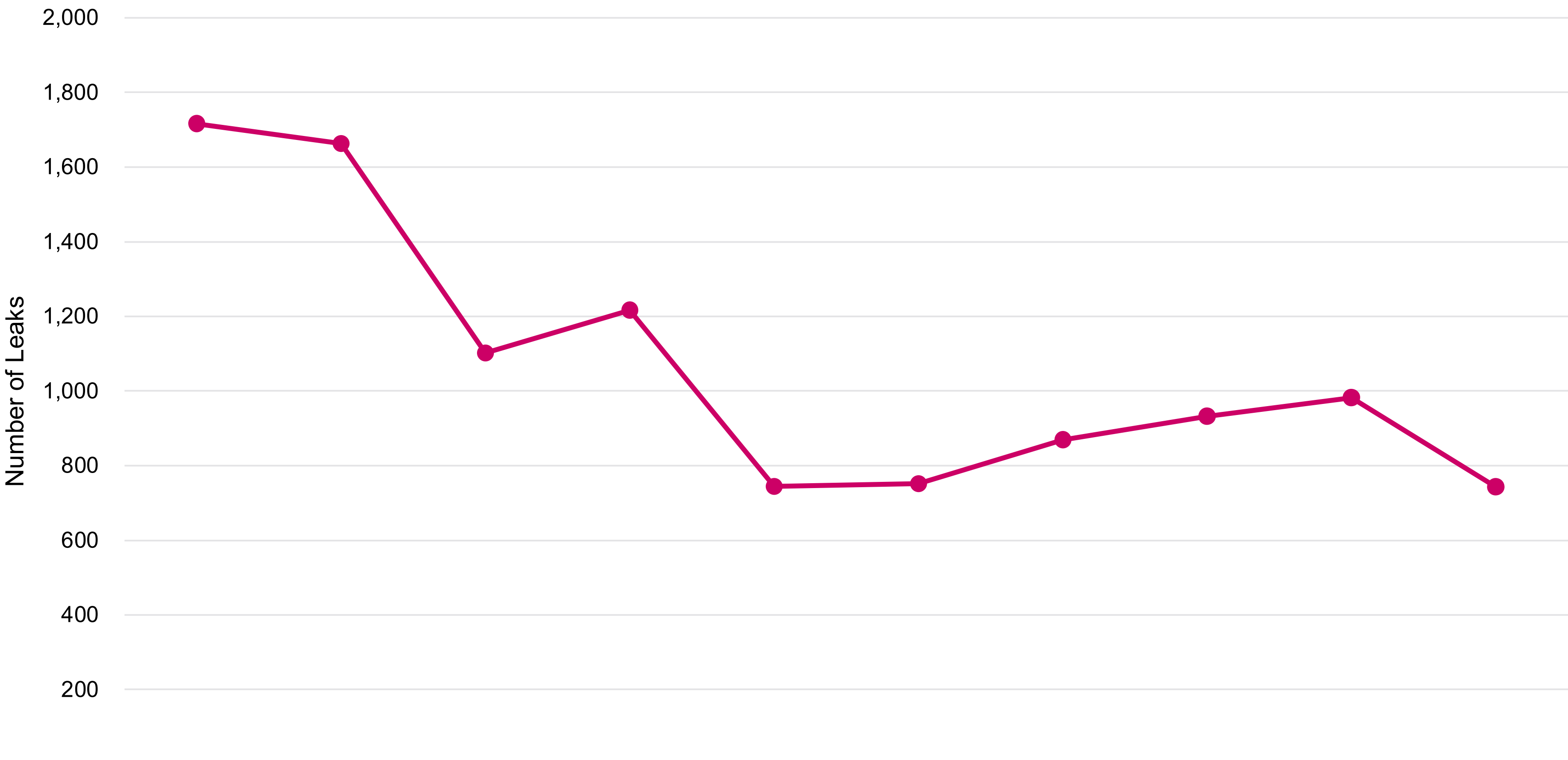
Main Leak Repairs By Region

(Including Damages)

RI



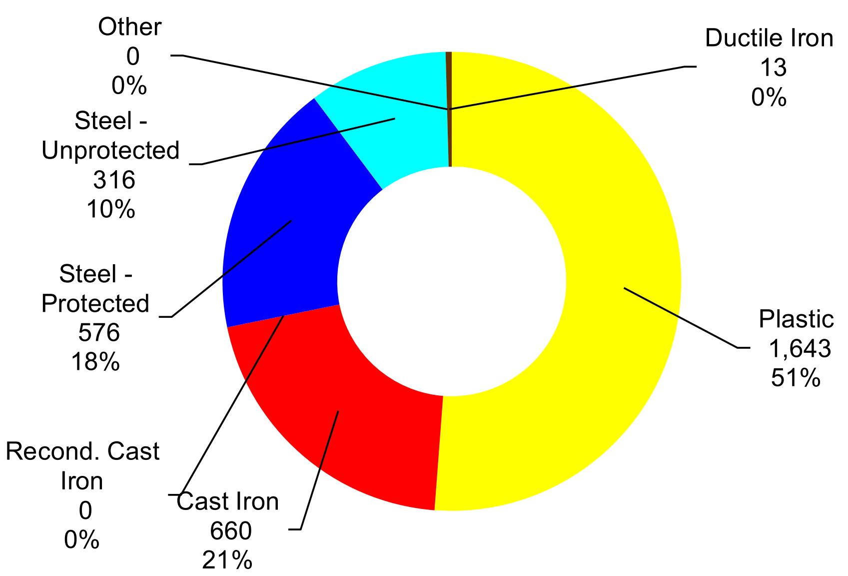
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	1,716	1,663	1,102	1,216	744	751	869	932	982	743

Years

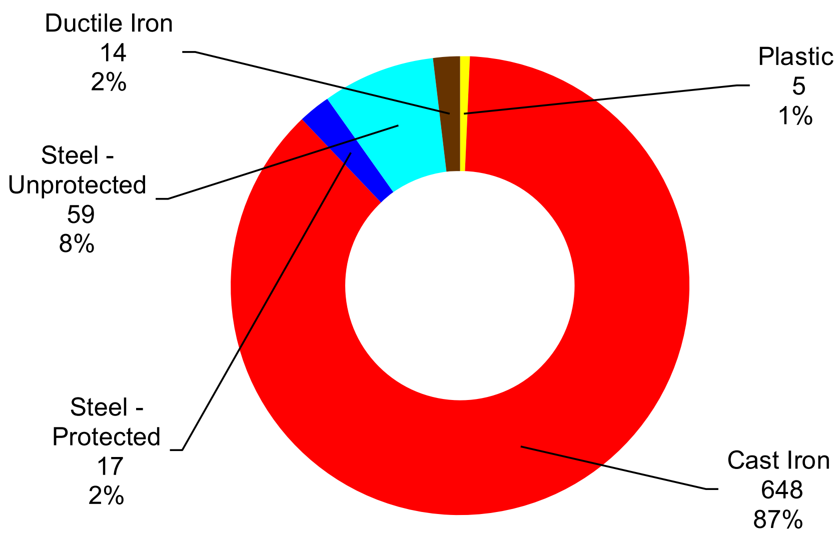
Main Inventory Compared To Main Leak Repairs By Material

RI

Main Inventory



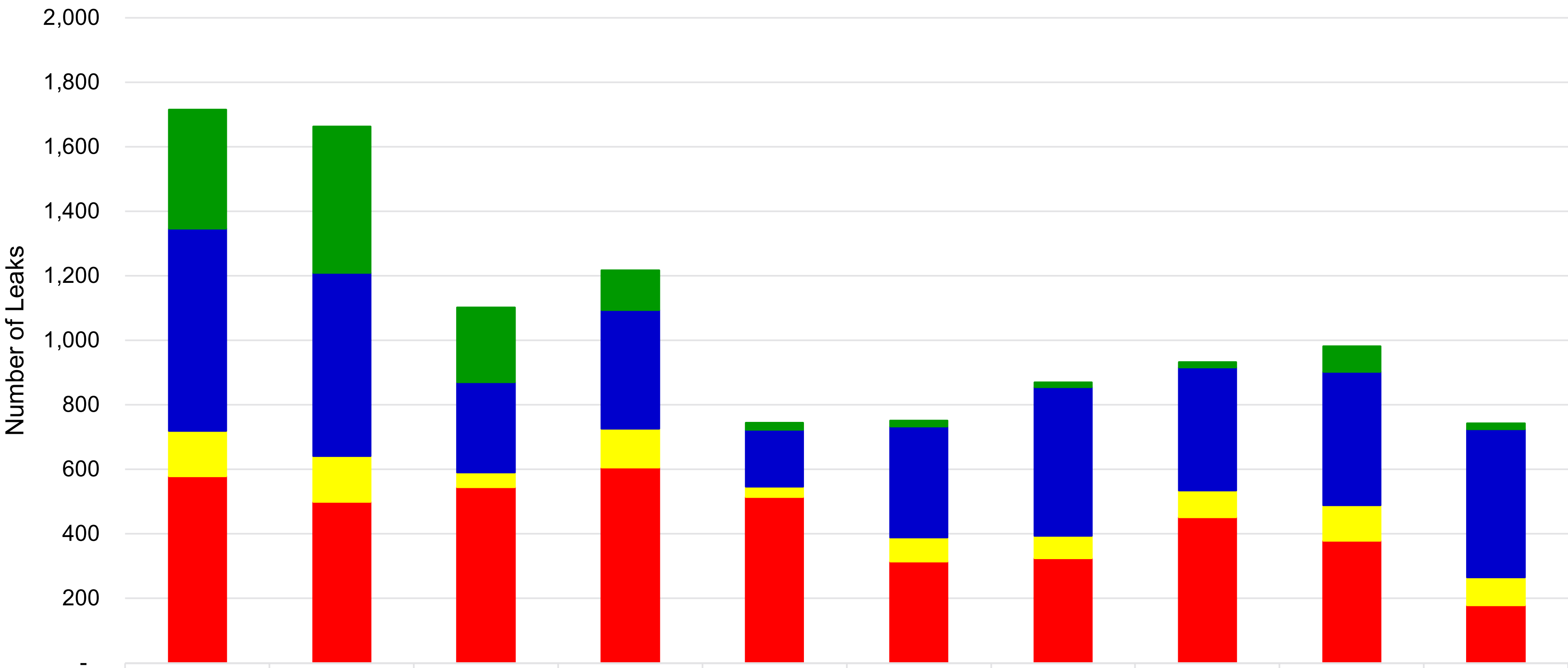
Main Leak Repairs



Main Leaks Repaired By Type

(Including Damages)

RI



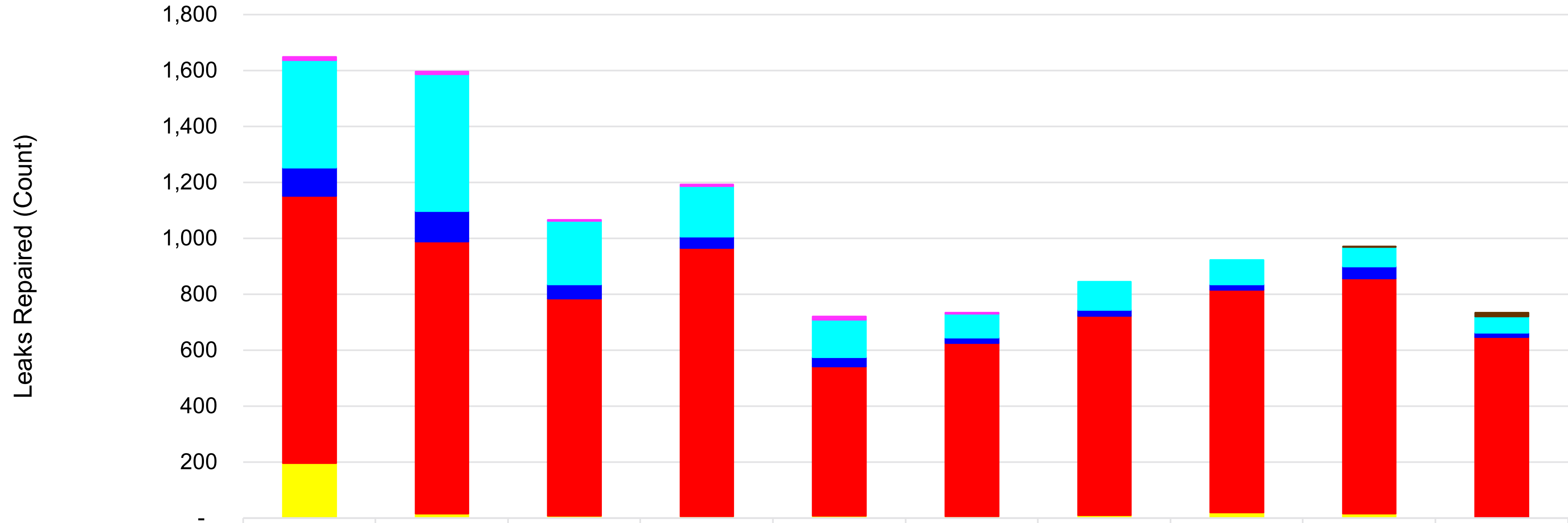
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Type 3	370	455	233	123	22	19	15	17	80	19
Type 2	626	568	278	367	176	343	461	381	413	459
Type 2A	142	141	47	121	32	76	69	83	111	86
Type 1	578	499	544	605	514	313	324	451	378	179

Years

Main Leaks Repaired By Material

(Excluding Damages)

RI

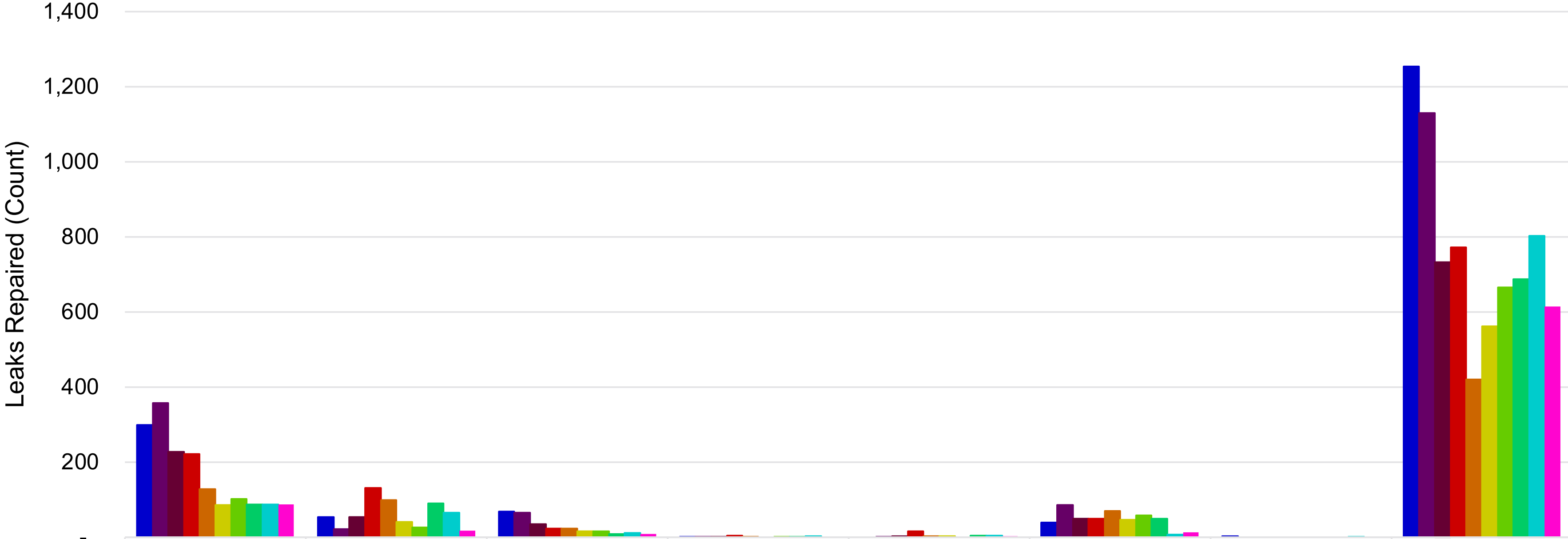


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ductile Iron	-	-	-	-	-	-	-	-	2	14
Other	11	10	6	6	12	4	-	-	-	-
Steel - Unprotected	385	490	225	180	135	87	100	86	68	58
Steel - Protected	100	109	52	42	33	19	23	20	44	15
Record. Cast Iron	-	-	-	-	-	-	-	-	-	-
Cast Iron	956	974	777	960	534	619	712	797	842	646
Plastic	196	14	7	5	7	6	10	19	14	1

Years

Main Leaks Repaired By Leak Cause

RI



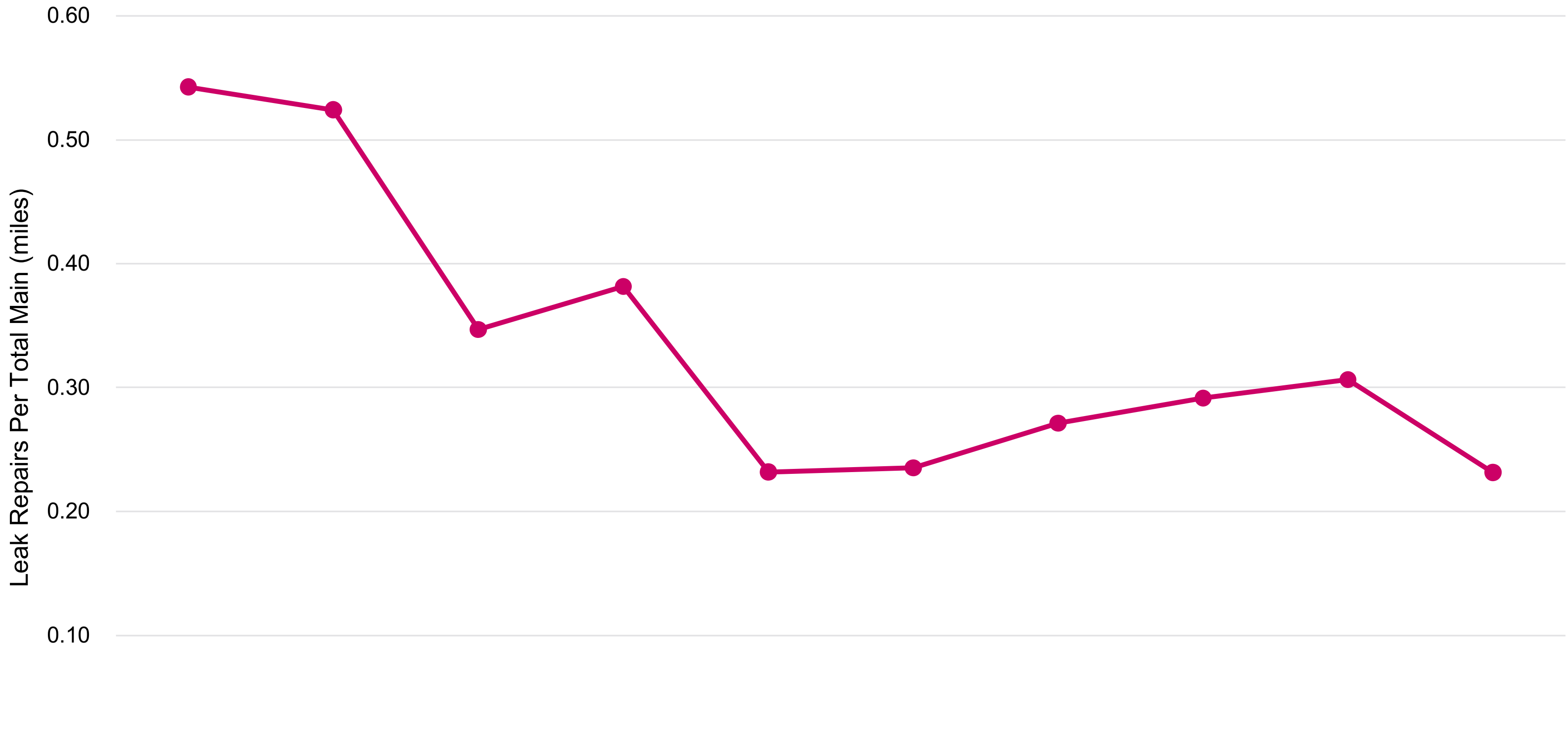
	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	CI Joint Leaks
2011	299	53	68	1	-	39	2	1,254
2012	357	22	66	1	1	86	-	1,130
2013	228	54	35	1	3	49	-	732
2014	222	131	23	4	15	49	-	772
2015	129	99	23	1	2	70	-	420
2016	85	40	16	-	2	46	-	562
2017	102	26	16	1	-	58	-	666
2018	88	90	8	1	4	50	-	688
2019	87	66	12	3	4	7	1	802
2020	87	18	9	-	2	13	-	614

Leak Cause

Main Leak Rate By Region

(Including Damages)

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	0.54	0.52	0.35	0.38	0.23	0.24	0.27	0.29	0.31	0.23

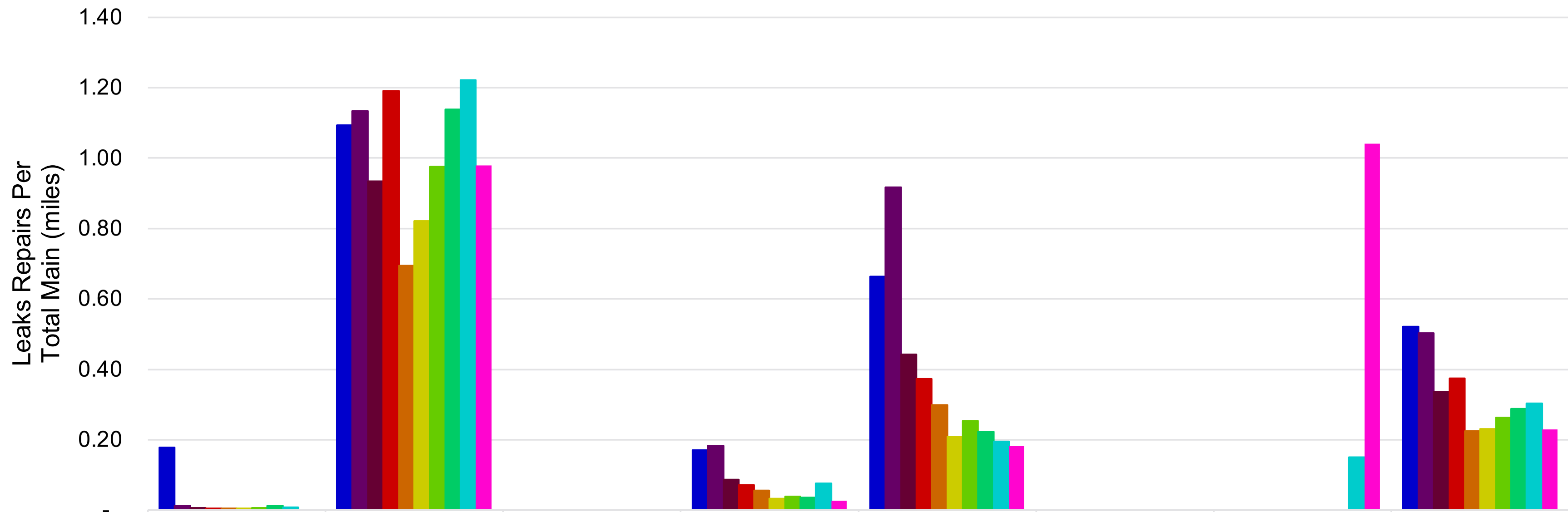
Years

$$Main\ Leak\ Rate = \frac{Main\ Leak\ Repairs\ [Qty.]}{Main\ [Miles]}$$

Main Leak Rates By Material

(Excluding Damages)

RI



	Plastic	Cast Iron	Recond. Cast Iron	Steel - Protected	Steel - Unprotected	Other	Ductile Iron	Total
2011	0.18	1.09	-	0.17	0.66	-	-	0.52
2012	0.01	1.13	-	0.18	0.92	-	-	0.50
2013	0.01	0.93	-	0.09	0.44	-	-	0.34
2014	0.00	1.19	-	0.07	0.37	-	-	0.37
2015	0.01	0.69	-	0.06	0.30	-	-	0.22
2016	0.00	0.82	-	0.03	0.21	-	-	0.23
2017	0.01	0.98	-	0.04	0.25	-	-	0.26
2018	0.01	1.14	-	0.04	0.22	-	-	0.29
2019	0.01	1.22	-	0.08	0.20	-	0.15	0.30
2020	0.00	0.98	-	0.03	0.18	-	1.04	0.23

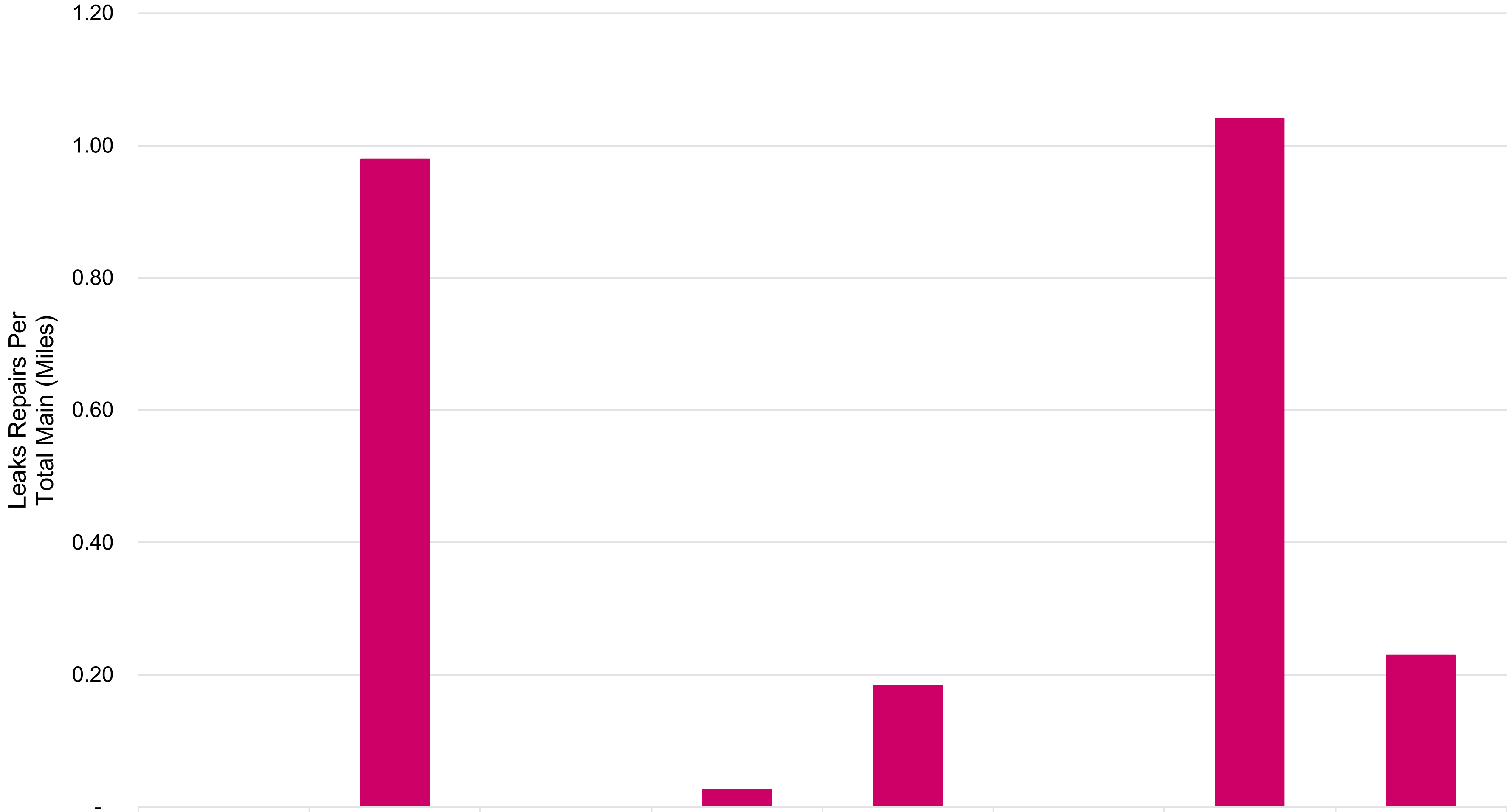
Material

Notes: Ductile Iron represents a small quantity of pipe

Main Leak Rate By Region

(Excluding Damages)

RI



	Plastic	Cast Iron	Recond. Cast Iron	Steel - Protected	Steel - Unprotected	Other	Ductile Iron	Total
RI	0.00	0.98		0.03	0.18		1.04	0.23

Material

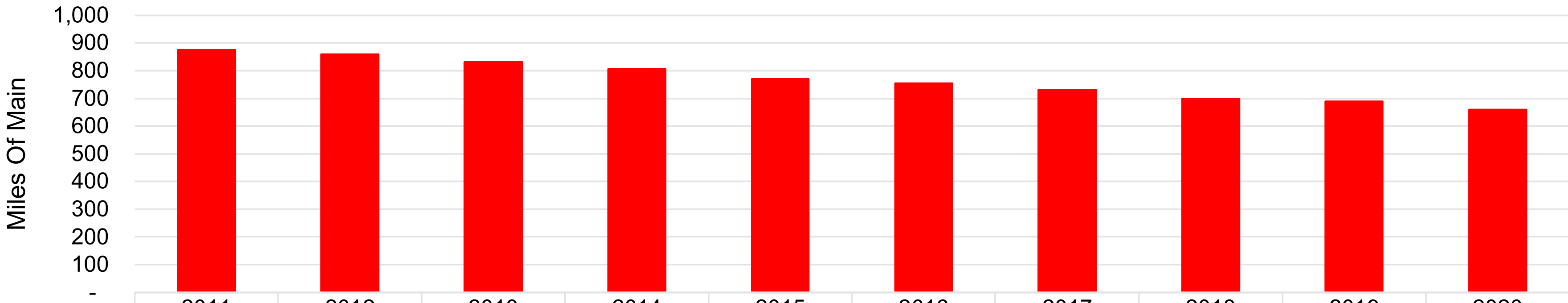
A Closer Look At Cast Iron Mains

nationalgrid

CI Main Inventory Compared to CI Attrition Rate

RI

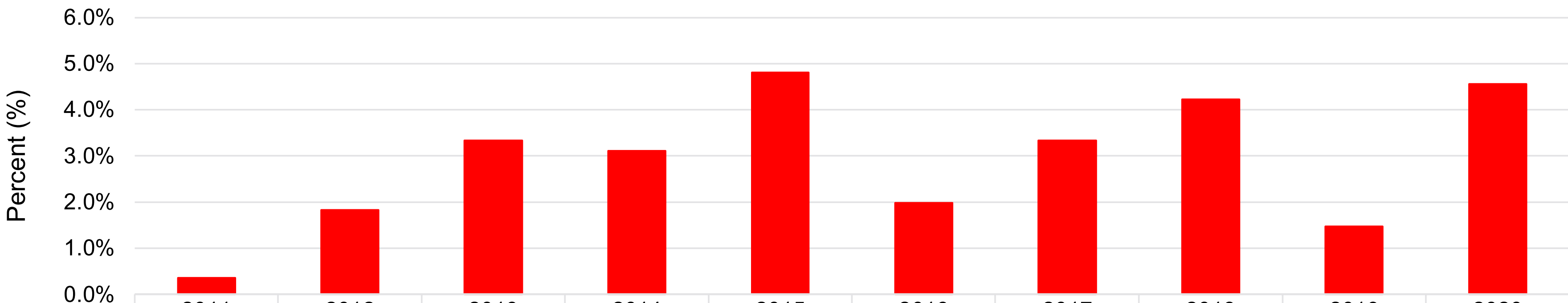
Cast Iron Main Inventory



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cast Iron	875	859	831	806	769	754	730	700	690	660

Years

Cast Iron Reduction Percentage



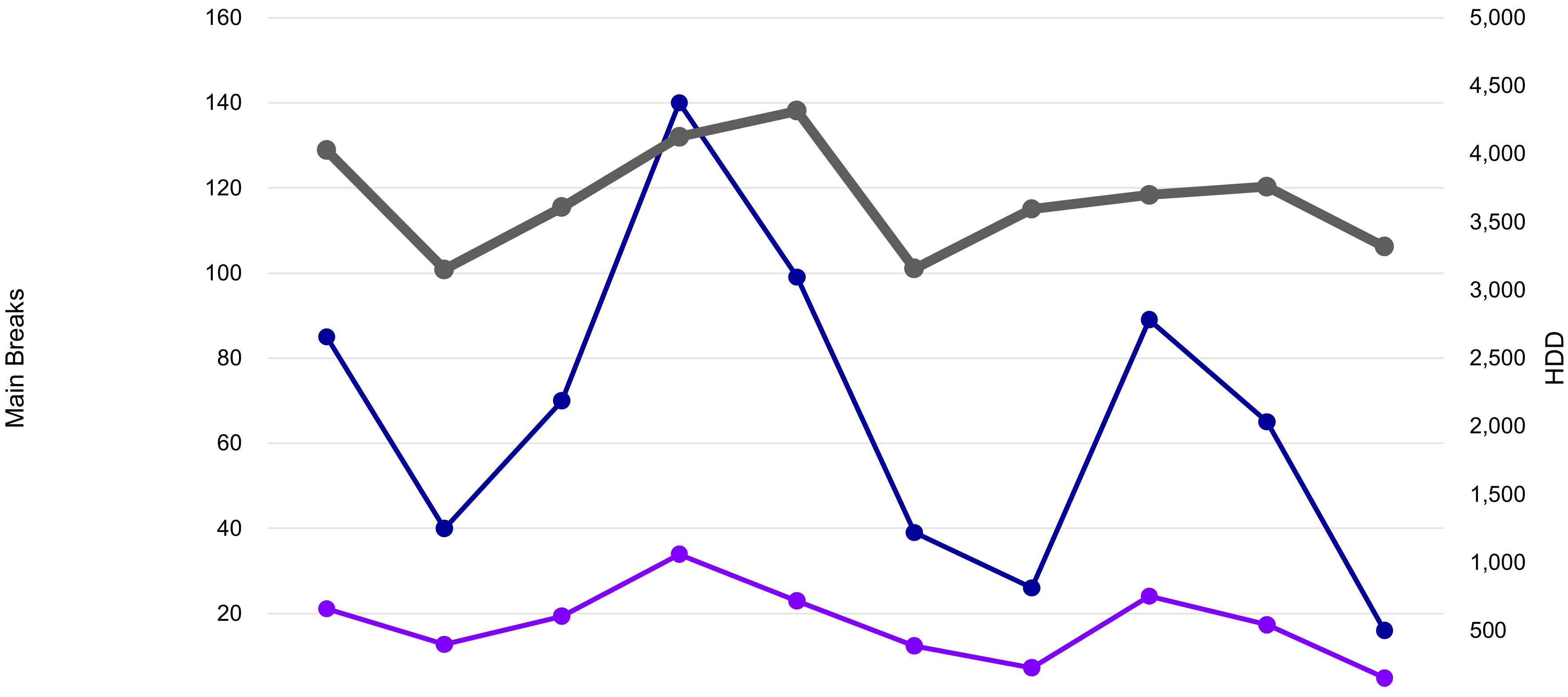
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Cast Iron	0.4%	1.8%	3.3%	3.1%	4.8%	2.0%	3.3%	4.2%	1.5%	4.6%

Years

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

CI Main Breaks Compared To HDD

RI



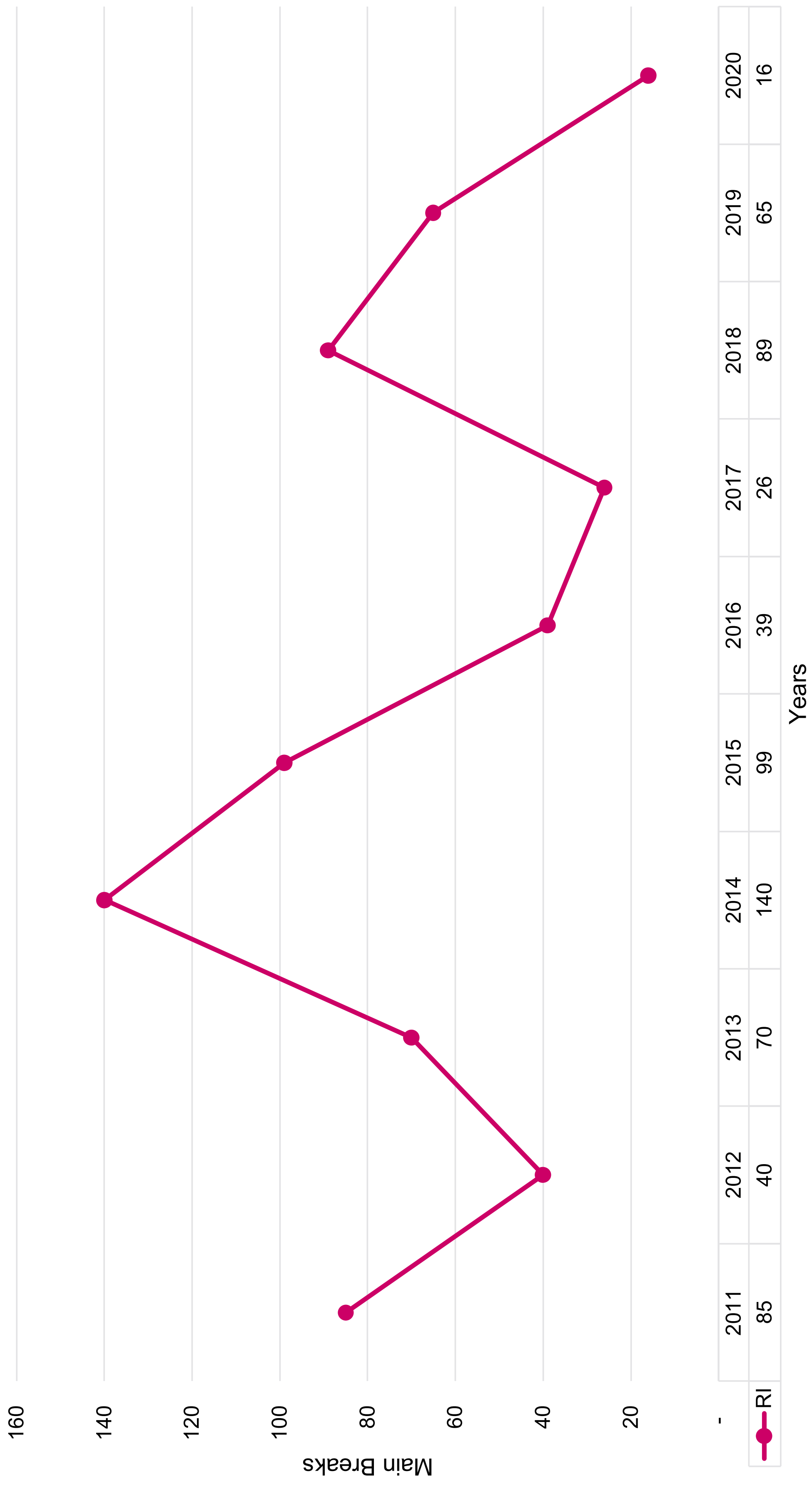
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Leak Repairs	85	40	70	140	99	39	26	89	65	16
Leak Repairs/HDD	21.11	12.69	19.40	33.96	22.93	12.36	7.24	24.06	17.30	4.82
HDD	4,026	3,151	3,608	4,123	4,318	3,156	3,593	3,699	3,757	3,319

Years

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

Cast Iron Main Breaks By Region

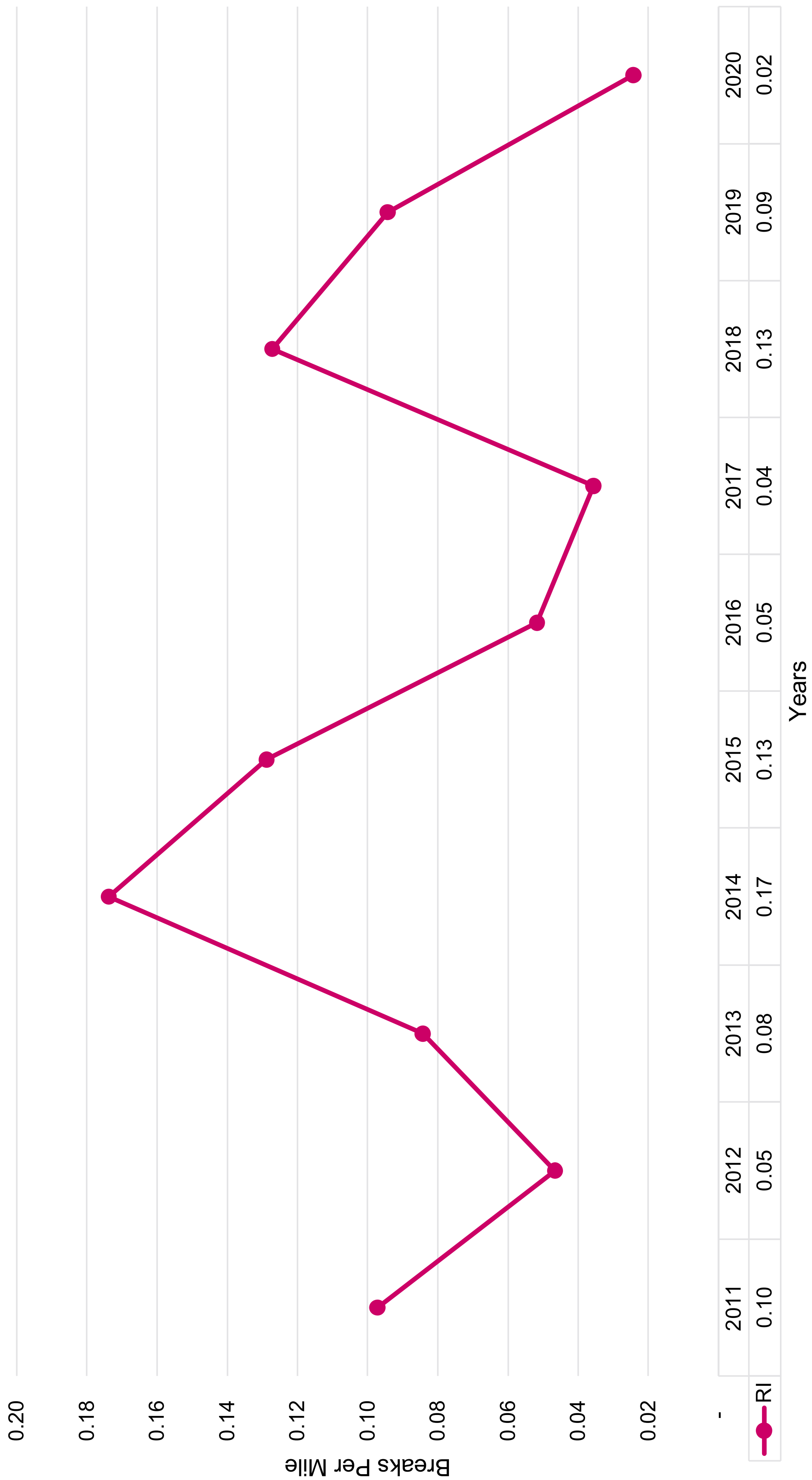
RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	85	40	70	140	99	39	26	89	65	16

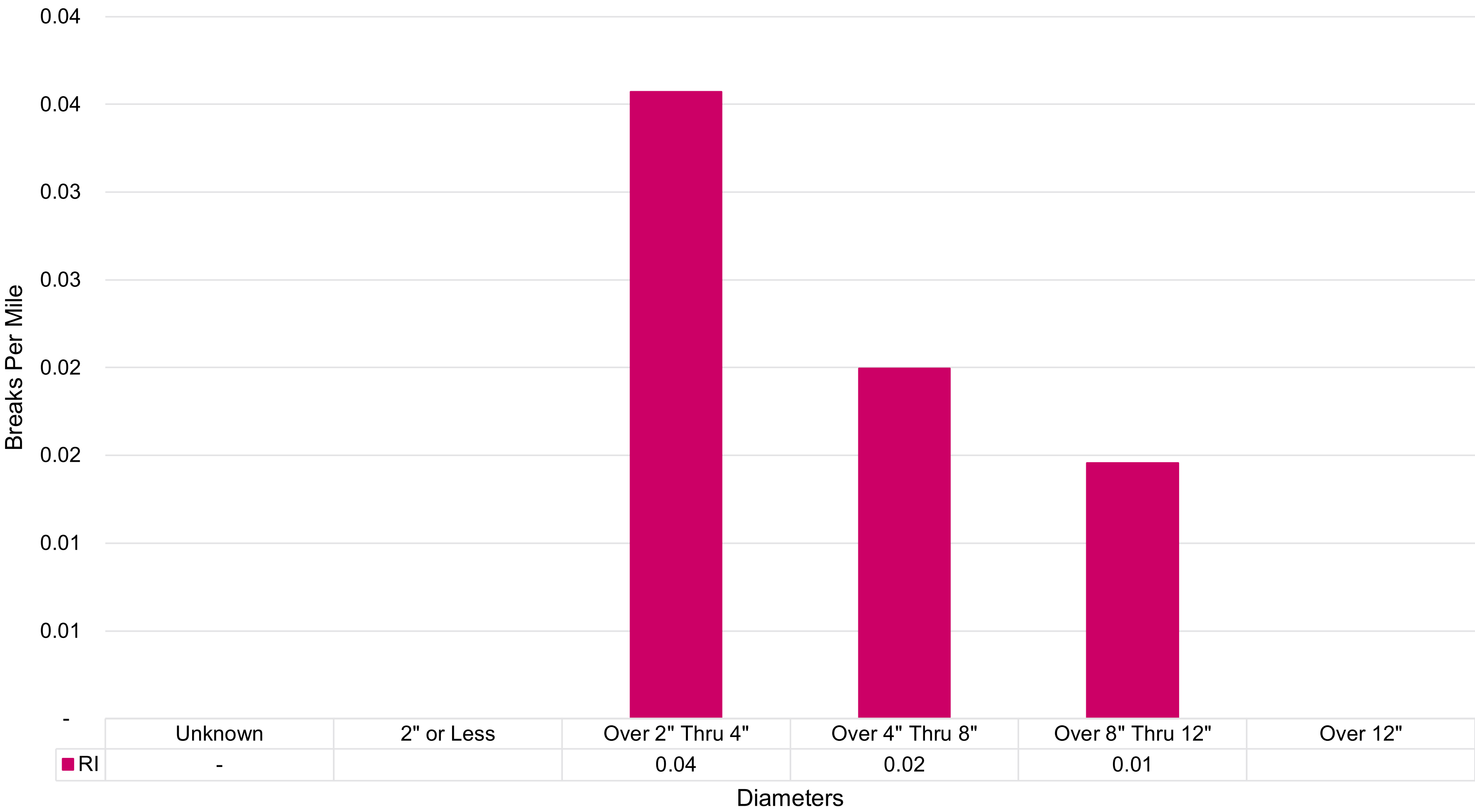
Cast Iron Main Breaks Rates By Region

RI



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

RI



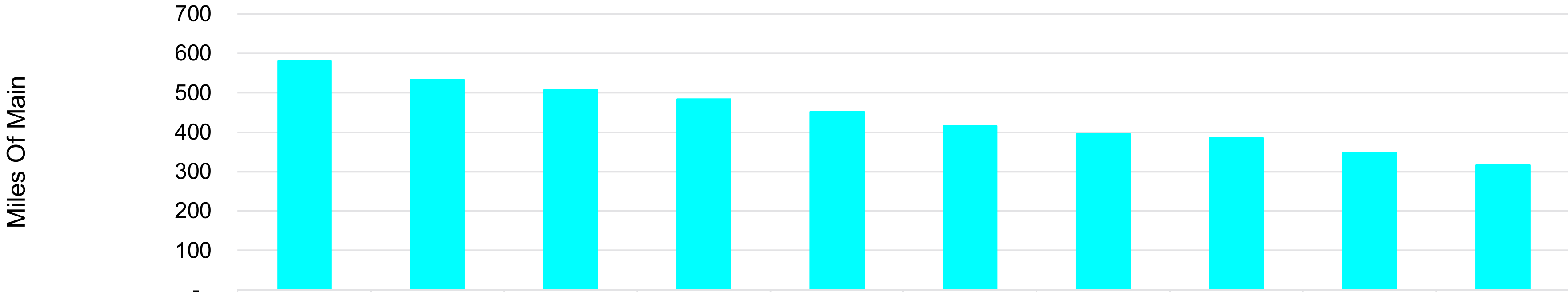
A Closer Look At Steel Mains

nationalgrid

Unprotected Steel Main Inventory Compared to Steel Attrition Rate

RI

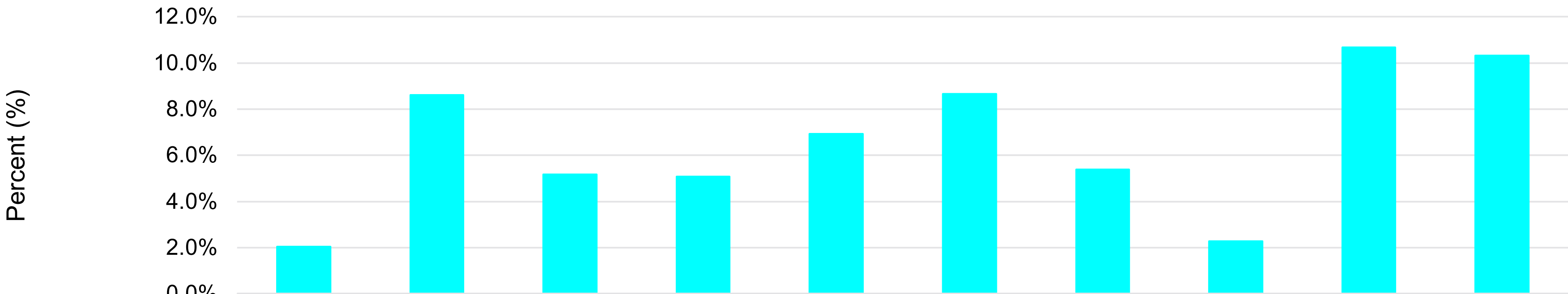
Unprotected Steel Main Inventory



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Steel - Unprotected	580	534	508	483	452	416	395	386	349	316

Years

Unprotected Steel Reduction Percentage



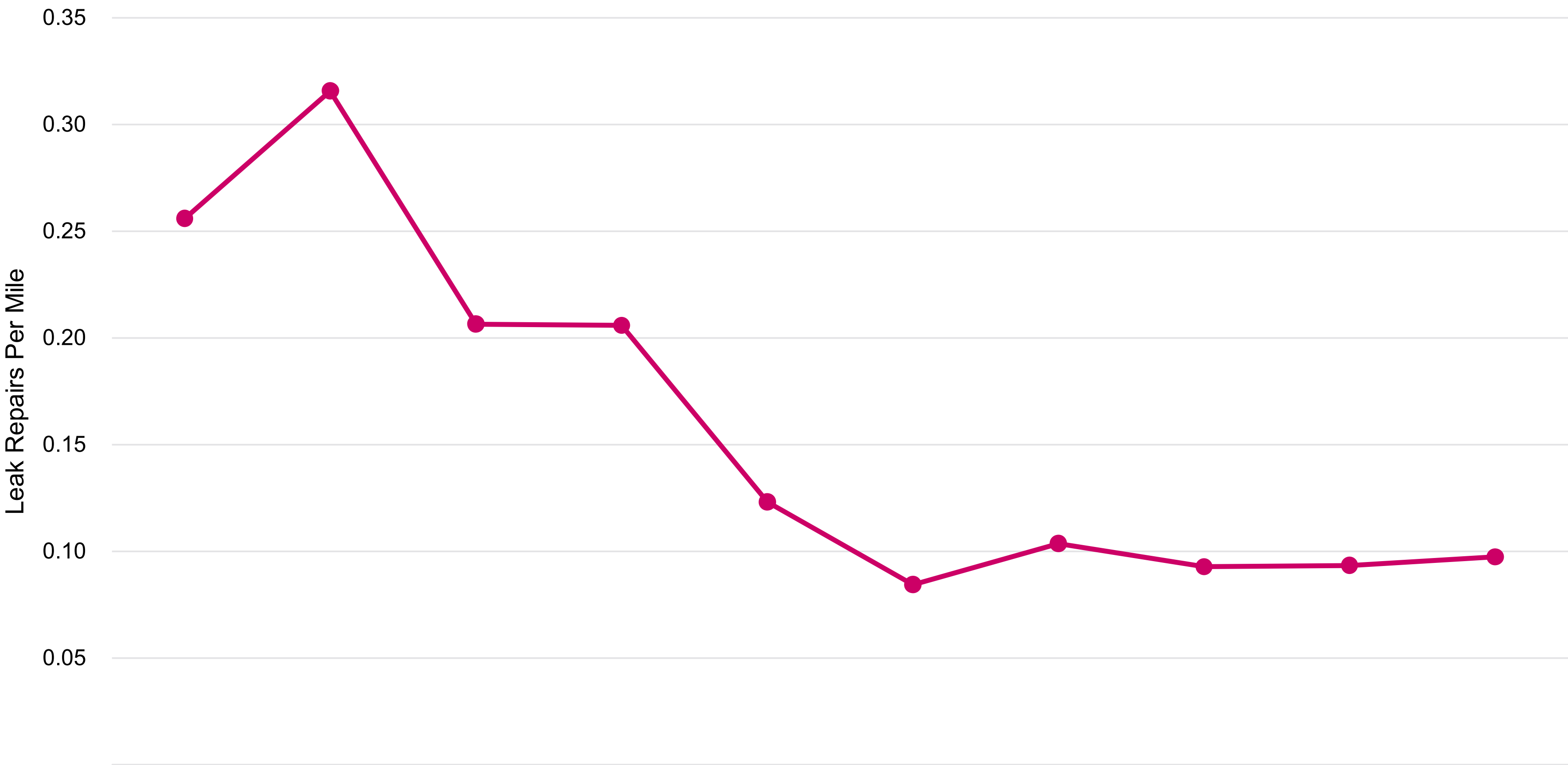
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Steel - Unprotected	2.0%	8.6%	5.2%	5.1%	6.9%	8.7%	5.4%	2.3%	10.7%	10.3%

Years

Main Corrosion Leak Rates

(Corrosion Leak Repairs Per Mile of Total Steel)

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	0.26	0.32	0.21	0.21	0.12	0.08	0.10	0.09	0.09	0.10

Years

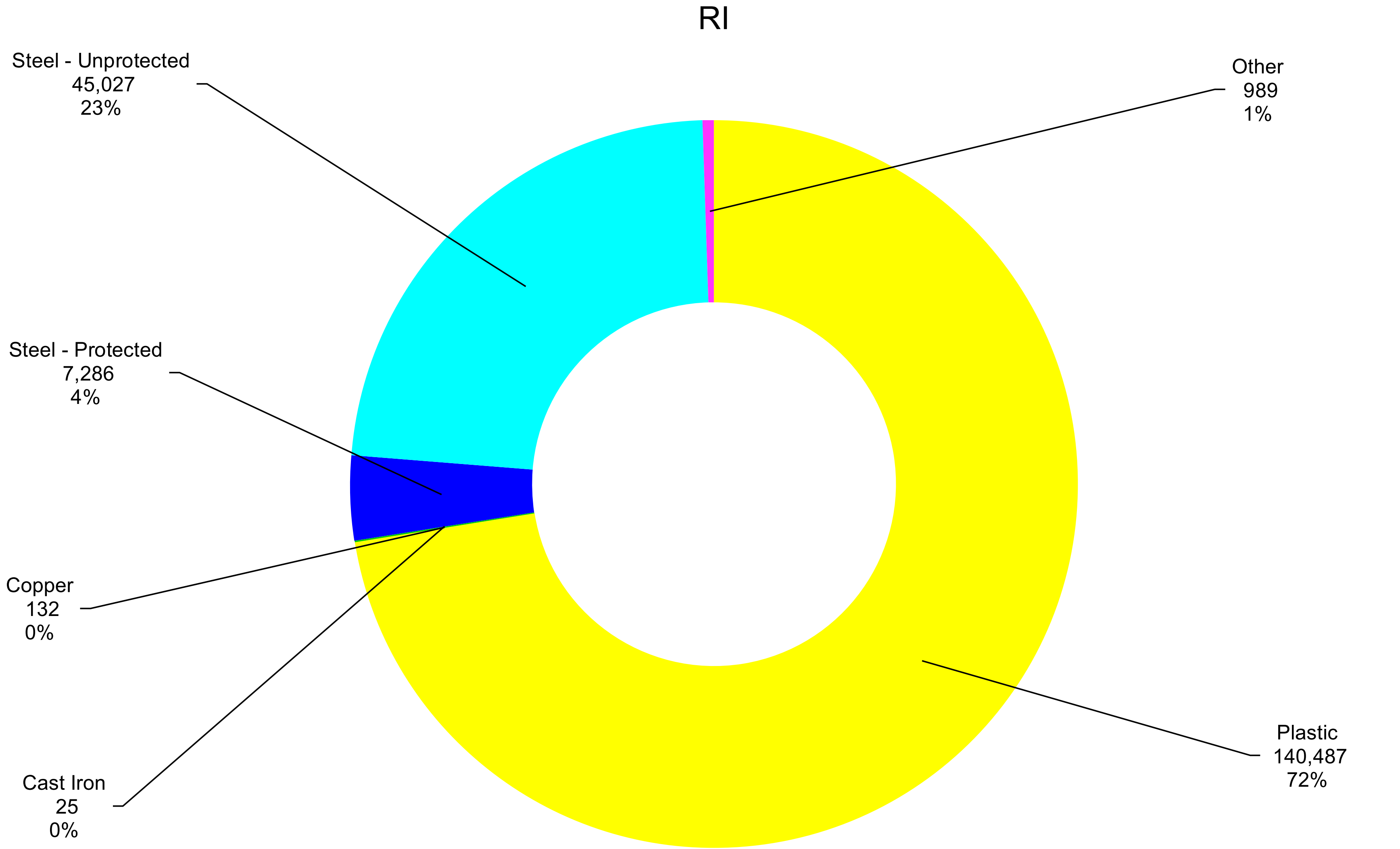
Note: Includes **ALL** corrosion leaks, regardless of main material

08 Service Inventory Analysis

Service Inventory Analysis By Material

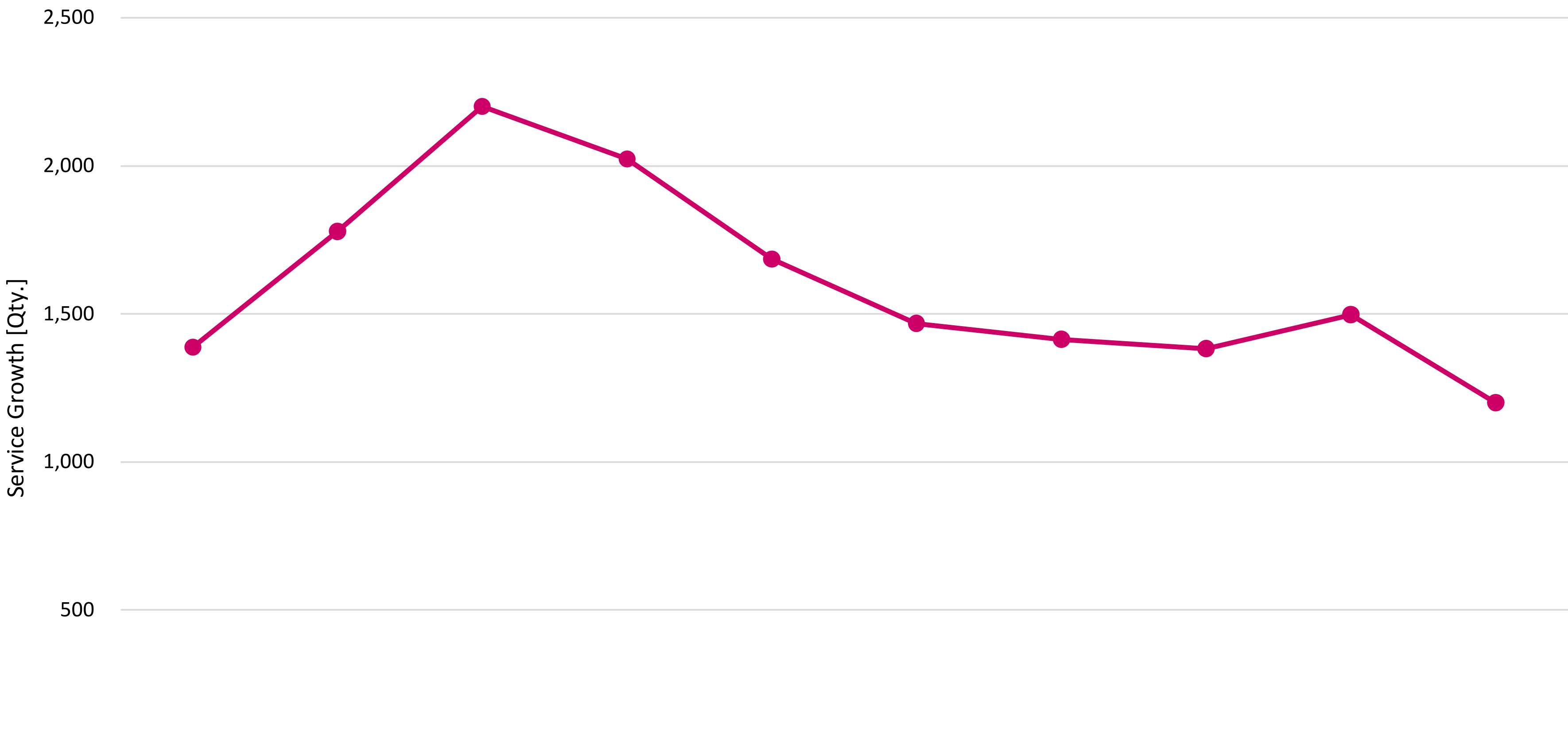
2020

RI



Service Growth By Region

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	1,387	1,778	2,200	2,023	1,684	1,468	1,414	1,382	1,497	1,200

Years

09 Service Leaks Repaired Analysis

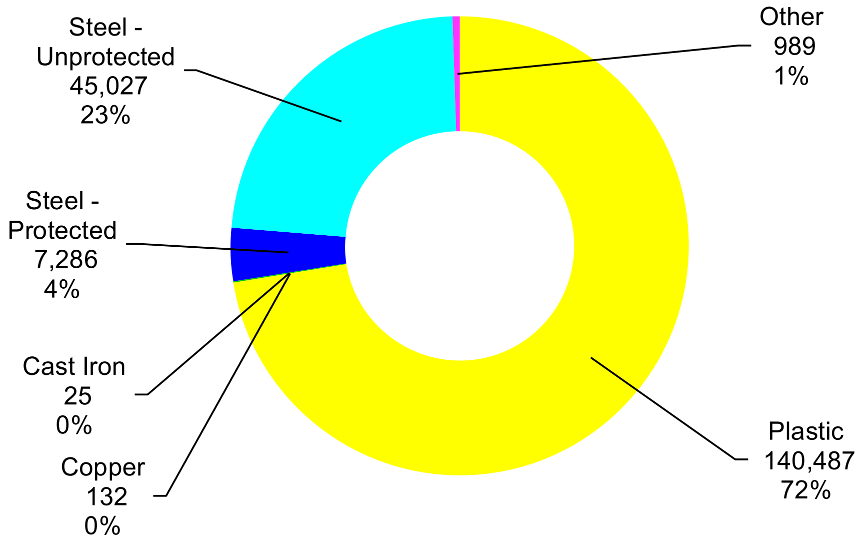
nationalgrid

Service Inventory Compared To Service Leak Repairs By Material

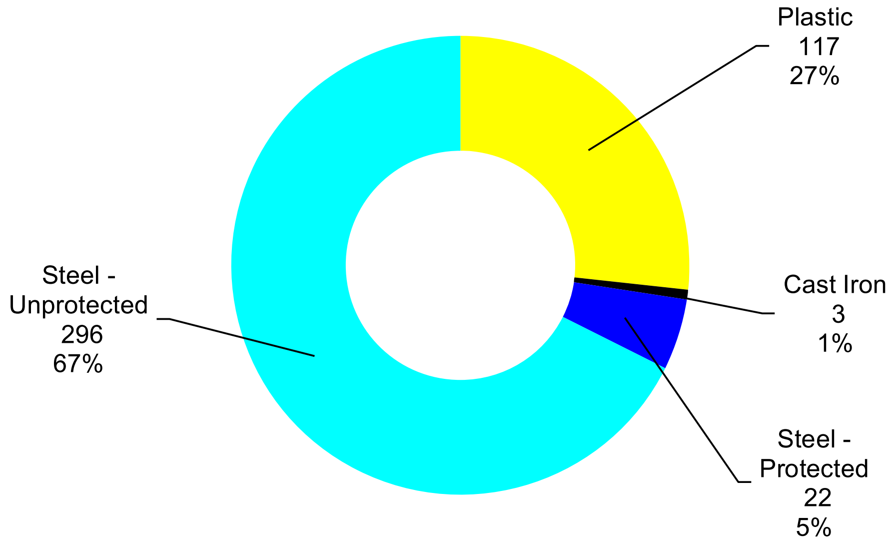
(Including Damages)

RI

Service Inventory



Service Leak Repairs



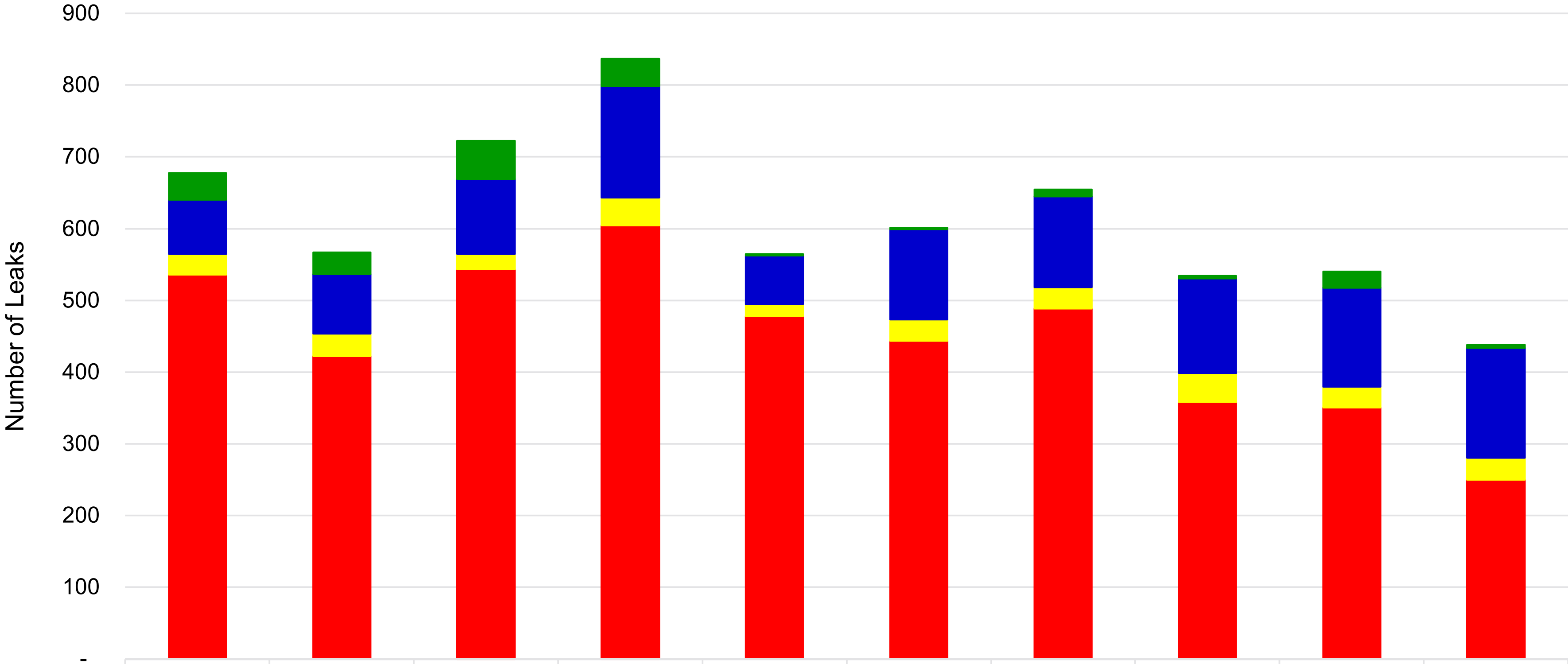
Plastic Leaks By Leak Cause

Region	Corrosion	Equipment	Excavation	Material or Weld Failure	Natural Force	Operations	Other	Other Outside Force	Total
RI	21	27	58	2		1	3	5	117

Service Leaks Repaired By Type

(Including Damages)

RI

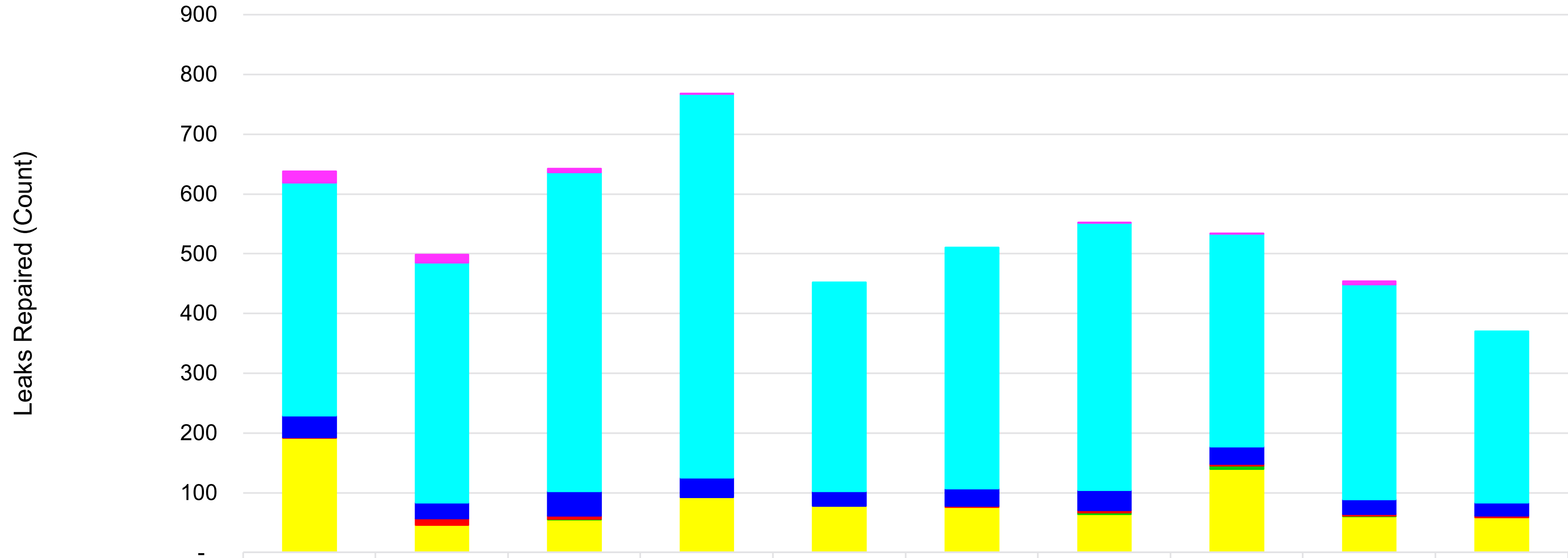


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Type 3	37	31	53	39	2	2	9	4	23	5
Type 2	76	83	105	155	68	126	127	132	138	153
Type 2A	29	31	21	39	17	30	30	40	29	30
Type 1	535	422	543	604	477	443	488	358	350	250

Service Leaks Repaired By Material

(Excluding Damages)

RI

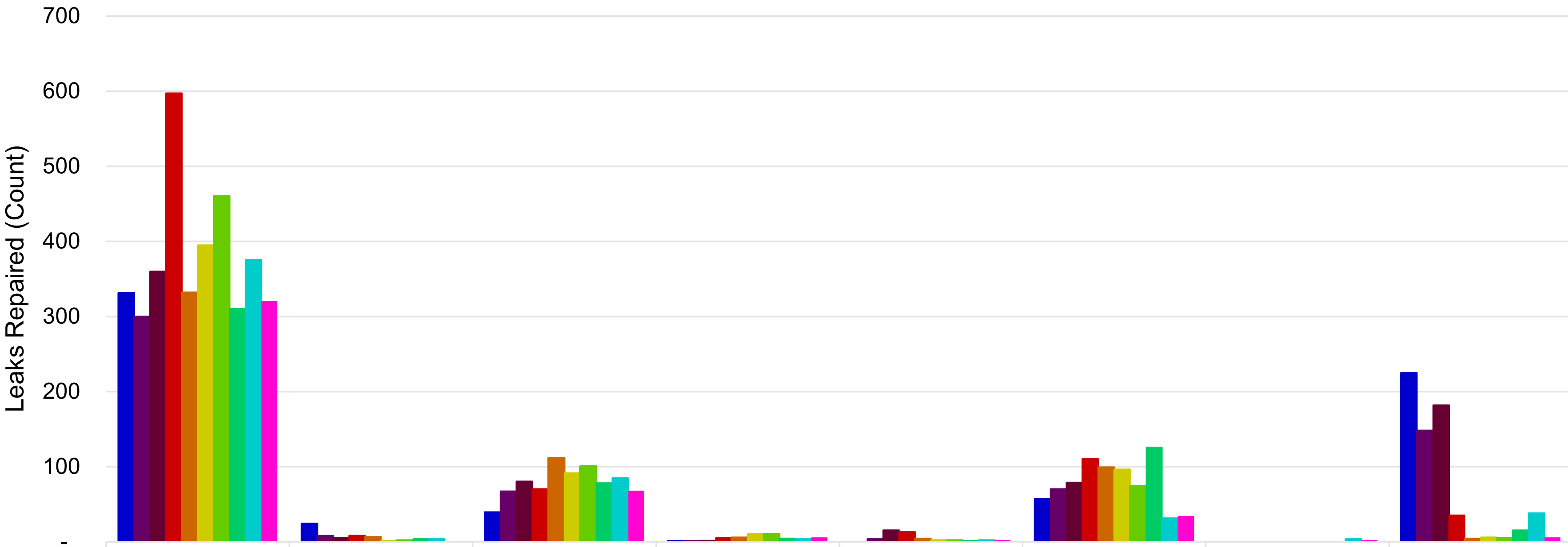


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Other	19	14	6	1	-	-	1	1	5	-
Steel - Unprotected	390	402	534	642	350	403	448	356	360	287
Steel - Protected	36	26	40	33	24	29	33	29	25	21
Cast Iron	1	11	6	-	-	2	4	3	2	3
Copper	-	-	1	-	-	-	3	5	1	-
Plastic	192	46	55	92	78	76	64	140	61	59

Years

Service Leaks Repaired By Leak Cause

RI



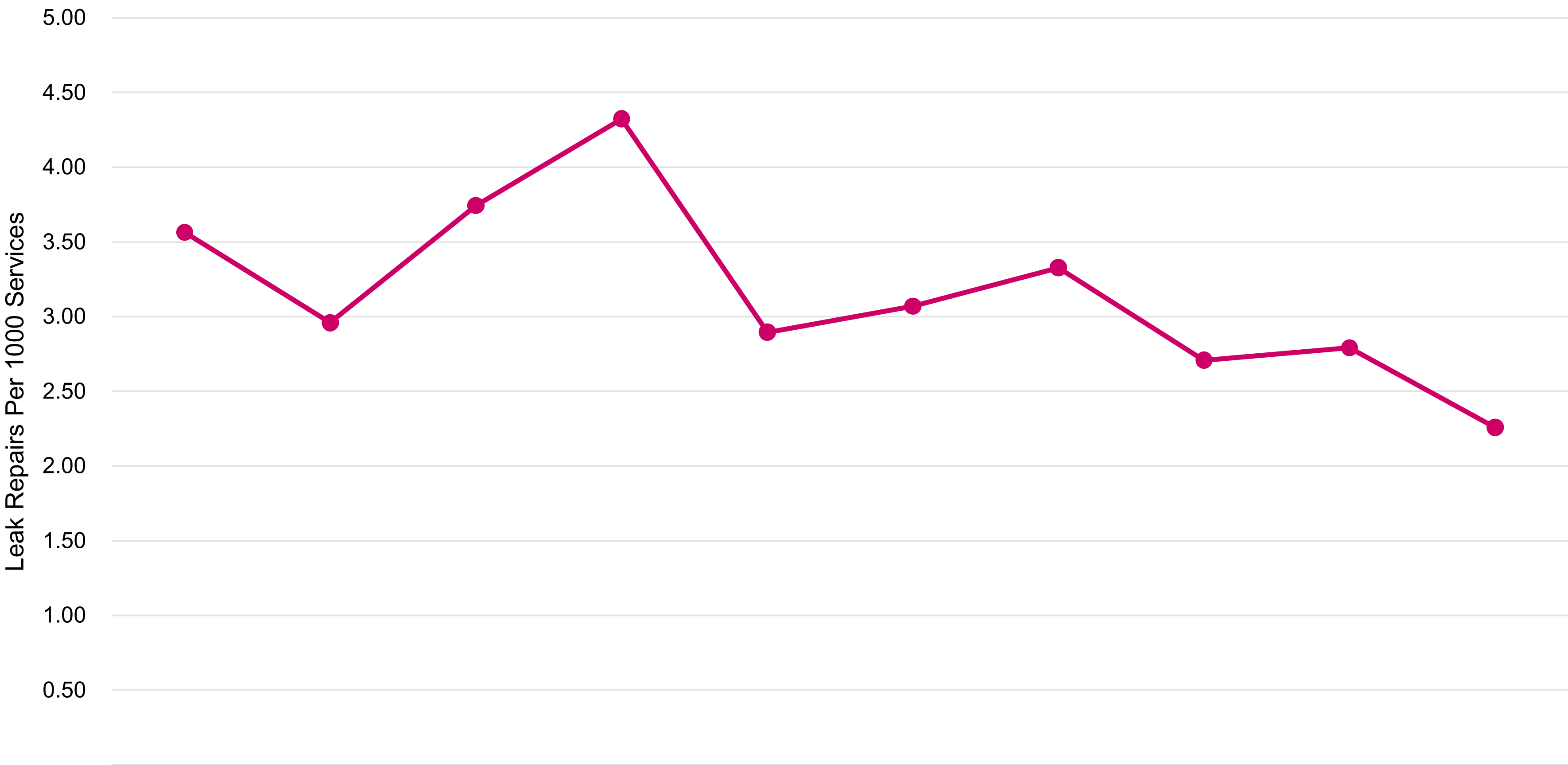
	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	Other
2011	331	24	39	1	-	57	-	225
2012	300	8	67	1	3	70	-	148
2013	360	5	80	1	15	79	-	182
2014	597	8	70	5	13	110	-	35
2015	332	7	112	6	4	99	-	4
2016	395	1	91	10	2	96	-	6
2017	460	2	101	10	2	74	-	5
2018	310	3	78	4	1	125	-	15
2019	375	3	85	3	2	31	3	38
2020	320	-	68	6	2	34	2	6

Leak Cause

Service Leak Rate By Region

(Including Damages)

RI

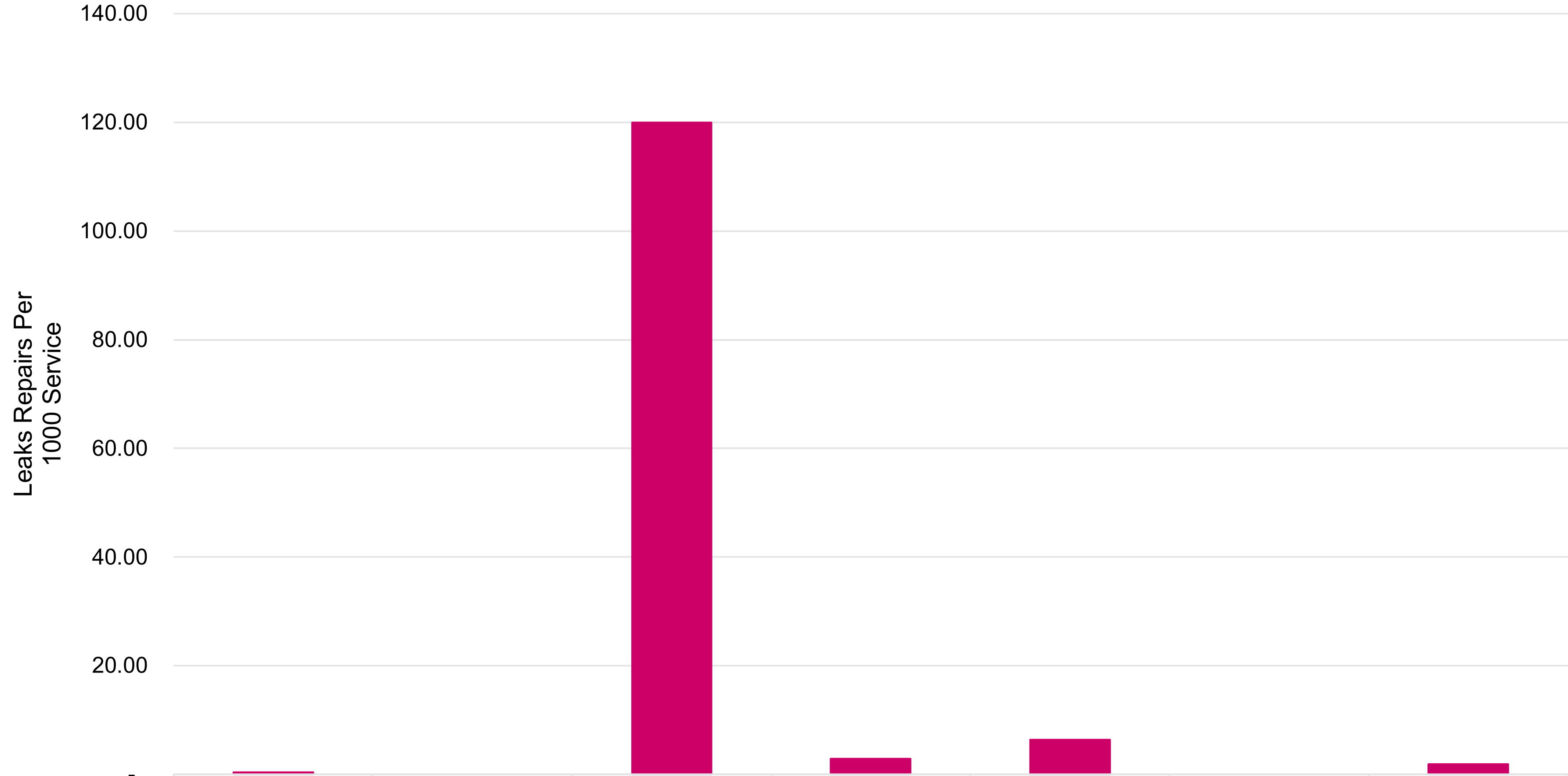


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	3.56	2.96	3.74	4.32	2.89	3.07	3.33	2.71	2.79	2.26

Service Leak Rate By Region

(Excluding Damages)

RI



	Plastic	Copper	Cast Iron	Steel - Protected	Steel - Unprotected	Other	Total
RI	0.42	-	120.00	2.88	6.37	-	1.91

Material

- Note: RI cast iron leak rate high due to small number of cast iron services.

10 Distribution DOT Report Data Comparison

nationalgrid

Distribution DOT Data Comparison

2020

RI

		RI - LPP INVENTORY						US NGRID - LPP INVENTORY					
		2020		2019		Delta(20-19)	%	2020		2019		Delta(20-19)	%
	General Data Correction	989	Main	1,052	Main	-62	-5.9%	8,620	Main	8,995	Main	-375	-4.2%
	Explanation Needed	45,184	Service	44,314	Service	+870	2.0%	493,344	Service	501,436	Service	-8092	-1.6%
	Discussed & Approved												
2019 - 2020 DOT Comparisons		**RI**						**US - NGRID (ALL REGIONS COMBINED)**					
		2020		2019		Delta(20-19)	%	2020		2019		Delta(20-19)	%
Main Inventory	Cast Iron	660	miles	690	miles	-30	-4.3%	4,040	miles	4,228	miles	-188.117	-4.4%
	Reconditioned Cast Iron	0	miles	0	miles	+0	N/A	9	miles	7	miles	+1.511	21.3%
	Plastic	1,643	miles	1,572	miles	+71	4.5%	18,294	miles	17,837	miles	+457.226	2.6%
	UP Bare Steel	172	miles	192	miles	-20	-10.4%	3,107	miles	3,229	miles	-121.913	-3.8%
	UP Coated Steel	144	miles	157	miles	-13	-8.3%	1,450	miles	1,517	miles	-66.558	-4.4%
	Total UP Steel	316	miles	349	miles	-33	-9.5%	4,558	miles	4,746	miles	-188.471	-4.0%
	CP Bare Steel	-	miles	0	miles	+0	N/A	174	miles	176	miles	-1.691	-1.0%
	CP Coated Steel	592	miles	582	miles	+10	1.7%	8,693	miles	8,688	miles	+4.812	0.1%
	Total CP Steel	592	miles	582	miles	+10	1.7%	8,867	miles	8,864	miles	+3.121	0.0%
	Other	0	miles	0	miles	-0	0.0%	0	miles	0	miles	-0.035	-52.2%
	Ductile Iron	13	miles	13	miles	+0	0.0%	13	miles	13	miles	+0.103	0.8%
	TOTAL MAIN	**3,225**	**miles**	**3,206**	**miles**	**+19**	**0.6%**	**35,782**	**miles**	**35,696**	**miles**	**+85.728**	**0.2%**
Main Leaks	Corrosion	87	repairs	87	repairs	+0	0.0%	1,858	repairs	2,216	repairs	-358	-16.2%
	Natural Forces	18	repairs	66	repairs	-48	-72.7%	345	repairs	593	repairs	-248	-41.8%
	Excavation	9	repairs	12	repairs	-3	-25.0%	241	repairs	242	repairs	-1	-0.4%
	Other Outside Force	0	repairs	3	repairs	-3	-100.0%	20	repairs	27	repairs	-7	-25.9%
	Material or Welds	2	repairs	4	repairs	-2	-50.0%	65	repairs	60	repairs	+5	8.3%
	Equipment	13	repairs	7	repairs	+6	85.7%	519	repairs	821	repairs	-302	-36.8%
	Operations	0	repairs	1	repairs	-1	-100.0%	3	repairs	2	repairs	+1	50.0%
	Other	614	repairs	802	repairs	-188	-23.4%	7,001	repairs	8,557	repairs	-1556	-18.2%
	TOTAL MAIN LEAKS	**743**	**repairs**	**982**	**repairs**	**-239**	**-24.3%**	**10,052**	**repairs**	**12,518**	**repairs**	**-2466**	**-19.7%**
Service Inventory	Copper	132	svcs	185	svcs	-53	-28.6%	120,483	svcs	123,922	svcs	-3439	-2.8%
	Plastic	140,487	svcs	138,929	svcs	+1558	1.1%	1,930,049	svcs	1,890,970	svcs	+39079	2.1%
	UP Bare Steel	39,373	svcs	40,239	svcs	-866	-2.2%	197,955	svcs	201,772	svcs	-3817	-1.9%
	UP Coated Steel	5,654	svcs	5,753	svcs	-99	-1.7%	171,686	svcs	172,489	svcs	-803	-0.5%
	Total UP Steel	45,027	svcs	44,103	svcs	+924	2.1%	369,641	svcs	374,261	svcs	-4620	-1.2%
	CP Bare Steel	0	svcs	0	svcs	+0	N/A	13,173	svcs	13,100	svcs	+73	0.6%
	CP Coated Steel	7,286	svcs	7,348	svcs	-62	-0.8%	144,839	svcs	146,007	svcs	-1168	-0.8%
	Total CP Steel	7,286	svcs	6,961	svcs	+325	4.7%	158,012	svcs	159,107	svcs	-1095	-0.7%
	Other	989	svcs	1,011	svcs	-22	-2.2%	96,988	svcs	97,079	svcs	-91	-0.1%
	Cast Iron / Wrought Iron	25	svcs	26	svcs	-1	-3.8%	3,220	svcs	3,253	svcs	-33	-1.0%
	TOTAL SERVICES	**193,946**	**svcs**	**193,491**	**svcs**	**+455**	**0.2%**	**2,678,393**	**svcs**	**2,648,592**	**svcs**	**+29801**	**1.1%**
Service Leaks Excluding Above Ground Leaks	Corrosion	320	repairs	374	repairs	-54	-14.4%	3,043	repairs	4,185	repairs	-1142	-27.3%
	Natural Forces	0	repairs	3	repairs	-3	-100.0%	88	repairs	132	repairs	-44	-33.3%
	Excavation	68	repairs	85	repairs	-17	-20.0%	1,470	repairs	1,326	repairs	+144	10.9%
	Other Outside Force	6	repairs	2	repairs	+4	200.0%	95	repairs	101	repairs	-6	-5.9%
	Material or Welds	2	repairs	2	repairs	+0	0.0%	30	repairs	44	repairs	-14	-31.8%
	Equipment	34	repairs	31	repairs	+3	9.7%	1,108	repairs	1,809	repairs	-701	-38.8%
	Operations	2	repairs	2	repairs	+0	0.0%	7	repairs	10	repairs	-3	-30.0%
	Other	6	repairs	36	repairs	-30	-83.3%	99	repairs	156	repairs	-57	-36.5%
	TOTAL SVC LEAKS	**438**	**repairs**	**535**	**repairs**	**-97**	**-18.1%**	**5,940**	**repairs**	**7,763**	**repairs**	**-1823**	**-23.5%**
Service Leaks Including Above Ground Leaks	Corrosion	320	repairs	375	repairs	-55	-14.7%	3,046	repairs	4,189	repairs	-1143	-27.3%
	Natural Forces	0	repairs	3	repairs	-3	-100.0%	102	repairs	138	repairs	-36	-26.1%
	Excavation	68	repairs	85	repairs	-17	-20.0%	1,470	repairs	1,326	repairs	+144	10.9%
	Other Outside Force	6	repairs	3	repairs	+3	100.0%	103	repairs	108	repairs	-5	-4.6%
	Material or Welds	2	repairs	2	repairs	+0	0.0%	30	repairs	44	repairs	-14	-31.8%
	Equipment	35	repairs	31	repairs	+4	12.9%	1,113	repairs	1,811	repairs	-698	-38.5%
	Operations	2	repairs	3	repairs	-1	-33.3%	8	repairs	12	repairs	-4	-33.3%
	Other	6	repairs	38	repairs	-32	-84.2%	100	repairs	162	repairs	-62	-38.3%
	TOTAL SVC LEAKS	**439**	**repairs**	**540**	**repairs**	**-101**	**-18.7%**	**5,972**	**repairs**	**7,790**	**repairs**	**-1818**	**-23.3%**
Total Leak Repairs (Main & Service) Excluding Above Ground Leak		1,181	repairs	1,517	repairs	-336	-22.1%	15,992	repairs	20,281	repairs	-4289	-21.1%
Total Leak Repairs (Main & Service) Including Above Ground Leak		1,182	repairs	1,522	repairs	-340	-22.3%	16,024	repairs	21,397	repairs	-5373	-25.1%
Workable Backlog As of 12/31		155	leaks	164	leaks	-9	-5.5%	792	leaks	1,181	leaks	-389	-32.9%
UFG (Net)		2.9%		2.6%		0.30%	11.5%	3.3%		2.39%		0.91%	38.1%
Average Service Length (Ft)		61.6	ft	61.6	ft	-0	0.0%	59.6	ft	59.6	ft	+0.084	0.1%

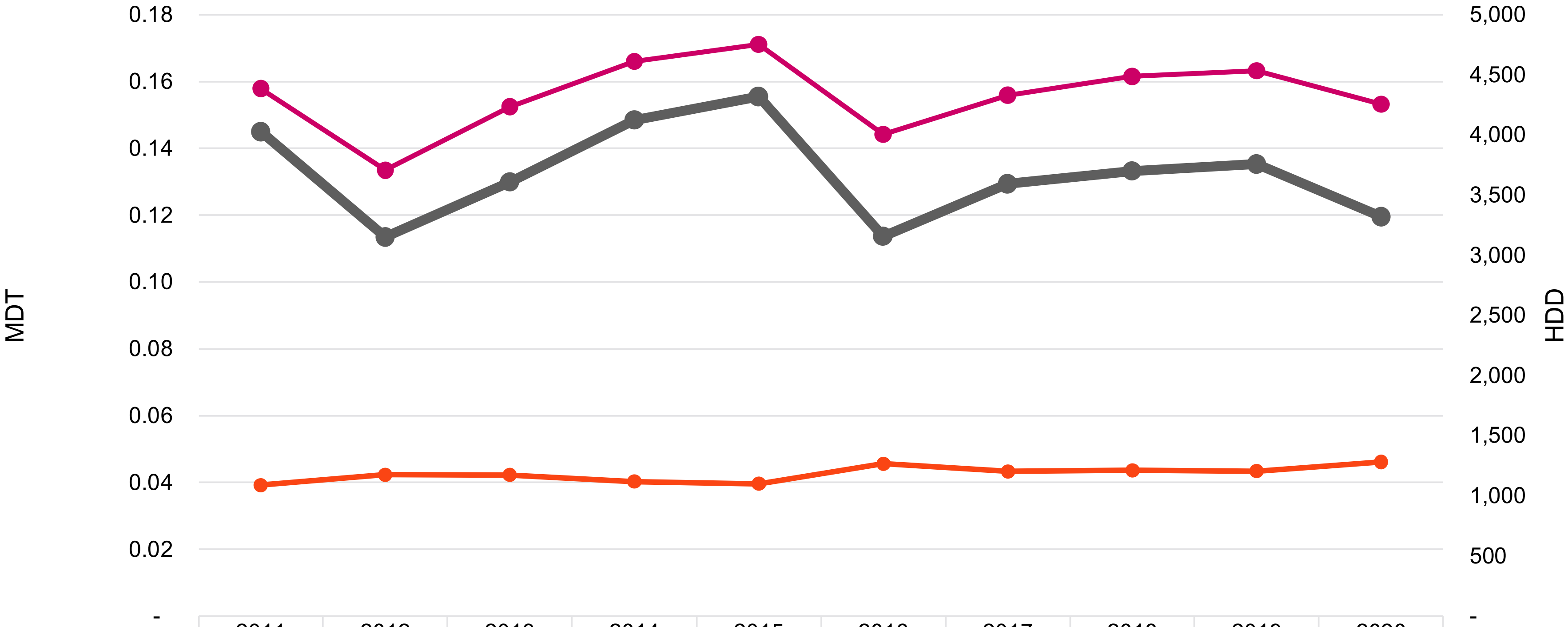
11 Gas Distribution System Statistics

nationalgrid

Average Customer Used Rate

(Compared to HDD)

RI



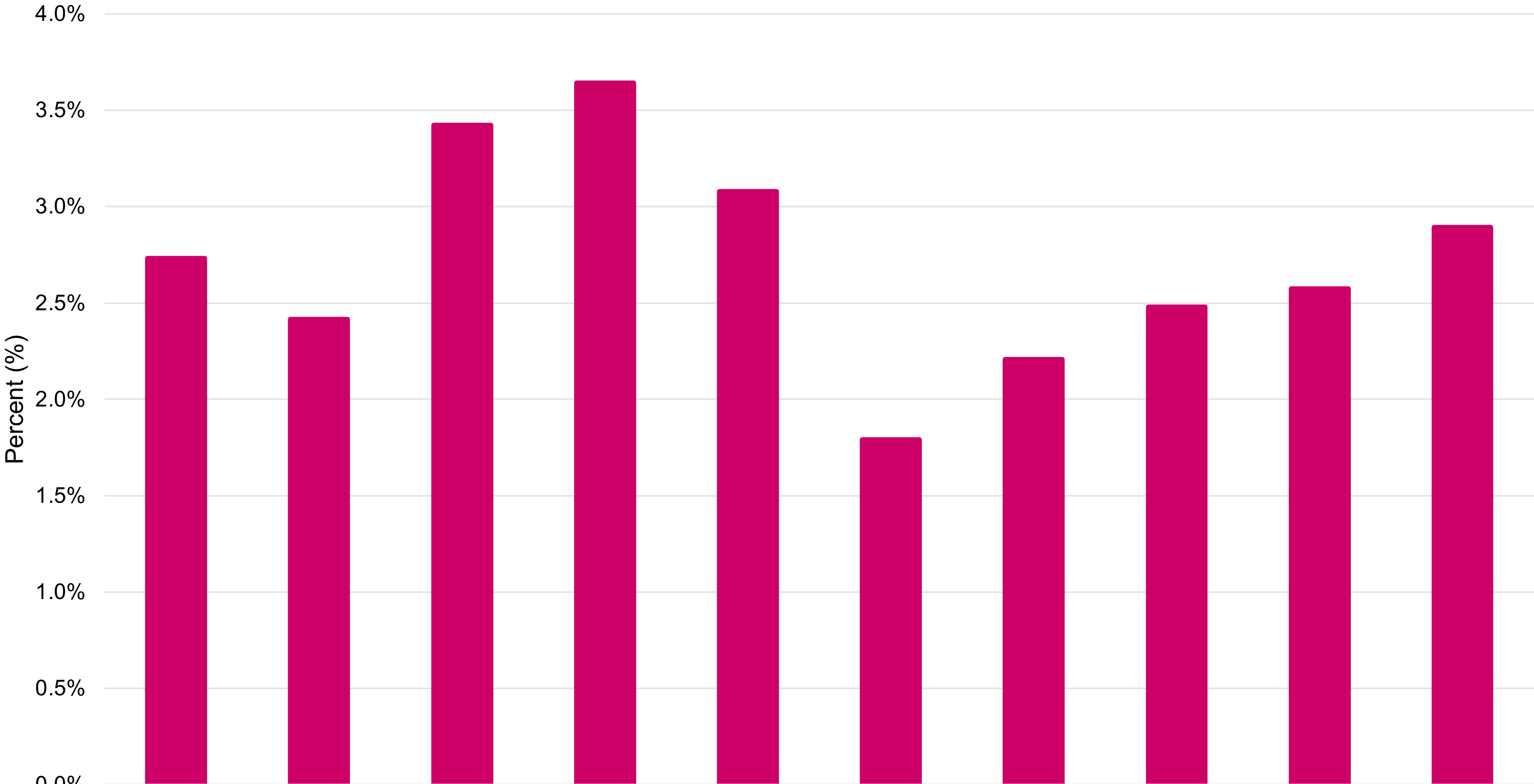
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	0.16	0.13	0.15	0.17	0.17	0.14	0.16	0.16	0.16	0.15
ACUR/HDD	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.05
HDD	4,026	3,151	3,608	4,123	4,318	3,156	3,593	3,699	3,757	3,319

Years

Notes:
- Average Customer Used Rate (ACUR)= Sendout (MDT) / Total Customer
- Total Customer includes Residential and Commercial
- ACUR/HDD = (Average Customer Used Rate / HDD) * 1000
- HDD: Heating Degree Days
- MDT: Million Dekatherm

Gross Unaccounted For Gas By Region

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	2.7%	2.4%	3.4%	3.6%	3.1%	1.8%	2.2%	2.5%	2.6%	2.9%

12

System Integrity Report Analysis (Findings and Explanations)

Analysis of Findings and Explanations

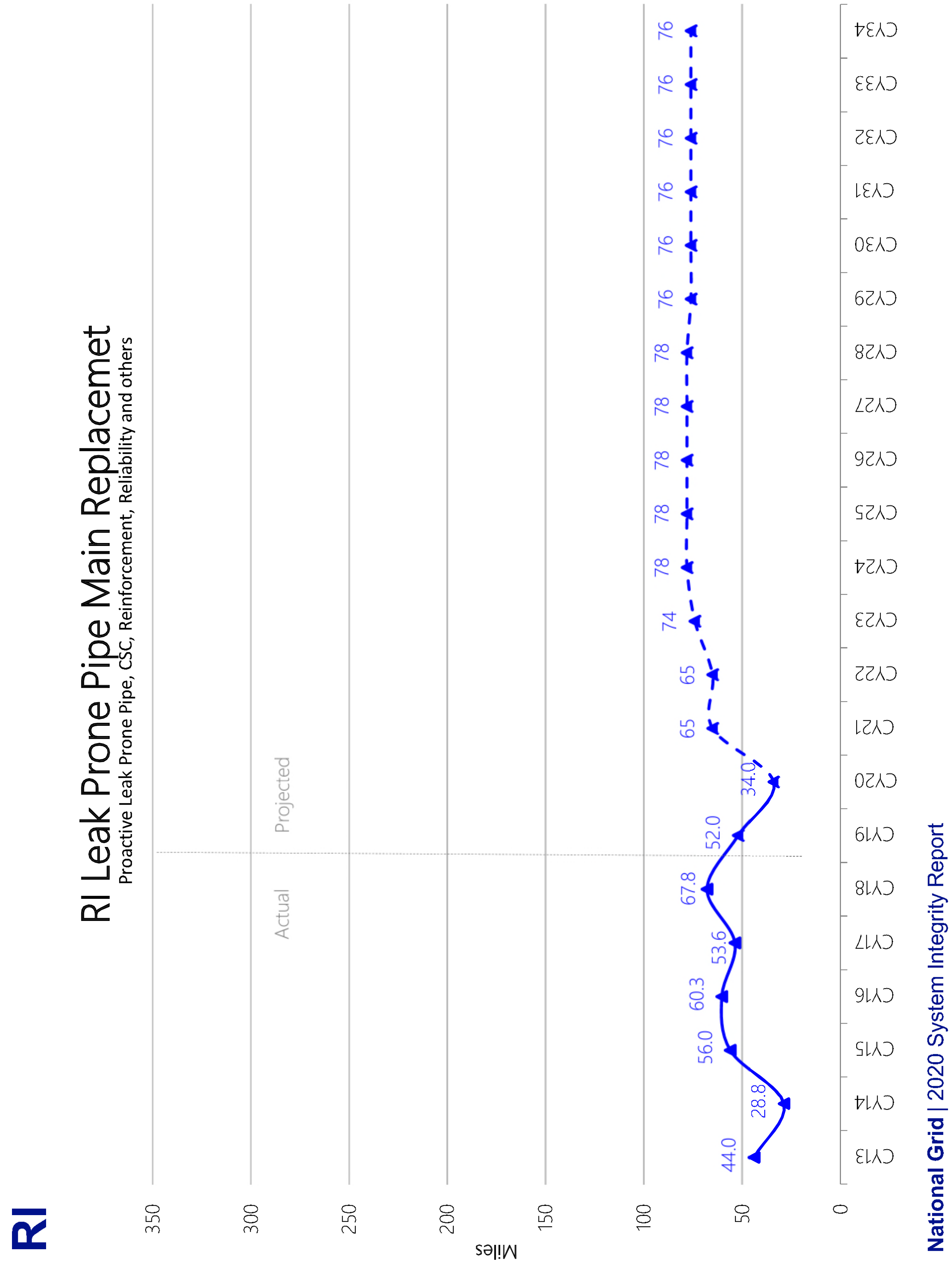
Rhode Island (RI)	
	• Total leak receipts have decreased by 17.5% (369) in 2020 compared to 2019. • MAIN – Leak repairs have decreased by 4.7% (347) in 2020 compared to 2019. Total Cast Iron Joint leaks comprise 79% of all main leaks. • SERVICE – Leak repairs have decreased by 16.6% (636) compared to 2018. Corrosion leaks comprise 66% of all service leaks. • TOTAL – Gas leak repairs decreased by 22.5% (320) in 2020.

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

RI															
Region	Program	CY14	CY15	CY16	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24	CY25	CY26	CY27
RI	All Programs	29	56	60	54	68	52	34	65	65	74	78	78	78	78
	Other Programs	6	6	14	5	17	12	0	10	10	10	12	12	12	12
	Proactive	23	50	46	48	51	40	34	55	55	64	66	66	66	66


RI
RI Leak Prone Pipe Main Replacemet
Proactive Leak Prone Pipe, CSC, Reinforcement, Reliability and others
Miles
350
300
250
200
150
100
50
0
Actual
Projected
44.0
28.8
56.0
60.3
53.6
67.8
52.0
34.0
65
65
74
78
78
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CY27
CY28
CY29
CY30
CY31
CY32
CY33
CY34
National Grid | 2020 System Integrity Report

13 Meter Statistics

nationalgrid

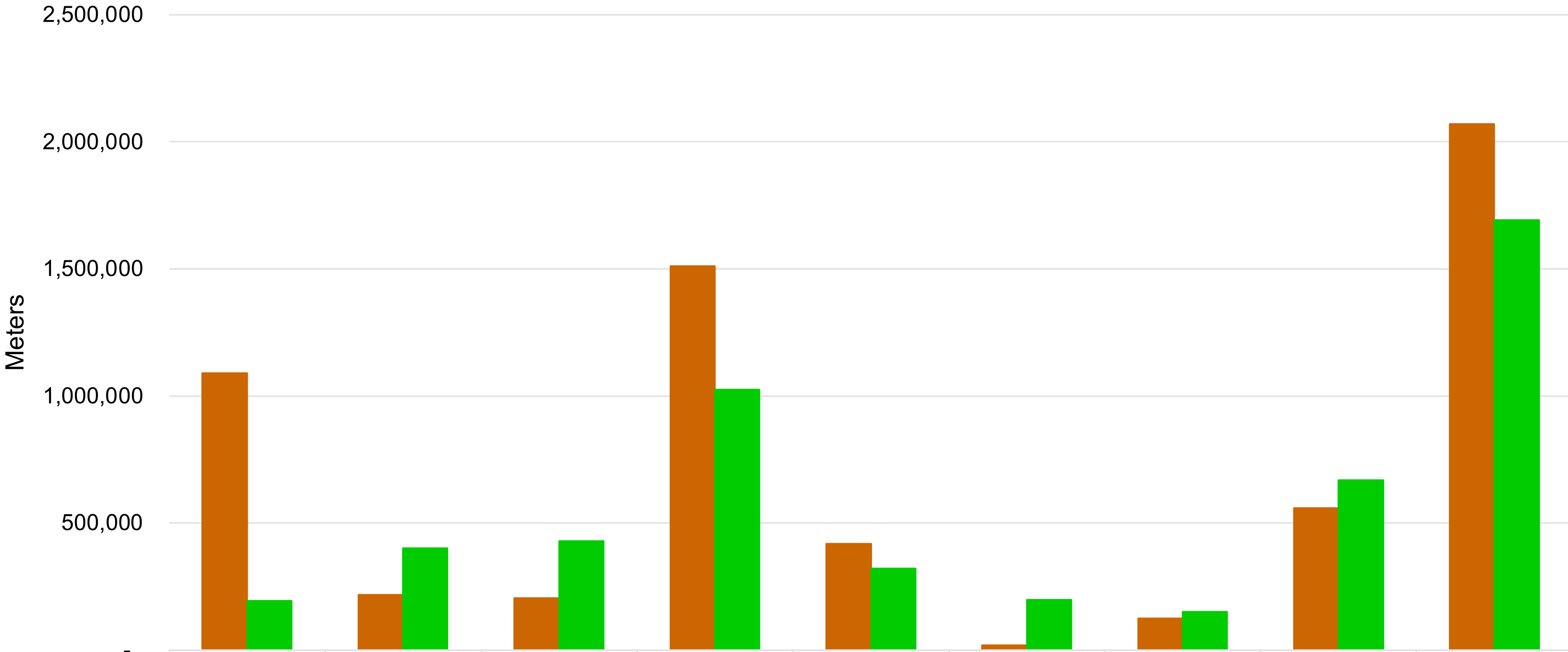
Meter Population By Region

RI

Meter Population By Region

Inside Vs Outside

RI

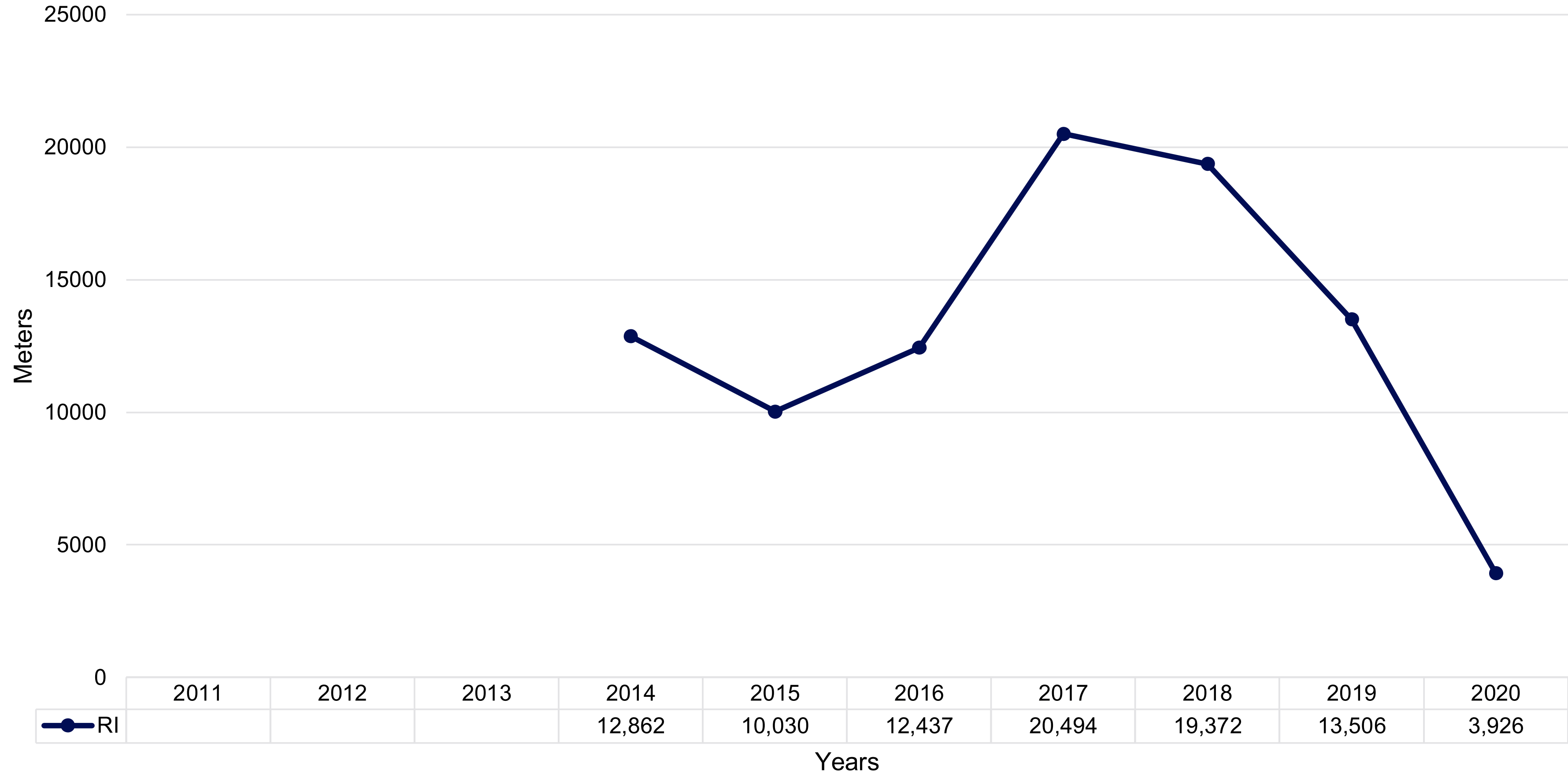


	NYC	LI	UNY	NYS	BGC/EGC	CGC	RI	NE	NGRID
Inside	1,088,639	217,458	204,376	1,510,473	417,196	18,923	123,470	559,589	2,070,062
Outside	193,752	400,542	429,739	1,024,033	319,816	197,841	150,313	667,970	1,692,003

Regions

Meter Changes By Region

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI				12,862	10,030	12,437	20,494	19,372	13,506	3,926

- Note: 2020 Meter changes down due to COVID restrictions.

14 Appendices

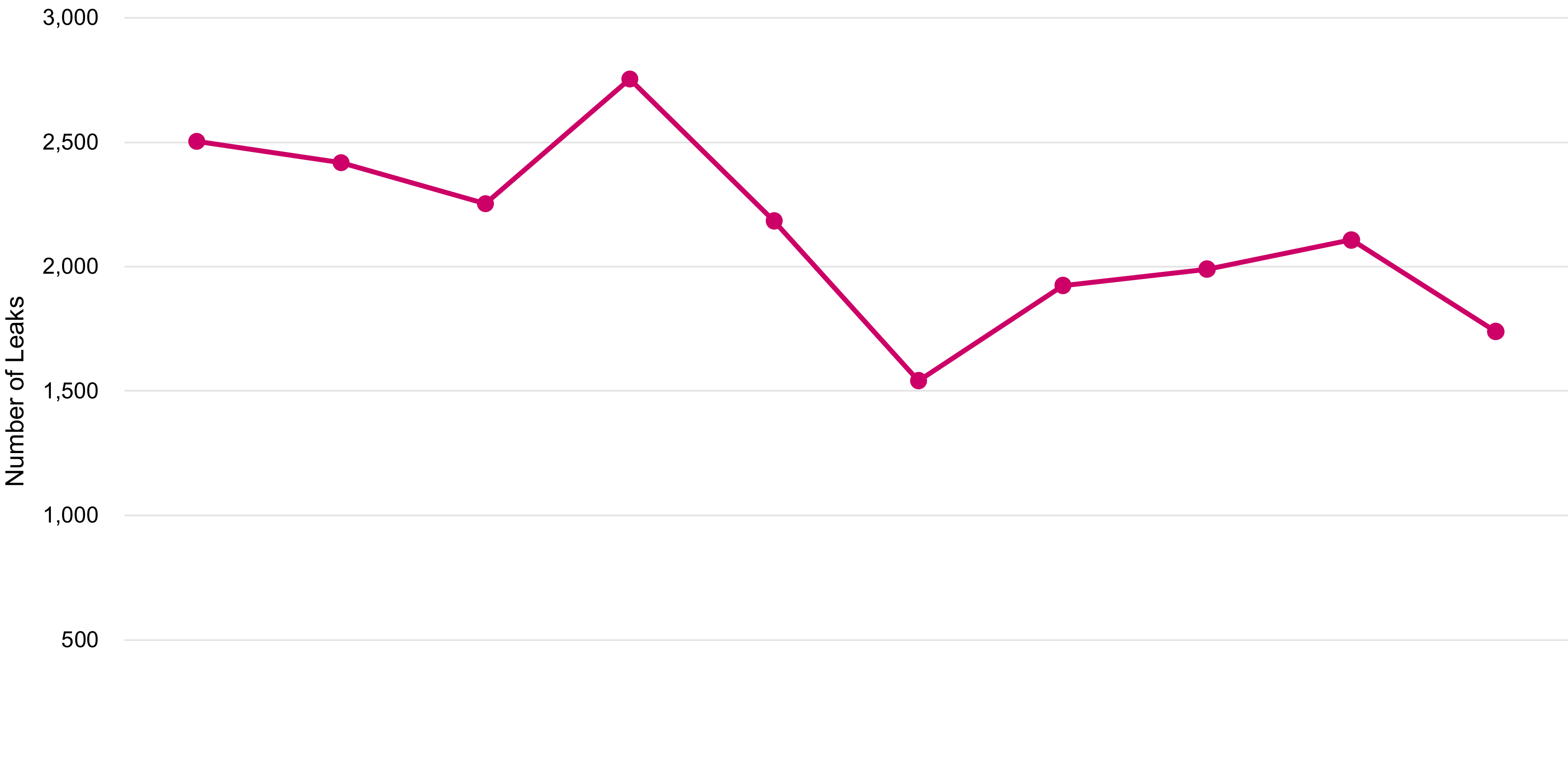
Total Leak Receipts

nationalgrid

Leak Receipts By Region

(Excluding Damages)

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	2,502	2,417	2,252	2,753	2,183	1,541	1,924	1,989	2,107	1,738

2019 Material Cause Matrix (Main Leak Repairs)

nationalgrid

2019 Material Cause Matrix

(Main Leaks)

RI

n Leaks	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	Other
Plastic	-	-	4	-	-	1	-	-
Cast Iron	17	16	2	-	2	10	-	601
nd. Cast Iron	-	-	-	-	-	-	-	-
l - Protected	12	1	2	-	-	2	-	-
Unprotected	57	1	1	-	-	-	-	-
Other	-	-	-	-	-	-	-	-
Ductile Iron	1	-	-	-	-	-	-	13
Total	87	18	9	-	2	13	-	614

2019 Material Cause Matrix (Service Leak Repairs)

nationalgrid

2019 Material Cause Matrix

(Service Leaks)

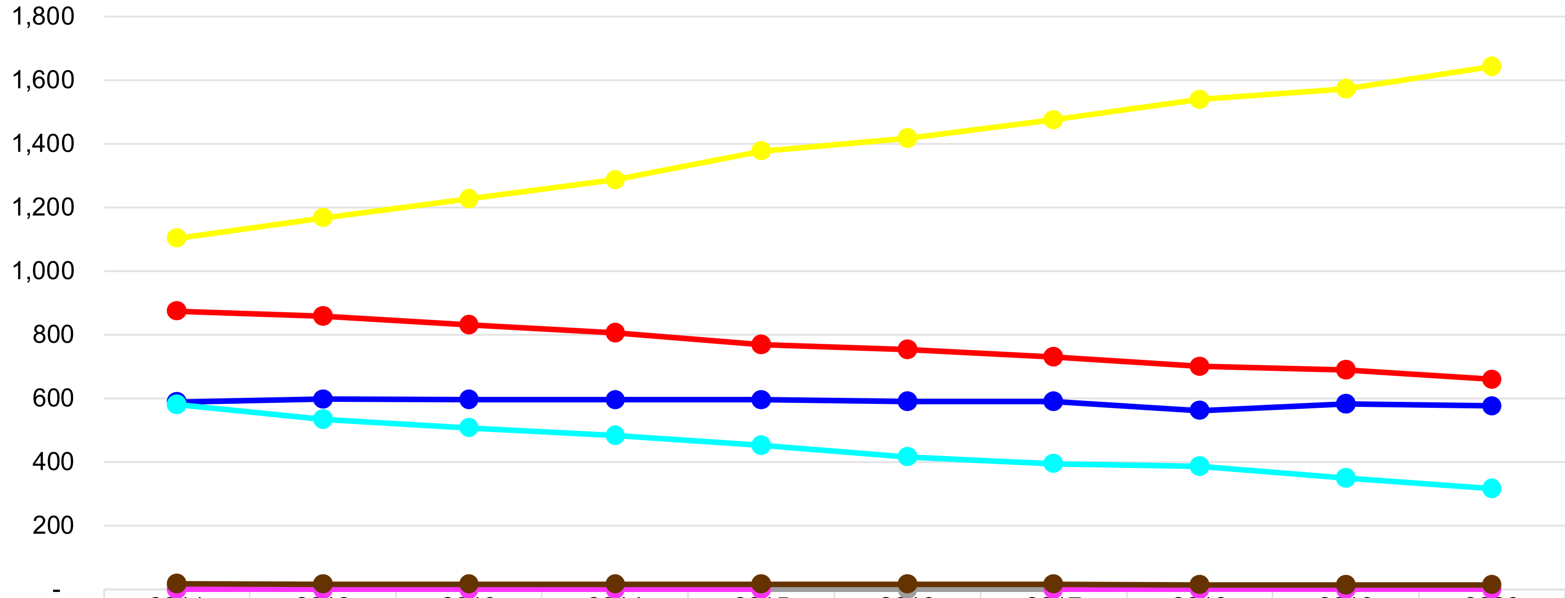
RI

rvice Leaks	Corrosion	Natural Force	Excavation	Other Outside Force	Material or Weld Failure	Equipment	Operations	Other
Plastic	21	-	58	5	2	27	1	3
Copper	-	-	-	-	-	-	-	-
Cast Iron	1	-	2	-	-	-	-	-
l - Unprotected	281	-	9	-	-	5	-	1
teel - Protected	17	-	1	1	-	2	1	-
Other	-	-	-	-	-	-	-	-
Total	320	-	70	6	2	34	2	4

Main Inventory Trend By Material

(Count)

RI



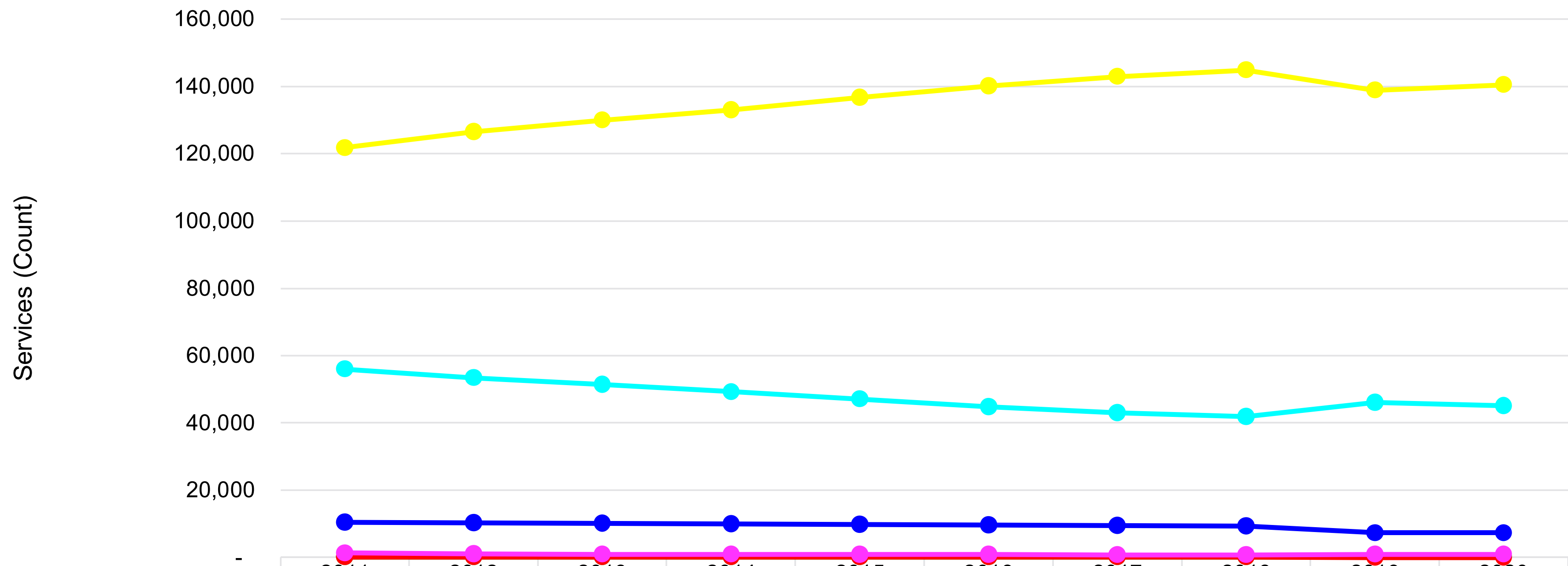
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Plastic	1,103	1,168	1,227	1,287	1,378	1,417	1,476	1,539	1,572	1,643
Cast Iron	875	859	831	806	769	754	730	700	690	660
Recond. Cast Iron	-	-	-	-	-	-	-	-	-	0
Steel - Protected	588	597	596	595	595	590	590	562	582	576
Steel - Unprotected	580	534	508	483	452	416	395	386	349	316
Other	-	-	-	-	-		-	-	0	0
Ductile Iron	17	16	16	16	16	16	16	14	13	13

Years

Service Inventory Trend By Material

(Count)

RI



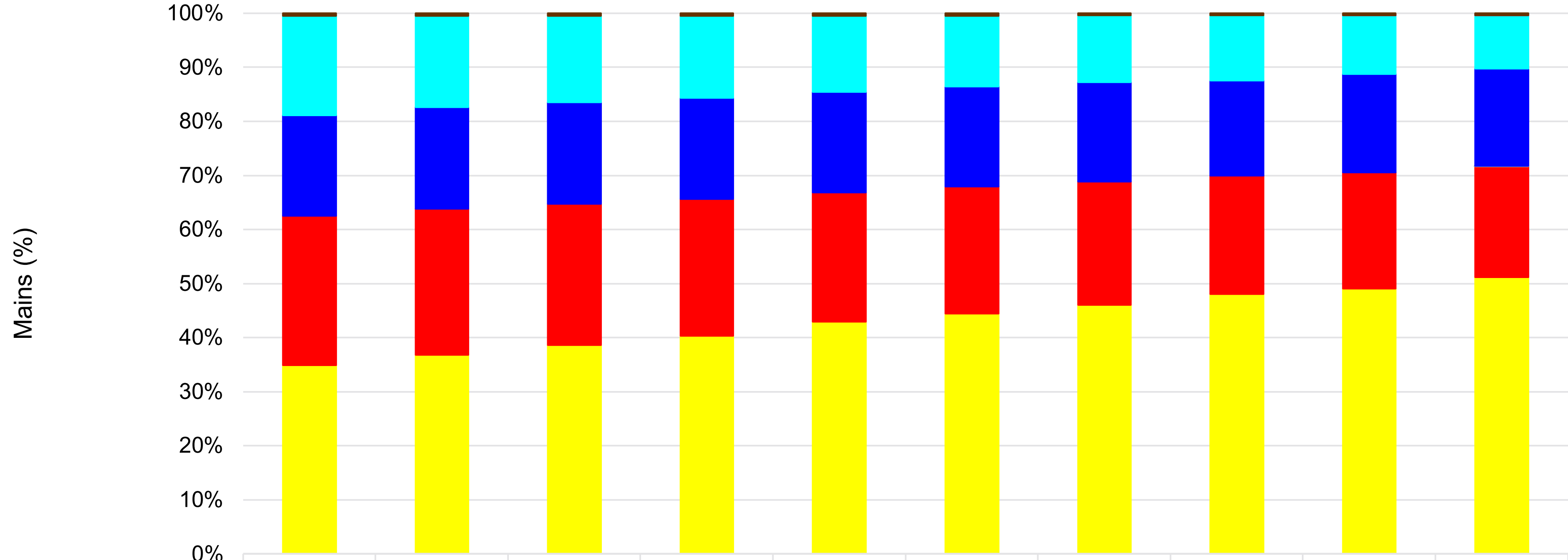
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Plastic	121,770	126,474	130,002	133,024	136,700	140,206	142,956	144,929	138,929	140,487
Copper	209	208	207	205	202	201	192	189	185	132
Cast Iron	194	189	185	174	137	134	129	127	26	25
Steel - Protected	10,422	10,285	10,150	9,989	9,800	9,585	9,456	9,334	7,348	7,286
Steel - Unprotected	56,049	53,449	51,387	49,265	47,104	44,806	42,969	41,793	45,992	45,027
Other	1,322	1,085	1,000	958	900	854	803	775	1,011	989

Years

Main Inventory Analysis By Material

(Percent)

RI



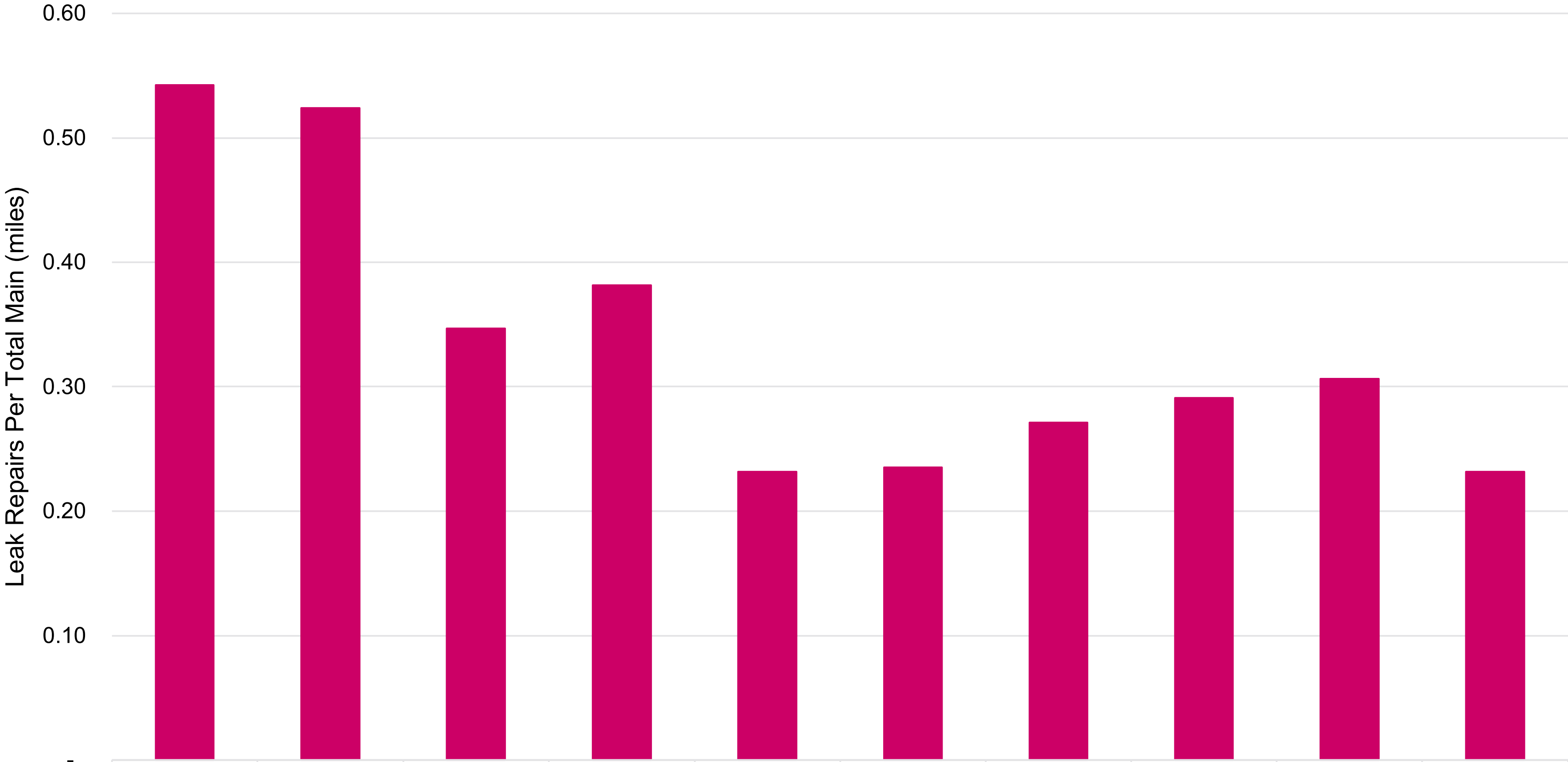
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Ductile Iron	1%	1%	1%	1%	0%	1%	0%	0%	0%	0%
Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Steel - Unprotected	18%	17%	16%	15%	14%	13%	12%	12%	11%	10%
Steel - Protected	19%	19%	19%	19%	19%	18%	18%	18%	18%	18%
Recond. Cast Iron	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cast Iron	28%	27%	26%	25%	24%	24%	23%	22%	22%	21%
Plastic	35%	37%	39%	40%	43%	44%	46%	48%	49%	51%

Years

Main Leak Rate By Region

(Including Damages)

RI

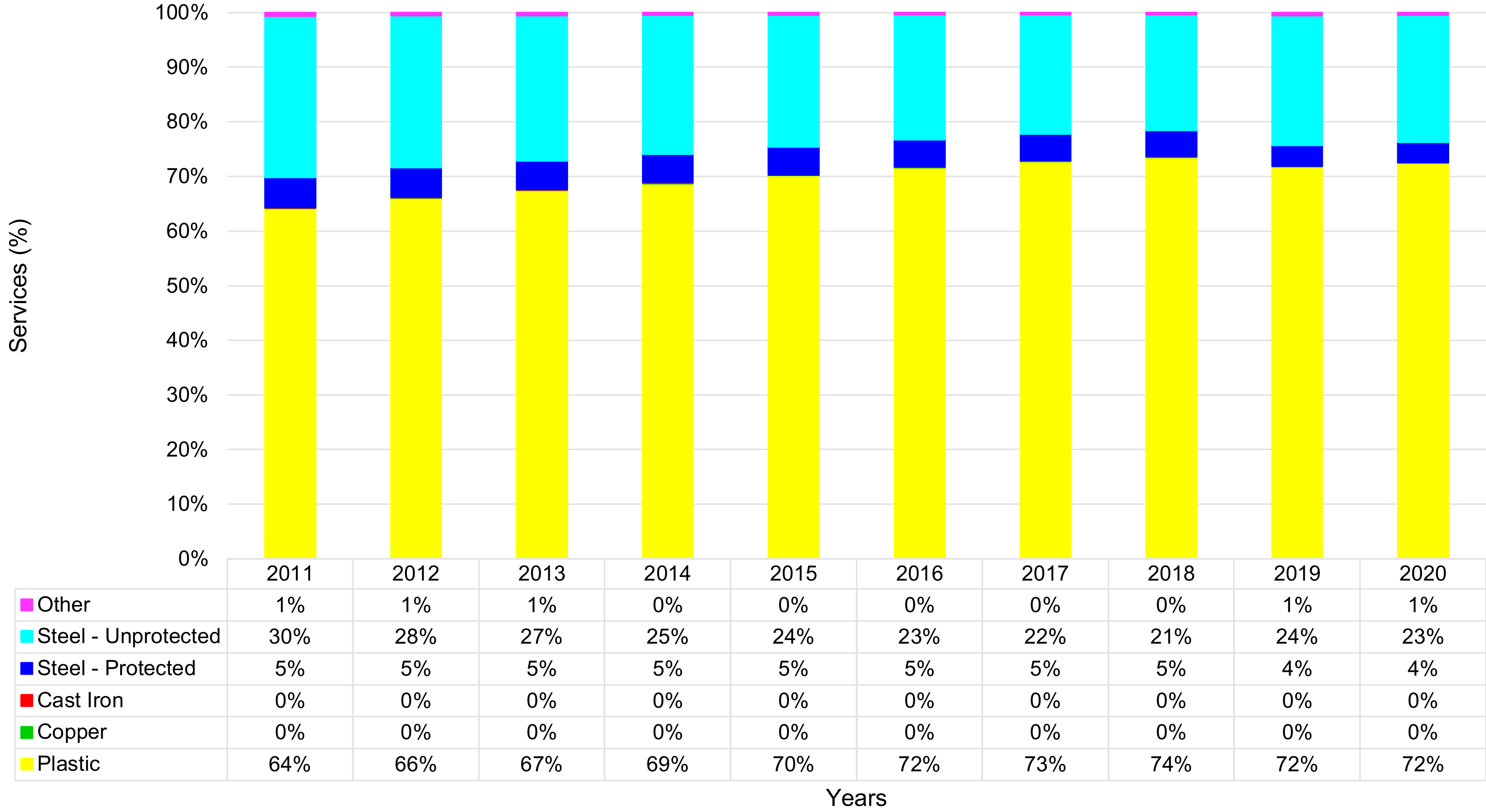


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RI	0.54	0.52	0.35	0.38	0.23	0.24	0.27	0.29	0.31	0.23

Service Inventory Analysis By Material

(Percent)

RI



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Other	1%	1%	1%	0%	0%	0%	0%	0%	1%	1%
Steel - Unprotected	30%	28%	27%	25%	24%	23%	22%	21%	24%	23%
Steel - Protected	5%	5%	5%	5%	5%	5%	5%	5%	4%	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	64%	66%	67%	69%	70%	72%	73%	74%	72%	72%

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Section 3
Revenue Requirement

Section 3

Revenue Requirement
FY 2023 Proposal

Revenue Requirement
FY 2023 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, 2023.

As shown on Attachment 1, Page 1, Column (b), the Company's FY 2023 Gas ISR Plan cumulative revenue requirement totals $42,436,970. The revenue requirement consists of the following elements: (1) the revenue requirement of $6,439,207 on FY 2023 proposed non-growth ISR capital investment of $162,924,000, as calculated on Attachment 1, Page 18; (2) the FY 2023 revenue requirement on incremental non-growth ISR capital investment for FY 2018 through FY 2022 totaling $29,176,179, as summarized on Attachment 1, Page 1; and (3) property tax expenses of $6,821,584, as shown on Attachment 1, Page 27, 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 2023 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 2024 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 18 calculates the revenue requirement of incremental capital investment associated with the Company's FY 2023 Gas ISR Plan, that is, gas infrastructure investment (net of general plant) incremental to the amounts embedded in the Company's base distribution rates. As per the PUC's Order in Docket No. 5099 and the resulting revisions to the Company's Gas tariff, RIPUC NG-GAS No. 101 at Section 3, Schedule A, Sheets 4 and 5, the definition of ISR capital investment changed from "non-growth capital spending" to "non-growth capital investment recorded as in service" effective April 1, 2021. The Company has implemented the plant-in-service methodology to replace the non-growth capital spending method to align with the PUC order and the tariff revision. The proposed FY 2023 vintage year ISR capital investment represents the non-growth capital investment projected to be in service in FY 2023. The FY 2023 capital investment was obtained from Table 1 in Section 2 of the Plan, and the FY 2023 cost of removal is on Page 2 in Section 2. The FY 2023 revenue requirement also includes the incremental capital investment associated with the Company's actual ISR capital investments from FY 2018 through FY 2021 and forecasted ISR capital investments approved in the FY 2022 ISR Plan, excluding investments reflected in rate base in Docket No. 4770.

Attachment 1, Page 21 calculates 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 2023 ISR revenue requirement. The calculations on Page 21 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. Docket No. 4770 includes three rate years, and the forecasted rate base embedded in each rate year included an estimate of incremental capital, cost of removal, retirements and NOL/NOL utilization through Rate Year 3 which ended on August 31, 2021. As such, no estimate of the incremental non-growth capital investment, cost of removal, retirements, or NOL position to be incurred during FY 2023 were included in Docket No. 4770. Therefore, all FY 2023 ISR-eligible capital is deemed incremental.

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 expand 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 2023 revenue requirement for incremental FY 2018 through FY 2023 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, 2020 and 2021 and estimated ISR investment levels for the Company's fiscal years ended March 31, 2022 and 2023, 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 2023 is shown on Attachment 1, Page 18. 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 18 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 because 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 capital 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 total 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 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 2022 incremental Plan capital investment are shown on Pages 2, 5, 8, 12 and 15, respectively. These capital investment revenue requirement amounts are added to the total property tax recovery on Page 1, Line 10 to derive the total FY 2023 Gas ISR Plan revenue requirement of $42,436,970, as shown on Page 1, Line 12.

Tax Depreciation Calculation

The tax depreciation calculation for FY 2023 is provided in Attachment 1, Page 19. 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 19, Lines 4 through 12 for FY 2023. In 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 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

[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.

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 and FY 2020 tax returns and has not included a bonus depreciation deduction in its tax returns after FY 2020. The Company's FY 2023 revenue requirement includes the impact of the 2017 Tax Act on vintage FY 2018 through FY 2023 investment.

Finally, the remaining plant additions not deducted as bonus depreciation are then subject to the IRS Modified Accelerated Cost-Recovery System, or 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. This election was submitted to the PUC, as required under IRS rules, on December 17, 2015. 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 2023 tax depreciation calculations in this filing include an additional tax deduction related to this change in accounting method. The total amount of tax depreciation equals the amount of capital repairs deduction plus the bonus depreciation deduction, the MACRS depreciation, the tax loss on retirements, and the cost of removal. These annual total tax depreciation amounts are carried forward to Line 10 of Page 18 and incorporated in the deferred tax calculation. Similar tax depreciation calculations are provided for FY 2018 through FY 2022 investments on Pages 3, 6, 9, 13 and 16, 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 filed its FY 2021 tax return in November 2021, and this tax return has been reflected in this FY 2023 Gas ISR revenue requirement. The Company anticipates that the sale of Narragansett Electric Company to PPL Corporation will be completed prior to the end of its fiscal year ending March 31, 2022 and that this sale will have an impact on FY 2022 NOL utilization. After the sale, the Company will supplement this filing with a revised FY 2023 revenue requirement calculation to reflect the impact of any additional NOL utilization on its deferred federal income taxes included in the calculation of ISR rate base.

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 did not expect to generate new NOLs in FY 2018. Instead, the Company anticipated 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 assumes no new NOL generated and zero NOL utilization in FY 2023. The FY 2023 revenue requirement also includes the actual incremental NOL generated or NOL utilized from FY 2018 through FY 2021, and forecasted NOL utilization for FY 2022, excluding the NOL utilization amounts embedded in the Company's base distribution rates in Docket No. 4770.

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 of the accumulated deferred income tax ("ADIT") balance included in rate base. The calculation fulfills the requirements in 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 the FY 2018 through FY 2023 proration calculations in Attachment 1, on Pages 4, 7, 10, 14, 17 and 20, 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 in Attachment 1, Pages 26 and 27. 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 2023 revenue requirement includes $6,821,584 for the Net Property Tax Recovery Adjustment.

The Narragansett Electric Company
d/b/a National Grid
FY 2023 Gas ISR Revenue Requirement Plan
Annual Revenue Requirement Summary

Line No.		Approved Fiscal Year 2022 (a)	Fiscal Year 2023 (b)	Fiscal Year 2024 (c)
	Operation and Maintenance Expenses			
1	FY 2023 Operation and Maintenance Expense	$0	$0	$0
	Capital Investment:			
2	Actual Revenue Requirement on FY 2018 Incremental Capital Included in ISR Rate Base	$690,881	$705,341	$719,824
3	Actual Revenue Requirement on FY 2019 Incremental Capital Included in ISR Rate Base	$291,583	$290,803	$290,015
4	Actual Revenue Requirement on FY 2020 Incremental Capital Included in ISR Rate Base	$8,718,700	$8,490,363	$8,264,099
5	Actual Revenue Requirement on FY 2021 Incremental Capital Included in ISR Rate Base	$15,098,354	$8,578,571	$8,300,604
6	Forecasted Revenue Requirement on FY 2022 Capital Included in ISR Rate Base	$5,634,198	$11,111,100	$10,799,267
7	Forecasted Revenue Requirement on FY 2023 Capital Included in ISR Rate Base		$6,439,207	$12,694,987
8	Total Capital Investment Revenue Requirement	$30,433,716	$35,615,386	$41,068,796
9	FY 2022 Property Tax Recovery Adjustment	$7,808,171		
10	FY 2023 Property Tax Recovery Adjustment		$6,821,584	
11	**Total Capital Investment Component of Revenue Requirement**	**$38,241,887**	**$42,436,970**	**$41,068,796**
12	**Total Fiscal Year Revenue Requirement**	**$38,241,887**	**$42,436,970**	**$41,068,796**
13	**Incremental Fiscal Year Rate Adjustment**		**$4,195,084**	

Column Notes:
(a) RIPUC Docket No. 5099, Section 3, Attachment 1 (C), Page 1 of 25, Column (b)

Line Notes for Columns (b) only:
2 Page 2 of 28, Line 30, Col. (f)
3 Page 5 of 28, Line 29, Col. (e)
4 Page 8 of 28, Line 29, Col. (d)
5 Page 12 of 28, Line 29, Col. (c)
6 Page 15 of 28, Line 29, Col. (b)
7 Page 18 of 28, Line 29, Col. (a)
8 Sum of Lines 2 through 7
10 Page 27 of 28, Line 61, Column (k) × 1,000
11 Sum of Line 8 through Line 10
12 Line 1 + Line 11
13 Line 12 Col (b) - Line 12 Col (a)

The Narragansett Electric Company
d/b/a National Grid
FY 2023 Gas ISR Revenue Requirement Plai
FY 2023 Revenue Requirement on FY 2018 Actual Incremental Gas Capital Investme

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)	Fiscal Year 2024 (g)
	Depreciable Net Capital Included in ISR Rate Base									
1	Total Allowed Capital Included in ISR Rate Base in Current Yea	Page 21 of 28 , Line 3 ,Col (a)		$4,632,718	$0	$0	$0	$0	$0	$0
2	Retirements	Page 21 of 28 , Line 9 ,Col (a)		$12,059,428	$0	$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)	($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	$0
5	Depreciation Expense			$0	$0	$0	$0	$0	$0	$0
6	Incremental Capital Amoun	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	$4,632,718
7	Cost of Removal	Page 21 of 28 , Line 6 ,Col (a)		$1,941,168						
8	**Net Plant Amoun**	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**	**$6,573,886**
	Deferred Tax Calculation:									
9	Composite Book Depreciation Rate		1/	3.38%	3.15%	2.99%	2.99%	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1=Page 3 of 28, Line 24, Col (a); then = Page 3 of 28, Col (d)		$7,820,728	$21,720	$20,089	$18,585	$17,189	$15,901	$14,707
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	$7,928,920
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)	($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)	($1,469,932)
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	$9,398,851
15	Effective Tax Rate		2/	21.00%	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	$1,973,759
17	Less: FY 2018 Federal NOL	-Page 22 of 28, Line 12, Col (e)		($6,051,855)	($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	$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)	($3,239,768)
	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	$6,573,886
21	Accumulated Depreciation	- Line 13		$125,511	$359,638	$581,697	$803,756	$1,025,814	$1,247,873	$1,469,932
22	Deferred Tax Reserve	- Line 19		$3,544,817	$3,491,089	$3,440,238	$3,389,703	$3,339,461	$3,289,489	$3,239,768
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	$11,283,586
	Revenue Requirement Calculation:									
24	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = 0; then Average of (Prior + Current Year Line 23)							$11,025,204	$11,197,417
25	Proration Adjustment	Columns (f) and (g) :Page 4 of 28, Line 41, Col (j) and Col. (k)							$2,145	$2,134
26	Average ISR Rate Base after Deferred Tax Proration	Line 24 + Line 25							$11,027,349	$11,199,551
27	Pre-Tax ROR	Page 28 of 28, Line 30, Column (e)							8.41%	8.41%
28	Return and Taxes	Line 26 × Line 27							$927,400	$941,882
29	Book Depreciation	Year 1 = N/A; then = Line 12							($222,059)	($222,059)
30	**Annual Revenue Requiremen**	Sum of Lines 28 through 29		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**$705,341**	**$719,824**

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 Janurary 1, 2018 per the Tax Cuts and Jobs Act of 2017

The Narragansett Electric Company
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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 28, 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 28, 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

(b) Fiscal Year	(c)	(d) Annual	(e) 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
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FY 2023 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2018 Incremental Capital Investment

Line No.	**Deferred Tax Subject to Proration**			(a) FY23	(b) FY24
1	Book Depreciation	Page 2 of 28 , Line 12 ,Col (f) and Col. (g)		($222,059)	($222,059)
2	Bonus Depreciation			$0	$0
3	Remaining MACRS Tax Depreciation	Page 3 of 28 , Col (d)		($15,901)	($14,707)
4	FY18 tax (gain)/loss on retirements			$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4		($237,960)	($236,765)
6	Effective Tax Rate			21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6		($49,972)	($49,721)
	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		($49,972)	($49,721)
15	Net Operating Loss			$0	$0
16	Net Deferred Tax Reserve	Line 14 + Line 15		($49,972)	($49,721)
	Allocation of FY 2018 Estimated Federal NOL				
17	Cumulative Book/Tax Timer Subject to Proration	Line 5		($237,960)	($236,765)
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11		$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18		($237,960)	($236,765)
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		($49,972)	($49,721)
	Proration Calculation	(h) Number of Days in Month	(i) Proration Percentage	(j) FY23	(k) FY24
26	April	30	91.78%	($3,822)	($3,803)
27	May	31	83.29%	($3,468)	($3,451)
28	June	30	75.07%	($3,126)	($3,110)
29	July	31	66.58%	($2,772)	($2,758)
30	August	31	58.08%	($2,419)	($2,407)
31	September	30	49.86%	($2,076)	($2,066)
32	October	31	41.37%	($1,723)	($1,714)
33	November	30	33.15%	($1,380)	($1,374)
34	December	31	24.66%	($1,027)	($1,022)
35	January	31	16.16%	($673)	($670)
36	February	28	8.49%	($354)	($352)
37	March	31	0.00%	$0	$0
38	Total	365		($22,841)	($22,726)
39	Deferred Tax Without Proration	Line 25		($49,972)	($49,721)
40	Average Deferred Tax without Proration	Line 39 × 50%		($24,986)	($24,860)
41	Proration Adjustment	Line 38 - Line 40		$2,145	$2,134

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 2023 Gas ISR Revenue Requirement Plan
FY 2023 Revenue Requirement on 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)	Fiscal Year 2024 (f)
	Depreciable Net Capital Included in ISR Rate Base								
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 21 of 28 , Line 3 ,Col (b)		($914,000)	$0	$0	$0	$0	$0
2	Retirements	Page 21 of 28 , Line 9 ,Col (b)		($1,368,021)	$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		$454,021	$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	$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		($914,000)	($914,000)	($914,000)	($914,000)	($914,000)	($914,000)
7	Cost of Removal	Page 21 of 28 , Line 6 ,Col (b)		$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**	**$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%	2.99%
10	Tax Depreciation	Year 1 = Page 6 of 28, Line 21, Col (a); then = Page 6 of 28, Col (d)		$5,200,130	($8,390)	($7,760)	($7,179)	($6,640)	($6,143)
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year		$5,200,130	$5,191,739	$5,183,979	$5,176,799	$5,170,159	$5,164,017
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	$13,575
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	$75,033
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$5,192,973	$5,171,007	$5,149,671	$5,128,917	$5,108,701	$5,088,984
15	Effective Tax Rate			21.00%	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	$1,068,687
17	Add: FY 2019 Federal NOL incremental utilization	Page 21 of 28, Line 12, Col (b)		$286,350	$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	$1,355,036
	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	$4,712,564
20	Accumulated Depreciation	- Line 13		($7,157)	($20,732)	($34,307)	($47,883)	($61,458)	($75,033)
21	Deferred Tax Reserve	- Line 18		($1,376,874)	($1,372,261)	($1,367,781)	($1,363,422)	($1,359,177)	($1,355,036)
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	$3,282,494
	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						$3,296,594	$3,287,211
24	Proration Adjustment	Columns (e) and (f) :Page 7 of 28, Line 41, Col (j) and Col. (k)						($182)	($178)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24						$3,296,412	$3,287,034
26	Pre-Tax ROR	Page 28 of 28, Line 30, Column (e)						8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26						$277,228	$276,440
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**	**N/A**	**$290,803**	**$290,015**

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
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FY 2023 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 28, 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 28, Line 7		$5,626,564
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$5,200,130

MACRS basis: ($116,227)

Fiscal Year (b)	(c)	Annual (d)	Cumulative (e)
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 2023 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) FY23	(b) FY24
1	Book Depreciation	Page 5 of 28 , Line 12 ,Col (e) and Col. (f)	$13,575	$13,575
2	Bonus Depreciation		$0	$0
3	Remaining MACRS Tax Depreciation	Page 6 of 28 , Col (d)	$6,640	$6,143
4	FY19 tax (gain)/loss on retirements		$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	$20,215	$19,718
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	$4,245	$4,141
	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	$4,245	$4,141
15	Net Operating Loss		$0	$0
16	Net Deferred Tax Reserve	Line 14 + Line 15	$4,245	$4,141
	Allocation of FY 2019 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	$20,215	$19,718
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	$20,215	$19,718
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	$4,245	$4,141

	Proration Calculation	(h) Number of Days in Month	(i) Proration Percentage	(j) FY23	(k) FY24
26	April	30	91.78%	$325	$317
27	May	31	83.29%	$295	$287
28	June	30	75.07%	$266	$259
29	July	31	66.58%	$236	$230
30	August	31	58.08%	$205	$200
31	September	30	49.86%	$176	$172
32	October	31	41.37%	$146	$143
33	November	30	33.15%	$117	$114
34	December	31	24.66%	$87	$85
35	January	31	16.16%	$57	$56
36	February	28	8.49%	$30	$29
37	March	31	0.00%	$0	$0
38	Total	365		$1,940	$1,893
39	Deferred Tax Without Proration		Line 25	$4,245	$4,141
40	Average Deferred Tax without Proration		Line 39 × 50%	$2,123	$2,070
41	Proration Adjustment		Line 38 - Line 40	($182)	($178)

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 2023 Gas ISR Revenue Requirement Plan
FY 2023 Revenue Requirement on 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)	Fiscal Year 2024 (e)
	Depreciable Net Capital Included in ISR Rate Base							
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 21 of 28 , Line 3 ,Col (c)		$105,296,046	$0	$0	$0	$0
2	Retirements	Page 21 of 28 , Line 9 ,Col (c)		$4,276,135	$0	$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	$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	$0
5	Depreciation Expense	Page 25 of 28, Line 72(c)		$23,534,853	$0	$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	$81,761,193
7	Cost of Removal	Page 21 of 28 , Line 6 ,Col (c)		$7,055,630			$0	$0
8	**Net Plant Amount**	Line 1 = Line 6+7; Then = Prior Year		**$88,816,823**	**$88,816,823**	**$88,816,823**	**$88,816,823**	**$88,816,823**
	Deferred Tax Calculation:							
9	Composite Book Depreciation Rate	Page 23 of 28, Line 86(e)	1/	2.99%	2.99%	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 9 of 28, Line 21, Col (a); then =Page 9 of 28, Col (d)		$89,531,414	$1,753,362	$1,621,720	$1,500,279	$1,387,582
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	$95,794,356
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	$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	$13,592,229
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$88,021,166	$86,754,032	$85,355,257	$83,835,040	$82,202,127
15	Effective Tax Rate			21.00%	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	$17,262,447
17	Add: FY 2020 Federal NOL utilization	Page 21 of 28, Line 12, Col (c)		($3,063,059)	($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	$14,199,388
	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	$88,816,823
20	Accumulated Depreciation	- Line 13		($1,510,248)	($4,530,743)	($7,551,238)	($10,571,734)	($13,592,229)
21	Deferred Tax Reserve	- Line 18		($15,421,386)	($15,155,288)	($14,861,545)	($14,542,300)	($14,199,388)
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	$61,025,206
	Revenue Requirement Calculation:							
23	Average Rate Base before Deferred Tax Proration Adjustment	Year 1 = Line 22 × Page 11 of 28, Line 16; then = Average of (Prior Year Line 22 + Current Year Line 22/2)					$65,053,414	$62,363,998
24	Proration Adjustment	Year 1 and 2 =0; then = Page 10 of 28, Line 41, Col (j) and Col. (k)					($13,375)	($14,366)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24					$65,040,040	$62,349,631
26	Pre-Tax ROR	Page 28 of 28, Line 30, Column (e)					8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26					$5,469,867	$5,243,604
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**	**N/A**	**$8,490,363**	**$8,264,099**

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

The Narragansett Electric Company
d/b/a National Grid
FY 2023 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 28, 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%	2/	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	3/	$557,081
20	Cost of Removal	Page 8 of 28, 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 (b)	(c)	Annual (d)	Cumulative (e)
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
3/ Actual Loss based on FY2020 tax return

The Narragansett Electric Company
d/b/a National Grid
FY 2023 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2020 Incremental Capital Investments

Line No.	**Deferred Tax Subject to Proration**			(a) FY23	(b) FY24
1	Book Depreciation	Page 8 of 28 , Line 12 ,Col (d) and Col. (e)		$3,020,495	$3,020,495
2	Bonus Depreciation			$0	$0
3	Remaining MACRS Tax Depreciation	Page 9 of 28 , Col (d)		($1,500,279)	($1,387,582)
4	FY20 tax (gain)/loss on retirements	Year 1 = Docket no. 4916, R.S. 3, Att. 1R, page 10 Col (a); then = 0		$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4		$1,520,216	$1,632,913
6	Effective Tax Rate			21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6		$319,245	$342,912
	Deferred Tax Not Subject to Proration				
8	Capital Repairs Deduction	Year 1 = Docket no. 4916, R.S. 3, Att. 1R, page 10 Col (a); then = 0			
9	Cost of Removal	Year 1 = Docket no. 4916, R.S. 3, Att. 1R, page 10 Col (a); then = 0			
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		$319,245	$342,912
15	Net Operating Loss				
16	Net Deferred Tax Reserve	Line 14 + Line 15		$319,245	$342,912
	Allocation of FY 2018 Estimated Federal NOL				
17	Cumulative Book/Tax Timer Subject to Proration	Line 5		$1,520,216	$1,632,913
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11		$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18		$1,520,216	$1,632,913
20	Total FY 2020 Federal NOL	Year 1 = Docket no. 4916, R.S. 3, Att. 1R, page 10 Col (a); then = 0			
21	Allocated FY 2020 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20			
22	Allocated FY 2020 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20			
23	Effective Tax Rate				
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23			
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24		$319,245	$342,912
	Proration Calculation	(h) Number of Days in Month	(i) Proration Percentage	(j) FY23	(k) FY24
26	April	30	91.80%	$24,423	$26,234
27	May	31	83.33%	$22,170	$23,813
28	June	30	75.14%	$19,989	$21,471
29	July	31	66.67%	$17,736	$19,051
30	August	31	58.20%	$15,483	$16,630
31	September	30	50.00%	$13,302	$14,288
32	October	31	41.53%	$11,049	$11,868
33	November	30	33.33%	$8,868	$9,525
34	December	31	24.86%	$6,615	$7,105
35	January	31	16.39%	$4,361	$4,685
36	February	29	8.47%	$2,253	$2,420
37	March	31	0.00%	$0	$0
38	Total	366		$146,248	$157,090
39	Deferred Tax Without Proration	Line 25		$319,245	$342,912
40	Average Deferred Tax without Proration	Line 39 × 50%		$159,623	$171,456
41	Proration Adjustment	Line 38 - Line 40		($13,375)	($14,366)

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 2023 Gas ISR Revenue Requirement Plan
ISR Additions April 2019 through March 2020

Line No.	Month No.	Month	FY 2020 ISR Additions	In Rates	Not In Rates	Weight for Days	Weighted Average	Weight for Investment
1			(a)	(b)	(c) = (a) - (b)	(d)	(e) = (d) × (c)	(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 21 of 28 , Line 1 ,Col (c)
Column (b)=Page 21 of 28 , Line 2 ,Col (c)
Column (d) = (12.5 - Month No.) ÷ 12
Line 14 = Page 21 of 28 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 2023 Gas ISR Revenue Requirement Plan
FY 2023 Revenue Requirement on FY 2021 Actual Incremental Gas Capital Investment

Line No.				Fiscal Year 2021 (a)	Fiscal Year 2022 (b)	Fiscal Year 2023 (c)	Fiscal Year 2024 (d)
	Depreciable Net Capital Included in ISR Rate Base						
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 21 of 28 , Line 3 ,Col (d)		$110,177,659	$0	$0	$0
2	Retirements	Page 21 of 28 , Line 9 ,Col (d)		$3,860,987	$0	$0	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$106,316,672	$106,316,672	$106,316,672	$106,316,672
	Change in Net Capital Included in ISR Rate Base						
4	Capital Included in ISR Rate Base	Line 1		$110,177,659	$0	$0	$0
5	Depreciation Expense	Page 18 of 22, Line 78(c)		$40,700,586	$0	$0	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$69,477,072	$69,477,072	$69,477,072	$69,477,072
7	Cost of Removal	Page 21 of 28 , Line 6 ,Col (d)		$8,861,636	$8,861,636	$8,861,636	$8,861,636
8	**Net Plant Amount**	**Line 6 + Line 7**		**$78,338,709**	**$78,338,709**	**$78,338,709**	**$78,338,709**
	Deferred Tax Calculation:						
9	Composite Book Depreciation Rate	Page 21 of 28, Line 86(e)	1/	2.99%	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 13 of 28, Line 21, Col (a); then = Page 13 of 28, Col (d)		$63,538,144	$4,232,177	$3,914,427	$3,621,299
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$63,538,144	$67,770,322	$71,684,748	$75,306,048
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50% ; then = Line 3 × Line 9		$1,589,434	$3,178,868	$3,178,868	$3,178,868
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$1,589,434	$4,768,303	$7,947,171	$11,126,040
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$61,948,710	$63,002,019	$63,737,577	$64,180,008
15	Effective Tax Rate			21.00%	21.00%	21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$13,009,229	$13,230,424	$13,384,891	$13,477,802
17	Add: FY 2021 Federal NOL utilization	Page 15 of 22 , Line 12 ,Col (d)		($5,525,796)	($5,525,796)	($5,525,796)	($5,525,796)
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$7,483,434	$7,704,628	$7,859,096	$7,952,006
	ISR Rate Base Calculation:						
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$78,338,709	$78,338,709	$78,338,709	$78,338,709
20	Accumulated Depreciation	- Line 13		($1,589,434)	($4,768,303)	($7,947,171)	($11,126,040)
21	Deferred Tax Reserve	- Line 18		($7,483,434)	($7,704,628)	($7,859,096)	($7,952,006)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$69,265,841	$65,865,777	$62,532,442	$59,260,663
	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				$64,199,110	$60,896,552
24	Proration Adjustment	Year 1 =0; then = Page 14 of 28, Line , Col (j) and Col. (k)				$6,630	$3,988
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24				$64,205,740	$60,900,540
26	Pre-Tax ROR	Page 22 of 22, Line 30, Column (e)				8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26				$5,399,703	$5,121,735
28	Book Depreciation	Line 12				$3,178,868	$3,178,868
29	**Annual Revenue Requirement**	**Sum of Lines 27 through 28**		**N/A**	**N/A**	**$8,578,571**	**$8,300,604**

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 2023 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2021 Incremental Capital Investments

Line No.				Fiscal Year 2021 (a)	(b)	(c)	(d)	(e)
	Capital Repairs Deduction							
1	Plant Additions	Page 12 of 28, Line 1		$110,177,659	20 Year MACRS Depreciation			
2	Capital Repairs Deduction Rate	Per Tax Department	1/	46.79%				
3	Capital Repairs Deduction	Line 1 × Line 2		$51,552,126	MACRS basis:		$58,625,533	
							Annual	Cumulative
					Fiscal Year			
	Bonus Depreciation				2021	3.75%	$2,198,457	$63,538,144
4	Plant Additions	Line 1		$110,177,659	2022	7.22%	$4,232,177	$67,770,322
5	Less Capital Repairs Deduction	Line 3		$51,552,126	2023	6.68%	$3,914,427	$71,684,748
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		$58,625,533	2024	6.18%	$3,621,299	$75,306,048
7	Percent of Plant Eligible for Bonus Depreciation	Per Tax Department		0.00%	2025	5.71%	$3,349,277	$78,655,324
8	Plant Eligible for Bonus Depreciation	Line 6 × Line 7		$0	2026	5.29%	$3,098,359	$81,753,684
9	Bonus Depreciation Rate ()	Per Tax Department		0.00%	2027	4.89%	$2,865,616	$84,619,300
10	Bonus Depreciation Rate ()	Per Tax Department		0.00%	2028	4.52%	$2,651,047	$87,270,346
11	Total Bonus Depreciation Rate	Line 9 + Line 10		0.00%	2029	4.46%	$2,615,871	$89,886,218
12	Bonus Depreciation	Line 8 × Line 11		$0	2030	4.46%	$2,615,285	$92,501,503
					2031	4.46%	$2,615,871	$95,117,374
	Remaining Tax Depreciation				2032	4.46%	$2,615,285	$97,732,659
13	Plant Additions	Line 1		$110,177,659	2033	4.46%	$2,615,871	$100,348,530
14	Less Capital Repairs Deduction	Line 3		$51,552,126	2034	4.46%	$2,615,285	$102,963,815
15	Less Bonus Depreciation	Line 12		$0	2035	4.46%	$2,615,871	$105,579,686
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		$58,625,533	2036	4.46%	$2,615,285	$108,194,971
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%	2037	4.46%	$2,615,871	$110,810,843
18	Remaining Tax Depreciation	Line 16 × Line 17		$2,198,457	2038	4.46%	$2,615,285	$113,426,128
					2039	4.46%	$2,615,871	$116,041,999
19	FY21 tax (gain)/loss on retirements	Per Tax Department	2/	925,925	2040	4.46%	$2,615,285	$118,657,284
20	Cost of Removal	Page 12 of 28, Line 7		$8,861,636	2041	2.23%	$1,307,936	$119,965,219
						100.00%	$58,625,533	
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$63,538,144				

1/ Capital Repairs percentage is the actual result of FY2021 tax return
2/ Actual Loss based on FY2021 tax return

The Narragansett Electric Company
d/b/a National Grid
FY 2023 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2021 Incremental Capital Investments

Line No.	**Deferred Tax Subject to Proration**			FY23 (a)	FY24 (b)
1	Book Depreciation	Page 12 of 28 , Line 12 ,Col (c) and Col (d)		$3,178,868	$3,178,868
2	Bonus Depreciation				
3	Remaining MACRS Tax Depreciation	Page 13 of 28 , Col (d)		($3,914,427)	($3,621,299)
4	FY21 tax (gain)/loss on retirements	Page 13 of 28 , Line 19 ,Col (a)		$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4		($735,558)	($442,431)
6	Effective Tax Rate			21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6		($154,467)	($92,910)
	Deferred Tax Not Subject to Proration				
8	Capital Repairs Deduction	Col (a): Docket 4996, R.S. 3, Att. 1R, page 14 Col (a)			
9	Cost of Removal	Col (a): Docket 4996, R.S. 3, Att. 1R, page 14 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		($154,467)	($92,910)
15	Net Operating Loss	Col (a): Docket 4996, R.S. 3, Att. 1R, page 14 Col (a)			
16	Net Deferred Tax Reserve	Line 14 + Line 15		($154,467)	($92,910)
	Allocation of FY 2021 Estimated Federal NOL				
17	Cumulative Book/Tax Timer Subject to Proration	Line 5		($735,558)	($442,431)
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11		$0	$0
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18		($735,558)	($442,431)
20	Total FY 2021 Federal NOL	Col (a): Docket 4996, R.S. 3, Att. 1R, page 14 Col (a)			
21	Allocated FY 2021 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20			
22	Allocated FY 2021 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20			
23	Effective Tax Rate				
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23			
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24		($154,467)	($92,910)
		(h)	(i)	(j)	(k)
	Proration Calculation	Number of Days in Month	Proration Percentage	FY23	FY24
26	April	30	91.78%	($11,814)	($7,106)
27	May	31	83.29%	($10,721)	($6,449)
28	June	30	75.07%	($9,663)	($5,812)
29	July	31	66.58%	($8,570)	($5,155)
30	August	31	58.08%	($7,476)	($4,497)
31	September	30	49.86%	($6,419)	($3,861)
32	October	31	41.37%	($5,325)	($3,203)
33	November	30	33.15%	($4,267)	($2,567)
34	December	31	24.66%	($3,174)	($1,909)
35	January	31	16.16%	($2,081)	($1,252)
36	February	28	8.49%	($1,093)	($658)
37	March	31	0.00%	$0	$0
38	Total	365		($70,604)	($42,467)
39	Deferred Tax Without Proration	Line 25		($154,467)	($92,910)
40	Average Deferred Tax without Proration	Line 39 × 0.5		($77,234)	($46,455)
41	Proration Adjustment	Line 38 - Line 40		$6,630	$3,988

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 2023 Gas ISR Revenue Requirement Plan
FY 2023 Revenue Requirement on FY 2022 Forecasted Incremental Gas Capital Investment

Line No.				Fiscal Year 2022 (a)	Fiscal Year 2023 (b)	Fiscal Year 2024 (c)
	Depreciable Net Capital Included in ISR Rate Base					
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Page 21 of 28 , Line 3 ,Col (e)		$158,263,312	$0	$0
2	Retirements	Page 21 of 28 , Line 9 ,Col (e)		$19,157,894	$0	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$139,105,418	$139,105,418	$139,105,418
	Change in Net Capital Included in ISR Rate Base					
4	Capital Included in ISR Rate Base	Line 1		$158,263,312	$0	$0
5	Depreciation Expense	Page 25 of 28, Line 77(c)		$40,954,246	$0	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$117,309,066	$117,309,066	$117,309,066
7	Cost of Removal	Page 21 of 28 , Line 6 ,Col (e)		$3,753,342	$3,753,342	$3,753,342
8	**Net Plant Amount**	**Line 6 + Line 7**		**$121,062,407**	**$121,062,407**	**$121,062,407**
	Deferred Tax Calculation:					
9	Composite Book Depreciation Rate	Page 23 of 28, Line 86(e)	1/	2.99%	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 16 of 28, Line 21, Col (a); then = Page 16 of 28, Col (d)		$134,824,063	$2,081,297	$1,925,034
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$134,824,063	$136,905,361	$138,830,395
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50% ; then = Line 3 × Line 9		$2,079,626	$4,159,252	$4,159,252
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$2,079,626	$6,238,878	$10,398,130
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$132,744,437	$130,666,483	$128,432,265
15	Effective Tax Rate			21.00%	21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$27,876,332	$27,439,961	$26,970,776
17	Add: FY 2022 Federal NOL utilization	Page 21 of 28 , Line 12 ,Col (e)		$6,564,587	$6,564,587	$6,564,587
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$34,440,918	$34,004,548	$33,535,362
	ISR Rate Base Calculation:					
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$121,062,407	$121,062,407	$121,062,407
20	Accumulated Depreciation	- Line 13		($2,079,626)	($6,238,878)	($10,398,130)
21	Deferred Tax Reserve	- Line 18		($34,440,918)	($34,004,548)	($33,535,362)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$84,541,863	$80,818,981	$77,128,915
	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			$82,680,422	$78,973,948
24	Proration Adjustment	Page 17 of 28, Line 41, Col (j) and Col. (k)			($18,730)	($20,139)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24			$82,661,692	$78,953,810
26	Pre-Tax ROR	Page 28 of 28, Line 30, Column (e)			8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26			$6,951,848	$6,640,015
28	Book Depreciation	Line 12			$4,159,252	$4,159,252
29	**Annual Revenue Requirement**	**Sum of Lines 27 through 28**		**N/A**	**$11,111,100**	**$10,799,267**

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 2023 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 28, Line 1		$158,263,312
2	Capital Repairs Deduction Rate	Per Tax Department	1/	81.78%
3	Capital Repairs Deduction	Line 1 × Line 2		$129,432,484
	Bonus Depreciation			
4	Plant Additions	Line 1		$158,263,312
5	Less Capital Repairs Deduction	Line 3		$129,432,484
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		$28,830,828
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		$158,263,312
14	Less Capital Repairs Deduction	Line 3		$129,432,484
15	Less Bonus Depreciation	Line 12		$0
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		$28,830,828
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
18	Remaining Tax Depreciation	Line 16 × Line 17		$1,081,156
19	FY22 tax (gain)/loss on retirements	Per Tax Department	2/	557,081
20	Cost of Removal	Page 15 of 28, Line 7		$3,753,342
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$134,824,063

20 Year MACRS Depreciation

MACRS basis: $28,830,828

Fiscal Year (b)	(c)	Annual (d)	Cumulative (e)
2022	3.75%	$1,081,156	$134,824,063
2023	7.22%	$2,081,297	$136,905,361
2024	6.68%	$1,925,034	$138,830,395
2025	6.18%	$1,780,880	$140,611,275
2026	5.71%	$1,647,105	$142,258,380
2027	5.29%	$1,523,709	$143,782,090
2028	4.89%	$1,409,251	$145,191,341
2029	4.52%	$1,303,730	$146,495,071
2030	4.46%	$1,286,432	$147,781,502
2031	4.46%	$1,286,143	$149,067,645
2032	4.46%	$1,286,432	$150,354,077
2033	4.46%	$1,286,143	$151,640,220
2034	4.46%	$1,286,432	$152,926,652
2035	4.46%	$1,286,143	$154,212,795
2036	4.46%	$1,286,432	$155,499,227
2037	4.46%	$1,286,143	$156,785,370
2038	4.46%	$1,286,432	$158,071,801
2039	4.46%	$1,286,143	$159,357,945
2040	4.46%	$1,286,432	$160,644,376
2041	4.46%	$1,286,143	$161,930,519
2042	2.23%	$643,216	$162,573,735
	100.00%	$28,830,828	

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 2023 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2022 Incremental Capital Investments

Line No.	Deferred Tax Subject to Proration		(a) FY23	(b) FY24
1	Book Depreciation	Page 15 of 28 , Line 12 ,Col (b) and Col (c)	$4,159,252	$4,159,252
2	Bonus Depreciation	- Page 16 of 28 , Line 12 ,Col (a)		
3	Remaining MACRS Tax Depreciation	- Page 16 of 28 , Col (d)	($2,081,297)	($1,925,034)
4	FY22 tax (gain)/loss on retirements	- Page 16 of 28 , Line 19 ,Col (a)	$0	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	$2,077,955	$2,234,218
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	$436,370	$469,186
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction			
9	Cost of Removal			
10	Book/Tax Depreciation Timing Difference at 3/31/2022			
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	$436,370	$469,186
15	Net Operating Loss	- Page 15 of 28 , Line 17 ,Col (a)		
16	Net Deferred Tax Reserve	Line 14 + Line 15	$436,370	$469,186
	Allocation of FY 2022 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5		
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11		
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18		
20	Total FY 2022 Federal NOL	- Page 15 of 28 , Line 17 ,Col (a)÷21%		
21	Allocated FY 2022 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20		
22	Allocated FY 2022 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20		
23	Effective Tax Rate			
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23		
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	$436,370	$469,186

Line No.	Proration Calculation	(h) Number of Days in Month	(i) Proration Percentage	(j) FY23	(k) FY24
26	April	30	91.78%	$33,375	$35,885
27	May	31	83.29%	$30,287	$32,564
28	June	30	75.07%	$27,298	$29,351
29	July	31	66.58%	$24,210	$26,030
30	August	31	58.08%	$21,121	$22,709
31	September	30	49.86%	$18,132	$19,496
32	October	31	41.37%	$15,044	$16,175
33	November	30	33.15%	$12,055	$12,962
34	December	31	24.66%	$8,967	$9,641
35	January	31	16.16%	$5,878	$6,320
36	February	28	8.49%	$3,088	$3,321
37	March	31	0.00%	$0	$0
38	Total	365		$199,455	$214,454
39	Deferred Tax Without Proration	Line 25		$436,370	$469,186
40	Average Deferred Tax without Proration	Line 39 × 0.5		$218,185	$234,593
41	Proration Adjustment	Line 38 - Line 40		($18,730)	($20,139)

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 2023 Gas ISR Revenue Requirement Plan
FY 2023 Revenue Requirement on FY 2023 Forecasted Incremental Gas Capital Investment

Line No.				Fiscal Year 2023 (a)	Fiscal Year 2024 (b)
	Depreciable Net Capital Included in ISR Rate Base				
1	Total Allowed Capital Included in ISR Rate Base in Current Year	Section 2, Table 1		$162,924,000	$0
2	Retirements	Line 1 x 3-year average actual retirement rate FY19 - FY21		9,639,422	$0
3	Net Depreciable Capital Included in ISR Rate Base	Year 1 = Line 1 - Line 2; then = Prior Year Line 3		$153,284,578	$153,284,578
	Change in Net Capital Included in ISR Rate Base				
4	Capital Included in ISR Rate Base	Line 1		$162,924,000	$0
5	Depreciation Expense	Page 25 of 28, Line 77(c)		$40,954,246	$0
6	Incremental Capital Amount	Year 1 = Line 4 - Line 5; then = Prior Year Line 6		$121,969,754	$121,969,754
7	Cost of Removal	Section 2, Page 2		$4,391,000	$4,391,000
8	**Net Plant Amount**	**Line 6 + Line 7**		**$126,360,754**	**$126,360,754**
	Deferred Tax Calculation:				
9	Composite Book Depreciation Rate	Page 23 of 28, Line 86(e)	1/	2.99%	2.99%
10	Tax Depreciation	Year 1 =Page 19 of 28, Line 21, Col (a); then = Page 19 of 28, Col (d)		$123,439,065	$3,360,256
11	Cumulative Tax Depreciation	Year 1 = Line 10; then = Prior Year Line 11 + Current Year Line 10		$123,439,065	$126,799,321
12	Book Depreciation	Year 1 = Line 3 × Line 9 × 50% ; then = Line 3 × Line 9		$2,291,604	$4,583,209
13	Cumulative Book Depreciation	Year 1 = Line 12; then = Prior Year Line 13 + Current Year Line 12		$2,291,604	$6,874,813
14	Cumulative Book / Tax Timer	Line 11 - Line 13		$121,147,461	$119,924,508
15	Effective Tax Rate			21.00%	21.00%
16	Deferred Tax Reserve	Line 14 × Line 15		$25,440,967	$25,184,147
17	Add: FY 2023 Federal NOL utilization	Page 21 of 28 , Line 12 ,Col (e)		$0	$0
18	Net Deferred Tax Reserve before Proration Adjustment	Line 16 + Line 17		$25,440,967	$25,184,147
	ISR Rate Base Calculation:				
19	Cumulative Incremental Capital Included in ISR Rate Base	Line 8		$126,360,754	$126,360,754
20	Accumulated Depreciation	- Line 13		($2,291,604)	($6,874,813)
21	Deferred Tax Reserve	- Line 18		($25,440,967)	($25,184,147)
22	Year End Rate Base before Deferred Tax Proration	Sum of Lines 19 through 21		$98,628,182	$94,301,794
	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		$49,314,091	$96,464,988
24	Proration Adjustment	Page 20 of 28, Line 41, Col (j) and Col. (k)		$3,424	($11,023)
25	Average ISR Rate Base after Deferred Tax Proration	Line 23 + Line 24		$49,317,515	$96,453,965
26	Pre-Tax ROR	Page 28 of 28, Line 30, Column (e)		8.41%	8.41%
27	Return and Taxes	Line 25 × Line 26		$4,147,603	$8,111,778
28	Book Depreciation	Line 12		$2,291,604	$4,583,209
29	**Annual Revenue Requirement**	**Sum of Lines 27 through 28**		**$6,439,207**	**$12,694,987**

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 2023 Gas ISR Revenue Requirement Plan
Calculation of Tax Depreciation and Repairs Deduction on FY 2023 Incremental Capital Investments

Line No.				Fiscal Year 2023 (a)
	Capital Repairs Deduction			
1	Plant Additions	Page 18 of 28, Line 1		$162,924,000
2	Capital Repairs Deduction Rate	Per Tax Department	1/	71.43%
3	Capital Repairs Deduction	Line 1 × Line 2		$116,376,613
	Bonus Depreciation			
4	Plant Additions	Line 1		$162,924,000
5	Less Capital Repairs Deduction	Line 3		$116,376,613
6	Plant Additions Net of Capital Repairs Deduction	Line 4 - Line 5		$46,547,387
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 1	Per Tax Department		0.00%
10	Bonus Depreciation Rate 2	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		$162,924,000
14	Less Capital Repairs Deduction	Line 3		$116,376,613
15	Less Bonus Depreciation	Line 12		$0
16	Remaining Plant Additions Subject to 20 YR MACRS Tax Depreciation	Line 13 - Line 14 - Line 15		$46,547,387
17	20 YR MACRS Tax Depreciation Rates	IRS Publication 946		3.75%
18	Remaining Tax Depreciation	Line 16 × Line 17		$1,745,527
19	FY23 tax (gain)/loss on retirements	Per Tax Department	2/	925,925
20	Cost of Removal	Page 18 of 28, Line 7		$4,391,000
21	Total Tax Depreciation and Repairs Deduction	Sum of Lines 3, 12, 18, 19 & 20		$123,439,065

(b)	(c)	(d)	(e)
20 Year MACRS Depreciation			
MACRS basis:		$46,547,387	
		Annual	Cumulative
Fiscal Year			
2023	3.75%	$1,745,527	$123,439,065
2024	7.22%	$3,360,256	$126,799,321
2025	6.68%	$3,107,969	$129,907,290
2026	6.18%	$2,875,232	$132,782,522
2027	5.71%	$2,659,252	$135,441,775
2028	5.29%	$2,460,029	$137,901,804
2029	4.89%	$2,275,236	$140,177,040
2030	4.52%	$2,104,873	$142,281,913
2031	4.46%	$2,076,944	$144,358,857
2032	4.46%	$2,076,479	$146,435,336
2033	4.46%	$2,076,944	$148,512,281
2034	4.46%	$2,076,479	$150,588,760
2035	4.46%	$2,076,944	$152,665,704
2036	4.46%	$2,076,479	$154,742,183
2037	4.46%	$2,076,944	$156,819,127
2038	4.46%	$2,076,479	$158,895,606
2039	4.46%	$2,076,944	$160,972,551
2040	4.46%	$2,076,479	$163,049,030
2041	4.46%	$2,076,944	$165,125,974
2042	4.46%	$2,076,479	$167,202,453
2043	2.23%	$1,038,472	$168,240,925
	100.00%	$46,547,387	

1/ Capital Repairs percentage is based on a five-year average of FYs 2017 through 2021 capital repairs rates.
2/ FY 2023 estimated tax loss on retirements is based on most recent actual loss on retirement

The Narragansett Electric Company
d/b/a National Grid
FY 2023 Gas ISR Revenue Requirement Plan
Calculation of Net Deferred Tax Reserve Proration on FY 2023 Incremental Capital Investments

Line No.	**Deferred Tax Subject to Proration**		(a) FY23	(b) FY24
1	Book Depreciation	Page 18 of 28 , Line 12 ,Col (a) and Col (b)	$2,291,604	$4,583,209
2	Bonus Depreciation	- Page 19 of 28 , Line 12 ,Col (a)	0	
3	Remaining MACRS Tax Depreciation	- Page 19 of 28 , Col (d)	($1,745,527)	($3,360,256)
4	FY23 tax (gain)/loss on retirements	- Page 19 of 28 , Line 19 ,Col (a)	($925,925)	$0
5	Cumulative Book / Tax Timer	Sum of Lines 1 through 4	($379,848)	$1,222,953
6	Effective Tax Rate		21%	21%
7	Deferred Tax Reserve	Line 5 × Line 6	($79,768)	$256,820
	Deferred Tax Not Subject to Proration			
8	Capital Repairs Deduction	- Page 19 of 28 , Line 3 ,Col (a)	(116,376,613)	
9	Cost of Removal	- Page 18 of 28 , Line 7 ,Col (a)	($4,391,000)	
10	Book/Tax Depreciation Timing Difference at 3/31/2022			
11	Cumulative Book / Tax Timer	Line 8 + Line 9 + Line 10	($120,767,613)	
12	Effective Tax Rate		21%	
13	Deferred Tax Reserve	Line 11 × Line 12	($25,361,199)	
14	Total Deferred Tax Reserve	Line 7 + Line 13	($25,440,967)	$256,820
15	Net Operating Loss	- Page 18 of 28 , Line 17 ,Col (a)	$0	
16	Net Deferred Tax Reserve	Line 14 + Line 15	($25,440,967)	$256,820
	Allocation of FY 2023 Estimated Federal NOL			
17	Cumulative Book/Tax Timer Subject to Proration	Line 5	($379,848)	
18	Cumulative Book/Tax Timer Not Subject to Proration	Line 11	($120,767,613)	
19	Total Cumulative Book/Tax Timer	Line 17 + Line 18	($121,147,461)	
20	Total FY 2023 Federal NOL	- Page 18 of 28 , Line 17 ,Col (a)÷21%	$0	
21	Allocated FY 2023 Federal NOL Not Subject to Proration	(Line 18 ÷ Line 19) × Line 20	$0	
22	Allocated FY 2023 Federal NOL Subject to Proration	(Line 17 ÷ Line 19) × Line 20	$0	
23	Effective Tax Rate		21%	
24	Deferred Tax Benefit subject to proration	Line 22 × Line 23	$0	
25	Net Deferred Tax Reserve subject to proration	Line 7 + Line 24	($79,768)	$256,820

	Proration Calculation	(h) Number of Days in Month	(i) Proration Percentage	(j) FY23	(k) FY24
26	April	30	91.78%	($6,101)	$19,643
27	May	31	83.29%	($5,536)	$17,825
28	June	30	75.07%	($4,990)	$16,066
29	July	31	66.58%	($4,425)	$14,248
30	August	31	58.08%	($3,861)	$12,431
31	September	30	49.86%	($3,315)	$10,672
32	October	31	41.37%	($2,750)	$8,854
33	November	30	33.15%	($2,204)	$7,095
34	December	31	24.66%	($1,639)	$5,277
35	January	31	16.16%	($1,075)	$3,459
36	February	28	8.49%	($565)	$1,818
37	March	31	0.00%	$0	$0
38	Total	365		($36,460)	$117,387
39	Deferred Tax Without Proration	Line 25		($79,768)	$256,820
40	Average Deferred Tax without Proration	Line 39 × 0.5		($39,884)	$128,410
41	Proration Adjustment	Line 38 - Line 40		$3,424	($11,023)

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 2023 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)	Actual Fiscal Year 2021 (d)	Plan Fiscal Year 2022 (e)
	Capital Investment						
1	ISR-eligible Capital Investment	Col (a)=Docket No. 4678 FY18 ISR Reconciliation Filing; Col (b)=Docket No. 4781 FY19 ISR Reconciliation Filing; Col (c)=Docket No. 4916 FY20 ISR Reconciliation Filing; Col (d)=Docket No. 4996 FY21 ISR Reconciliation Filing; Col (e)=Docket No. 5099 FY22 ISR Plan Filing	$97,809,718	$92,263,000	$144,119,796	$110,177,659	$158,263,312
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); Col(d) = Line 1(h) + 1(j)	$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	$110,177,659	$158,263,312
	Cost of Removal						
4	ISR-eligible Cost of Removal	Col (a)=Docket No. 4678 FY18 ISR Reconciliation Filing; Col (b)=Docket No. 4781 FY19 ISR Reconciliation Filing; Col (c)=Docket No. 4916 FY20 ISR Reconciliation Filing; Col (d)=Docket No. 4996 FY21 ISR Reconciliation Filing; Col (e)=Docket No. 5099 FY22 ISR Plan Filing	$8,603,224	$11,583,085	$10,161,508	$9,975,152	$4,224,688
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	$8,861,636	$3,753,342
	Retirements						
7	ISR-eligible Retirements	Col (a)=Docket No. 4678 FY18 ISR Reconciliation Filing; Col (b)=Docket No. 4781 FY19 ISR Reconciliation Filing; Col (c)=Docket No. 4916 FY20 ISR Reconciliation Filing; Col (d)=Docket No. 4996 FY21 ISR Reconciliation Filing; Col (e)=Docket No. 5099 FY22 ISR Plan Filing;	$24,056,661	$6,531,844	$8,395,321	$5,337,792	$19,783,019
8	ISR-eligible Retirements per RIPUC Docket No. 4770	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	$3,860,987	$19,157,894
	(NOL)/ NOL Utilization						
10	ISR (NOL)/NOL Utilization Per ISR	Page 22 of 28, Line 12	($6,051,855)	$1,091,119	$0	$2,072,387	$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)	($5,525,796)	$6,564,587

The Narragansett Electric Company
d/b/a National Grid
FY 2023 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)	(k)	(l)
			Test Year July 2016 - June 2017					Jul & Aug 2017	12 Mths Aug 31 2018	12 Mths Aug 31 2019	12 Mths Aug 31 2020	12 Mths Aug 31 2021	12 Mths Aug 31 2022
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	$0
2	Excess DIT amortization							$0	$0	($1,470,238)	($1,470,238)	($1,470,238)	$0
		FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
3	Total Base Rate Plant DIT Provision							$24,514,347.17	$17,043,594	$8,195,453.84	$5,167,632	$2,615,282.52	$0
4	Incremental FY 18	$2,507,039	$2,560,766	$2,611,618	$2,662,153	$2,712,395	$2,762,366	$2,507,039	$53,728	$50,851	$50,535	$50,242	$49,972
5	Incremental FY 19	$0	$1,090,524	$1,085,911	$1,081,431	$1,077,072	$1,072,827	$0	$1,090,524	($4,613)	($4,480)	($4,358)	($4,245)
6	Incremental FY 20	$0	$0	$18,484,445	$18,218,347	$17,924,604	$17,605,358	$0	$0	$18,484,445	($266,098)	($293,743)	($319,245)
7	Incremental FY 21				$13,009,229	$13,230,424	$13,384,891			$0	$13,009,229	$221,195	$154,467
8	Incremental FY 22					$27,876,332	$27,439,961					$27,876,332	($436,370)
9	Incremental FY 23						$25,440,967						$25,440,967
10	TOTAL Plant DIT Provision	$2,507,039	$3,651,291	$22,181,974	$34,971,160	$62,820,827	$87,706,371	$27,021,386	$18,187,846	$26,726,137	$17,956,818	$30,464,950	$24,885,545
11	NOL (Utilization)							$6,051,855	($1,091,119)	$0	($2,072,387)	($10,722,358)	$0
12	Lesser of NOL or DIT Provision							$6,051,855	($1,091,119)	$0	($2,072,387)	($10,722,358)	$0

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(g) RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 11 of 23, Line 3 plus Line 4
1(h) RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 11 of 23, Line 7
1(i) RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 11 of 23, Line 50
1(j) RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 12 of 23, Line 41
1(k) RIPUC Docket Nos. 4770/4780, Compliance, Revised Rebuttal Attachment 1, Schedule 11-GAS, Page 12 of 23, Line 51
1(l) 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)
4(a)-9(f) 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(g)-9(m) Year over year change in cumulative DIT shown in Cols (a) through (f)
10 Sum of Lines 3 through 9
11 Col (f)~(g) = Docket no. 4916 FY 20 ISR Rec, Att. MAL-1, p.19, L. 8; Col (h) ~Col (j) Per Tax Department
12 Lesser of Line 9 or Line 10
12 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 1/ June 30, 2017 (a)	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 Equipme	$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 Measur & 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. Measur. 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
Page 1 of 5

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 Adjustmen		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
Page 2 of 5

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 2023 ISR Property Tax Recovery Adjustment
(000s)

Line		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
		End of FY 2018	ISR Additions	Non-ISR Add's	Total Add's	Bk Depr (1)	Retirements	COR	Adjustment	End of FY 2019
1	Plant In Service	$1,195,705	$92,263	$24,845	$117,108		($6,844)		$0	$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 (1)	Retirements	COR	Adjustment	End of FY 2020
6	Plant In Service	$1,305,969	$144,120	$22,074	$166,193		($8,567)		$0	$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 (1)	Retirements	COR	Adjustment	End of FY 2021
11	Plant In Service	$1,463,595	$110,178	$97,667	$207,844		($5,766)		($26,386)	$1,639,288
12	Accumulated Depr	$465,463				$45,652	($5,766)	($11,566)	($32,599)	$461,185
13	Net Plant	$998,132								$1,178,103
14	Property Tax Expense	$25,959								$28,846
15	Effective Prop tax Rate	2.60%								2.45%
		End of FY 2021	ISR Additions	Non-ISR Add's	Total Add's	Bk Depr	Retirements	COR	Adjustment	End of FY 2022
16	Plant In Service	$1,639,288	$158,263	$22,074	$180,337		($19,783)			$1,799,842
17	Accumulated Depr	$461,185				$50,167	($19,783)	($4,225)		$487,344
18	Net Plant	$1,178,103								$1,312,498
19	Property Tax Expense	$28,846								$34,125
20	Effective Prop tax Rate	2.45%								2.60%
		End of FY 2022	ISR Additions	Non-ISR Add's	Total Add's	Bk Depr	Retirements	COR	Adjustment	End of FY 2023
21	Plant In Service	$1,799,842	$162,924	$22,074	$184,998		($9,639)			$1,975,200
22	Accumulated Depr	$487,344				$55,142	($9,639)	($4,391)		$528,455
23	Net Plant	$1,312,498								$1,446,745
24	Property Tax Expense	$34,125								$35,445
25	Effective Prop tax Rate	2.60%								2.45%

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

The Narragansett Electric Company
d/b/a National Grid
Forecasted FY 2023 ISR Property Tax Recovery Adjustment
Forecasted FY 2023 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		
43	Incremental ISR Additions			$105,296				$110,178				$158,263	
44	Book Depreciation: base allowance on ISR eligible plant			$0				$0				($23,890)	
45	Book Depreciation: current year ISR additions			($1,510)				($1,589)				($2,080)	
46	COR			$7,056				$8,862				$3,753	
47	Net Plant Additions			$110,841		9056980		$117,450				$136,047	
48						11121216							
49	RY Effective Tax Rate			2.96%		312500		3.02%				3.05%	
50	Property Tax Recovery on Growth and non-ISR					$437,500.00							
51	ISR Year Effective Tax Rate		2.60%				2.45%				2.60%		
52	RY Effective Tax Rate		2.96%	-0.36%			3.02%	-0.57%			3.05%	-0.45%	
53	RY Effective Tax Rate 7 mos for FY 2019			-0.36%				-0.57%				-0.45%	
54	RY Net Plant times Rate Difference	7 month	$908,586	* -0.36%	($3,246)		$889,353	* -0.57%	($5,080)		$881,383	* -0.45%	($3,957)
55	Growth and non-ISR Incremental times rate difference		($20,407)	* -0.36%	$73		($41,336)	* -0.57%	$236		($51,615)	* -0.45%	$232
56	FY 2018 Net Incremental times rate difference		$7,156	* 2.6%	$186		$7,378	* 2.45%	$181		$7,600	* 2.6%	$198
57	FY 2019 Net Incremental times rate difference		$4,692	* 2.6%	$122		$4,678	* 2.45%	$115		$4,665	* 2.6%	$121
58	FY 2020 Net Incremental times rate difference		$110,841	* 2.6%	$2,882		$107,821	* 2.45%	$2,642		$104,800	* 2.6%	$2,725
59	FY 2021 Net Incremental times rate difference						$117,450	* 2.45%	$2,878		$114,271	* 2.6%	$2,971
60	FY 2022 Net Adds times rate difference										$136,047	* 2.6%	$3,537
61	Total ISR Property Tax Recovery				$17				$970				$5,826

			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
			Cumulative Increm. ISR Prop. Tax for FY2023										
62	Incremental ISR Additions			$162,924									
63	Book Depreciation: base allowance on ISR eligible plant			($40,954)									
64	Book Depreciation: current year ISR additions			($2,292)									
65	COR			$4,391									
66	Net Plant Additions			$124,069									
67													
68	RY Effective Tax Rate			3.05%									
69	Property Tax Recovery on Growth and non-ISR												
70	ISR Year Effective Tax Rate		2.45%										
71	RY Effective Tax Rate		3.05%	-0.60%									
72	RY Effective Tax Rate 7 mos for FY 2019			-0.60%									
73	RY Net Plant times Rate Difference		$881,383	* -0.6%	($5,279)								
74	Growth and non-ISR Incremental times rate difference		($51,615)	* -0.6%	$309								
75	FY 2018 Net Incremental times rate difference		$7,822	* 2.45%	$192								
76	FY 2019 Net Incremental times rate difference		$4,651	* 2.45%	$114								
77	FY 2020 Net Incremental times rate difference		$101,780	* 2.45%	$2,494								
78	FY 2021 Net Incremental times rate difference		$111,092	* 2.45%	$2,722								
79	FY 2022 Net Adds times rate difference		$131,888	* 2.45%	$3,231								
80	FY 2023 Net Adds times rate difference		$124,069	* 2.45%	$3,040								
81	Total ISR Property Tax Recovery				$6,822								

Line Notes

1(a) - 5(i)	Docket No. 4781 Attachment MAL-2, Page 10 of 13, 1(a) to 5(h)
6(i) - 10(i)	Docket No. 4916 Attachment MAL-1, Page 17 of 20, 6(a) to 10(h)
11(a) - 15(i)	Docket No. 4996 Attachment MAL-1, Page 20 of 22, 11(a) to 15(i)
16(a) - 20(a)	11(i) - 15(i)
16(b)	Page 21 of 28 , Line 1 ,Col (e)÷1000
16(c)	Docket No. 5099, Section 3, Att. 1 (C), Page 23, 16 (c)
16(d)	Docket No. 5099, Section 3, Att. 1 (C), Page 23, 16 (d)
16(f)	Docket No. 5099, Section 3, Att. 1 (C), Page 23, 16 (f)
16(i)	Line 16(a) + (d) + (f)
17(e)	P25, (L58+L59)+(P2, L3 (a)+P5, L3 (a)+P8, L3 (a)+P12, L3 (a))÷1000×3.05%+Inc (L1(c)+L6(c)+L11(c))×0.0416+ P15, L3 (a)×0.5×3.05%÷1000+ L16(c)×0.5×0.0416
17(f)	=16(f)
17(g)	Docket No. 5099, Section 3, Att. 1 (C), Page 23, 17 (g)
17(i)	Line 17(a) + (e) + (f) + (g)
18(i)	Line 16(i) - 17(i)
19(i)	Line 18(h) × 20(h)
20(i)	Docket No. 5099, Section 3, Att. 1 (C), Page 23, 20 (h)
21(a) - 25(a)	16(i) - 20(i)
21(b)	Page 18 of 28 , Line 1 ,Col (a)÷1000
21(c)	Line 6(c)
21(d)	Line 16(b) + 16(c)
21(f)	- Page 18 of 28 , Line 2 ,Col (a)÷1000
21(i)	Line 21 (a) + (d) + (f)
22(e)	Page 25, (Line 58 + Line 59) + (Page 2 , Line 3, Col (a) + Page 5 , Line 3, Col (a) + Page 8 , Line 3, Col (a) + Page 12 , Line 3, Col (a) + Page 15 , Line 3, Col (a))÷1000 × 3.05%+ Incremental (L1(c)+L6(c)+L11(c)+L16(c))×3.05% + Page 18 , Line 3, Col (a)+ L21(c))×0.5×3.05%÷1000
22(f)	=21(f)
22(g)	- Page 18 of 28 , Line 7 ,Col (a)÷1000
22(i)	Line 22 (a) + (e) + (f) + (g)
23(i)	Line 21(i) - 22(i)

Line Notes

24(i)	Line 23(i) × 25(i)
25(i)	=10(a) most recent actual property tax rate
26(a) - 42(h)	Docket No. 4781 Rec, Attachment MAL-1, Page 29 of 35, 82(e) to 107(k)
43(a)-61 (c)	Docket No. 4781 Rec, Attachment MAL-2, Page 10 of 13, 31(a) to 50 (c)
43(e) -61(g)	Docket No. 4916 Rec, Attachment MAL-1, Page 18 of 20, 28(e) to 48 (g)
43(j)	Page 15 of 28, Line 4(a)÷1000
44(j)	- (Page 25 of 28, Line 77(c) ×7÷12)÷1000
45(j)	- Page 15 of 28, Line 12(a)÷1000
46(j)	Page 15 of 28, Line 7(a)÷1000
47(j)	Sum of Lines 43(j) through 46(j)
49(j)	=Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att. 1, Sch 1-G, P3, L15, Col (e) ÷ 54(j)
51(i)	=20(i)
52(i)	=49(j)
52(j)	51(i)-52(i)
53(j)	=52(j)
54(i)	=Rate Case, Docket 4770, Compliance, Revised Rebuttal. Att. 1: 54(a) × 5÷12 + (Sch 6-G, P2, L30 - L41 + P3, L5(d) - P5, L4(d) - Sch 5-G, P1, L1(e) - L1(g)) × 7÷12000
54(k)	54(i)×53(j)
55(i)	= - Rate Case, Docket 4770, Compliance, Revised Rebuttal Att. 1: Sch 11-G, P5, L3(e)+L3(i)+L7(e)+L7(i)+L3(l)+L7(l)")
55(k)	55(i)×53(j)
56(i)	(Line 56(e) - Page 2 of 28, Line 12(e))÷100(
56(k)	=56(i)×51(i)
57(i)	(Line 57(e) - Page 5 of 28, Line 12(d))÷1000
57(k)	=57(i)×51(i)
58(i)	(Line 58(e) - Page 8 of 28, Line 12(c))÷1000
58(k)	=58(i)×51(i)
59(i)	(Line 59(e) - Page 12 of 28, Line 12(c))÷1000
59(k)	=59(i)×51(i)

Line Notes

60(i)	47(j)
60(k)	=60(i)×51(i)
61(k)	sum of 54(k) through 60(k)
62(b)	Page 18 of 28, Line 4(a)÷1000
63(b)	- Page 18 of 28, Line 5(a)÷1000
64(b)	- Page 18 of 28, Line 12(a)÷1000
65(b)	Page 18 of 28, Line 7(a)÷1000
66(b)	Sum of Lines 62(b) through 65(b)
68(b)	49(j)
70(a)	25(i)
71(a)	68(b)
71(b)	70(a)-71(a)
72(b)	71(b)
73(a)	54(i)
73(c)	73(a)×72(b)
74(a)	55(i)
74(c)	74(a)×72(b)
75(a)	(Line 56(i) - Page 2 of 28, Line 12(f))÷1000
75(c)	=75(a)×70(a)
76(a)	(Line 57(i) - Page 5 of 28, Line 12(e))÷1000
76(c)	=76(a)×70(a)
77(a)	(Line 58(i) - Page 8 of 28, Line 12(d))÷1000
77(c)	=77(a)×70(a)
78(a)	(Line 59(i) - Page 12 of 28, Line 12(c))÷100(
78(c)	=78(a)×70(a)
79(a)	(Line 60(i) - Page 15 of 28, Line 12(b))÷1000
79(c)	=79(a)×70(a)
80(a)	=66(b)
80(c)	=80(a)×70(a)
81(c)	sum of 73(c) through 80(c)

The Narragansett Electric Company
d/b/a National Grid
FY 2023 Gas ISR Revenue Requirement Plan
Calculation of Weighted Average Cost of Capital

Line No.						
1	Weighted Average Cost of Capital as approved in RIPUC Docket No. 4323 at 35% income tax rate effective April 1, 2013					
2		(a)	(b)	(c)	(d)	(e)
3		Ratio	Rate	Weighted Rate	Taxes	Return
4	Long Term Debt	49.95%	5.70%	2.85%		2.85%
5	Short Term Debt	0.76%	0.80%	0.01%		0.01%
6	Preferred Stock	0.15%	4.50%	0.01%		0.01%
7	Common Equity	49.14%	9.50%	4.67%	2.51%	7.18%
8		100.00%		7.54%	2.51%	10.05%
9						
10	(d) - Column (c) x 35% divided by (1 - 35%)					
11						
12						
13	Weighted Average Cost of Capital as approved in RIPUC Docket No. 4323 at 21% income tax rate effective January 1, 2018					
14		(a)	(b)	(c)	(d)	(e)
15		Ratio	Rate	Weighted Rate	Taxes	Return
16	Long Term Debt	49.95%	5.70%	2.85%		2.85%
17	Short Term Debt	0.76%	0.80%	0.01%		0.01%
18	Preferred Stock	0.15%	4.50%	0.01%		0.01%
19	Common Equity	49.14%	9.50%	4.67%	1.24%	5.91%
20		100.00%		7.54%	1.24%	8.78%
21	(d) - Column (c) x 21% divided by (1 - 21%)					
22						
23	Weighted Average Cost of Capital as approved in RIPUC Docket No. 4770 effective September 1, 2018					
24		(a)	(b)	(c)	(d)	(e)
25		Ratio	Rate	Weighted Rate	Taxes	Return
26	Long Term Debt	48.35%	4.98%	2.41%		2.41%
27	Short Term Debt	0.60%	1.76%	0.01%		0.01%
28	Preferred Stock	0.10%	4.50%	0.00%		0.00%
29	Common Equity	50.95%	9.28%	4.73%	1.26%	5.99%
30		100.00%		7.15%	1.26%	8.41%
31	(d) - Column (c) x 21% divided by (1 - 21%)					
32						
33	FY18 Blended Rate		Line 8(e) × 75% + Line 20(e) × 25%			9.73%
34						
35	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 2023 Proposal

Rate Design and Bill Impacts
FY 2023 Proposal

For purposes of rate design, the revenue requirement associated with cumulative capital investment and property tax recovery presented in the proposed Gas ISR Plan for FY 2023 is allocated to rate classes based upon a rate base allocator[1] 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 2022 through March 2023 period is from the Company's most recent forecast filed in the Company's Gas Cost Recovery filing in Docket No. 5180. Attachment 1 of this section provides the proposed ISR factors by rate class. Attachment 2 of this section provides the Plan's bill impacts[2] associated with the rate design in Attachment 1 by rate class. For the average Residential Heating customer using 845 therms per year, the impact of the FY 2023 Gas ISR Plan will represent an annual increase of $10.98, or 0.8 percent, as compared to the annual bills based on rates in effect November 1, 2021.

[1] In Docket No. 5099, the PUC approved the Company's proposal to combine the allocated revenue requirements for the Residential Heating and Residential Non-Heating rate classes, thereby deriving one ISR factor applicable to all residential customers, until the Company's next rate case filing.

[2] Bill impacts are provided using rates currently in effect as of November 1, 2021.

	FY 2023 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)	$42,436,970								
(2)		Residential	66.59%	$28,258,778	20,697,949	$1.3652	$0.1365	1.91%	$0.1391
(3)		Small	8.04%	$3,411,932	2,424,875	$1.4070	$0.1407	1.91%	$0.1434
(4)		Medium	12.23%	$5,190,041	6,342,064	$0.8183	$0.0818	1.91%	$0.0833
(5)		Large LL	5.57%	$2,363,739	2,793,133	$0.8462	$0.0846	1.91%	$0.0862
(6)		Large HL	2.25%	$954,832	1,215,766	$0.7853	$0.0785	1.91%	$0.0800
(7)		XL-LL	0.97%	$411,639	972,342	$0.4233	$0.0423	1.91%	$0.0431
(8)		XL-HL	4.35%	$1,846,008	6,153,693	$0.2999	$0.0299	1.91%	$0.0304
(9)		Total	100.00%	$42,436,970	40,599,822				

(a) Line 1: Capital Revenue Requirement & Forecasted Annual Property Tax Recovery Mechanism (Section 3: Attachment 1, Page 1, Line 12)
(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 (f) ÷ 10
(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

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Forecasted Throughput April 2022 - March 2023

		Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
(1)	Res-NH	33,894	17,716	12,854	8,013	6,392	7,967	12,706	23,745	34,705	44,010	48,549	37,447	287,998
(2)	Res-H	2,339,944	955,323	597,144	477,322	453,942	477,646	644,498	1,552,439	2,628,857	3,489,125	3,866,324	2,927,388	20,409,951
(3)	Small	265,768	134,012	76,371	58,880	54,860	59,894	87,848	207,482	320,763	403,601	418,710	336,686	2,424,875
(4)	Medium	693,699	352,007	202,844	157,512	147,095	160,142	232,366	542,417	836,451	1,050,189	1,089,627	877,717	6,342,064
(5)	Large LL	306,130	154,364	87,969	67,821	63,192	68,990	101,189	238,992	369,476	464,895	482,298	387,817	2,793,133
(6)	Large HL	95,376	89,925	91,567	92,819	94,919	92,141	93,561	100,772	108,693	121,422	116,996	117,573	1,215,766
(7)	X-Large LL	106,569	53,737	30,624	23,610	21,998	24,017	35,226	83,197	128,622	161,838	167,897	135,006	972,342
(8)	X-Large HL	508,607	465,264	472,732	479,699	491,379	475,928	485,491	525,600	566,333	587,195	553,429	542,035	6,153,693
(9)		4,349,987	2,222,347	1,572,105	1,365,675	1,333,777	1,366,725	1,692,886	3,274,644	4,993,902	6,322,275	6,743,831	5,361,668	40,599,822

Source: Company Forecast

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

Residential Heating:

(1)						Difference due to:					
(2)	Annual	Proposed	Current				DAC				
(3)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
(4)											
(5)	548	$1,019.46	$1,012.31	$7.14	0.7%	$0.00	$0.00	$6.93	$0.00	$0.00	$0.21
(6)	608	$1,111.04	$1,103.14	$7.91	0.7%	$0.00	$0.00	$7.67	$0.00	$0.00	$0.24
(7)	667	$1,201.11	$1,192.44	$8.67	0.7%	$0.00	$0.00	$8.41	$0.00	$0.00	$0.26
(8)	726	$1,291.15	$1,281.73	$9.42	0.7%	$0.00	$0.00	$9.14	$0.00	$0.00	$0.28
(9)	785	$1,381.16	$1,370.97	$10.19	0.7%	$0.00	$0.00	$9.88	$0.00	$0.00	$0.31
(10)	845	$1,472.72	$1,461.74	$10.98	0.8%	$0.00	$0.00	$10.65	$0.00	$0.00	$0.33
(11)	905	$1,564.33	$1,552.59	$11.74	0.8%	$0.00	$0.00	$11.39	$0.00	$0.00	$0.35
(12)	964	$1,654.32	$1,641.80	$12.52	0.8%	$0.00	$0.00	$12.14	$0.00	$0.00	$0.38
(13)	1,023	$1,744.40	$1,731.11	$13.29	0.8%	$0.00	$0.00	$12.89	$0.00	$0.00	$0.40
(14)	1,082	$1,834.46	$1,820.39	$14.06	0.8%	$0.00	$0.00	$13.64	$0.00	$0.00	$0.42
(15)	1,142	$1,926.08	$1,911.24	$14.84	0.8%	$0.00	$0.00	$14.39	$0.00	$0.00	$0.45

Residential Heating Low Income:

(16)							Difference due to:					
(17)	Annual	Proposed	Current				Low Income	DAC				
(18)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Discount	Base DAC	ISR	EE	LIHEAP	GET
(19)												
(20)	548	$756.50	$751.15	$5.36	0.7%	$0.00	($1.73)	$0.00	$6.93	$0.00	$0.00	$0.16
(21)	608	$824.31	$818.38	$5.93	0.7%	$0.00	($1.92)	$0.00	$7.67	$0.00	$0.00	$0.18
(22)	667	$891.01	$884.50	$6.50	0.7%	$0.00	($2.10)	$0.00	$8.41	$0.00	$0.00	$0.20
(23)	726	$957.67	$950.60	$7.07	0.7%	$0.00	($2.28)	$0.00	$9.14	$0.00	$0.00	$0.21
(24)	785	$1,024.26	$1,016.62	$7.64	0.8%	$0.00	($2.47)	$0.00	$9.88	$0.00	$0.00	$0.23
(25)	845	$1,092.07	$1,083.84	$8.23	0.8%	$0.00	($2.66)	$0.00	$10.65	$0.00	$0.00	$0.25
(26)	905	$1,159.88	$1,151.07	$8.81	0.8%	$0.00	($2.85)	$0.00	$11.39	$0.00	$0.00	$0.26
(27)	964	$1,226.52	$1,217.13	$9.39	0.8%	$0.00	($3.04)	$0.00	$12.14	$0.00	$0.00	$0.28
(28)	1,023	$1,293.21	$1,283.25	$9.97	0.8%	$0.00	($3.22)	$0.00	$12.89	$0.00	$0.00	$0.30
(29)	1,082	$1,359.87	$1,349.32	$10.55	0.8%	$0.00	($3.41)	$0.00	$13.64	$0.00	$0.00	$0.32
(30)	1,142	$1,427.69	$1,416.56	$11.13	0.8%	$0.00	($3.60)	$0.00	$14.39	$0.00	$0.00	$0.33

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2021

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

Residential Non-Heating:

							Difference due to:				
(31)											
(32)	Annual	Proposed	Current				DAC				
(33)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
(34)											
(35)	144	$387.60	$385.76	$1.84	0.5%	$0.00	$0.00	$1.78	$0.00	$0.00	$0.06
(36)	158	$407.42	$405.38	$2.04	0.5%	$0.00	$0.00	$1.98	$0.00	$0.00	$0.06
(37)	172	$427.38	$425.18	$2.20	0.5%	$0.00	$0.00	$2.13	$0.00	$0.00	$0.07
(38)	189	$451.47	$449.03	$2.44	0.5%	$0.00	$0.00	$2.37	$0.00	$0.00	$0.07
(39)	202	$469.94	$467.32	$2.62	0.6%	$0.00	$0.00	$2.54	$0.00	$0.00	$0.08
(40)	220	$495.55	$492.70	$2.85	0.6%	$0.00	$0.00	$2.76	$0.00	$0.00	$0.09
(41)	238	$521.07	$518.00	$3.07	0.6%	$0.00	$0.00	$2.98	$0.00	$0.00	$0.09
(42)	251	$539.55	$536.32	$3.23	0.6%	$0.00	$0.00	$3.13	$0.00	$0.00	$0.10
(43)	268	$563.70	$560.22	$3.47	0.6%	$0.00	$0.00	$3.37	$0.00	$0.00	$0.10
(44)	282	$583.63	$579.96	$3.67	0.6%	$0.00	$0.00	$3.56	$0.00	$0.00	$0.11
(45)	297	$604.93	$601.07	$3.87	0.6%	$0.00	$0.00	$3.75	$0.00	$0.00	$0.12

Residential Non-Heating Low Income:

								Difference due to:				
(46)												
(47)	Annual	Proposed	Current				Low Income	DAC				
(48)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Discount	Base DAC	ISR	EE	LIHEAP	GET
(49)												
(50)	144	$288.77	$287.40	$1.38	0.5%	$0.00	($0.44)	$0.00	$1.78	$0.00	$0.00	$0.04
(51)	158	$303.46	$301.93	$1.53	0.5%	$0.00	($0.49)	$0.00	$1.98	$0.00	$0.00	$0.05
(52)	172	$318.22	$316.57	$1.65	0.5%	$0.00	($0.53)	$0.00	$2.13	$0.00	$0.00	$0.05
(53)	189	$336.09	$334.26	$1.83	0.5%	$0.00	($0.59)	$0.00	$2.37	$0.00	$0.00	$0.05
(54)	202	$349.77	$347.81	$1.96	0.6%	$0.00	($0.63)	$0.00	$2.54	$0.00	$0.00	$0.06
(55)	220	$368.71	$366.57	$2.13	0.6%	$0.00	($0.69)	$0.00	$2.76	$0.00	$0.00	$0.06
(56)	238	$387.60	$385.30	$2.30	0.6%	$0.00	($0.74)	$0.00	$2.98	$0.00	$0.00	$0.07
(57)	251	$401.29	$398.87	$2.42	0.6%	$0.00	($0.78)	$0.00	$3.13	$0.00	$0.00	$0.07
(58)	268	$419.19	$416.58	$2.61	0.6%	$0.00	($0.84)	$0.00	$3.37	$0.00	$0.00	$0.08
(59)	282	$433.93	$431.18	$2.75	0.6%	$0.00	($0.89)	$0.00	$3.56	$0.00	$0.00	$0.08
(60)	297	$449.74	$446.84	$2.90	0.6%	$0.00	($0.94)	$0.00	$3.75	$0.00	$0.00	$0.09

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2021

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Bill Impact Analysis with Various Levels of Consumption:

C & I Small:

Line	Annual Consumption (Therms)	Proposed Rates	Current Rates	Difference	% Chg	GCR	DAC: Base DAC	DAC: ISR	EE	LIHEAP	GET
(61)						Difference due to:					
(62)											
(63)											
(64)											
(65)	830	$1,510.81	$1,489.92	$20.89	1.4%	$0.00	$0.00	$20.26	$0.00	$0.00	$0.63
(66)	919	$1,638.52	$1,615.43	$23.09	1.4%	$0.00	$0.00	$22.40	$0.00	$0.00	$0.69
(67)	1,010	$1,769.21	$1,743.81	$25.39	1.5%	$0.00	$0.00	$24.63	$0.00	$0.00	$0.76
(68)	1,099	$1,897.01	$1,869.38	$27.63	1.5%	$0.00	$0.00	$26.80	$0.00	$0.00	$0.83
(69)	1,187	$2,023.39	$1,993.57	$29.82	1.5%	$0.00	$0.00	$28.93	$0.00	$0.00	$0.89
(70)	1,277	$2,152.53	$2,120.43	$32.10	1.5%	$0.00	$0.00	$31.14	$0.00	$0.00	$0.96
(71)	1,367	$2,281.76	$2,247.36	$34.39	1.5%	$0.00	$0.00	$33.36	$0.00	$0.00	$1.03
(72)	1,456	$2,409.51	$2,372.88	$36.63	1.5%	$0.00	$0.00	$35.53	$0.00	$0.00	$1.10
(73)	1,544	$2,535.93	$2,497.09	$38.84	1.6%	$0.00	$0.00	$37.67	$0.00	$0.00	$1.17
(74)	1,635	$2,666.61	$2,625.49	$41.12	1.6%	$0.00	$0.00	$39.89	$0.00	$0.00	$1.23
(75)	1,725	$2,795.78	$2,752.41	$43.37	1.6%	$0.00	$0.00	$42.07	$0.00	$0.00	$1.30

C & I Medium:

Line	Annual Consumption (Therms)	Proposed Rates	Current Rates	Difference	% Chg	GCR	DAC: Base DAC	DAC: ISR	EE	LIHEAP	GET
(76)						Difference due to:					
(77)											
(78)											
(79)											
(80)	6,907	$9,592.68	$9,542.84	$49.84	0.5%	$0.00	$0.00	$48.34	$0.00	$0.00	$1.50
(81)	7,650	$10,510.58	$10,455.36	$55.22	0.5%	$0.00	$0.00	$53.56	$0.00	$0.00	$1.66
(82)	8,391	$11,425.52	$11,364.95	$60.57	0.5%	$0.00	$0.00	$58.75	$0.00	$0.00	$1.82
(83)	9,136	$12,345.63	$12,279.71	$65.93	0.5%	$0.00	$0.00	$63.95	$0.00	$0.00	$1.98
(84)	9,880	$13,264.66	$13,193.35	$71.31	0.5%	$0.00	$0.00	$69.17	$0.00	$0.00	$2.14
(85)	10,623	$14,182.53	$14,105.85	$76.68	0.5%	$0.00	$0.00	$74.38	$0.00	$0.00	$2.30
(86)	11,366	$15,100.37	$15,018.36	$82.01	0.5%	$0.00	$0.00	$79.55	$0.00	$0.00	$2.46
(87)	12,111	$16,020.52	$15,933.13	$87.39	0.5%	$0.00	$0.00	$84.77	$0.00	$0.00	$2.62
(88)	12,855	$16,939.57	$16,846.81	$92.76	0.6%	$0.00	$0.00	$89.98	$0.00	$0.00	$2.78
(89)	13,596	$17,854.53	$17,756.42	$98.11	0.6%	$0.00	$0.00	$95.17	$0.00	$0.00	$2.94
(90)	14,340	$18,773.55	$18,670.05	$103.49	0.6%	$0.00	$0.00	$100.39	$0.00	$0.00	$3.10

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2021

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Infrastructure, Safety, and Reliability (ISR) Filing
Bill Impact Analysis with Various Levels of Consumption:

C & I LLF Large:

							Difference due to:					
(91)								DAC				
(92)	Annual	Proposed	Current									
(93)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
(94)											
(95)	37,587	$48,329.84	$47,837.73	$492.10	1.0%	$0.00	$0.00	$477.34	$0.00	$0.00	$14.76
(96)	41,634	$53,265.70	$52,720.61	$545.09	1.0%	$0.00	$0.00	$528.74	$0.00	$0.00	$16.35
(97)	45,683	$58,204.50	$57,606.37	$598.12	1.0%	$0.00	$0.00	$580.18	$0.00	$0.00	$17.94
(98)	49,731	$63,142.08	$62,490.95	$651.13	1.0%	$0.00	$0.00	$631.60	$0.00	$0.00	$19.53
(99)	53,777	$68,076.85	$67,372.76	$704.09	1.0%	$0.00	$0.00	$682.97	$0.00	$0.00	$21.12
(100)	57,825	$73,014.47	$72,257.36	$757.11	1.0%	$0.00	$0.00	$734.40	$0.00	$0.00	$22.71
(101)	61,873	$77,952.11	$77,142.04	$810.07	1.1%	$0.00	$0.00	$785.77	$0.00	$0.00	$24.30
(102)	65,920	$82,888.02	$82,024.94	$863.07	1.1%	$0.00	$0.00	$837.18	$0.00	$0.00	$25.89
(103)	69,967	$87,824.52	$86,908.45	$916.07	1.1%	$0.00	$0.00	$888.59	$0.00	$0.00	$27.48
(104)	74,016	$92,763.22	$91,794.15	$969.06	1.1%	$0.00	$0.00	$939.99	$0.00	$0.00	$29.07
(105)	78,063	$97,699.09	$96,677.05	$1,022.04	1.1%	$0.00	$0.00	$991.38	$0.00	$0.00	$30.66

C & I HLF Large:

							Difference due to:				
(106)											
(107)	Annual	Proposed	Current				DAC				
(108)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
(109)											
(110)	41,956	$45,912.07	$45,535.77	$376.30	0.8%	$0.00	$0.00	$365.01	$0.00	$0.00	$11.29
(111)	46,471	$50,585.64	$50,168.85	$416.79	0.8%	$0.00	$0.00	$404.29	$0.00	$0.00	$12.50
(112)	50,991	$55,263.86	$54,806.49	$457.37	0.8%	$0.00	$0.00	$443.65	$0.00	$0.00	$13.72
(113)	55,507	$59,938.40	$59,440.54	$497.86	0.8%	$0.00	$0.00	$482.92	$0.00	$0.00	$14.94
(114)	60,028	$64,617.63	$64,079.23	$538.40	0.8%	$0.00	$0.00	$522.25	$0.00	$0.00	$16.15
(115)	64,545	$69,293.10	$68,714.20	$578.90	0.8%	$0.00	$0.00	$561.53	$0.00	$0.00	$17.37
(116)	69,062	$73,968.54	$73,349.11	$619.43	0.8%	$0.00	$0.00	$600.85	$0.00	$0.00	$18.58
(117)	73,583	$78,647.78	$77,987.82	$659.96	0.8%	$0.00	$0.00	$640.16	$0.00	$0.00	$19.80
(118)	78,099	$83,322.28	$82,621.80	$700.47	0.8%	$0.00	$0.00	$679.46	$0.00	$0.00	$21.01
(119)	82,619	$88,000.58	$87,259.56	$741.02	0.8%	$0.00	$0.00	$718.79	$0.00	$0.00	$22.23
(120)	87,137	$92,677.92	$91,896.41	$781.52	0.9%	$0.00	$0.00	$758.07	$0.00	$0.00	$23.45

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2021

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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:				
(121)											
(122)	Annual	Proposed	Current				DAC				
(123)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
(124)											
(125)	233,835	$229,483.42	$225,819.20	$3,664.23	1.6%	$0.00	$0.00	$3,554.30	$0.00	$0.00	$109.93
(126)	259,019	$253,531.26	$249,472.41	$4,058.86	1.6%	$0.00	$0.00	$3,937.09	$0.00	$0.00	$121.77
(127)	284,197	$277,573.98	$273,120.58	$4,453.40	1.6%	$0.00	$0.00	$4,319.80	$0.00	$0.00	$133.60
(128)	309,381	$301,621.81	$296,773.78	$4,848.03	1.6%	$0.00	$0.00	$4,702.59	$0.00	$0.00	$145.44
(129)	334,562	$325,667.08	$320,424.46	$5,242.62	1.6%	$0.00	$0.00	$5,085.34	$0.00	$0.00	$157.28
(130)	359,745	$349,714.09	$344,076.85	$5,637.24	1.6%	$0.00	$0.00	$5,468.12	$0.00	$0.00	$169.12
(131)	384,928	$373,761.06	$367,729.21	$6,031.86	1.6%	$0.00	$0.00	$5,850.90	$0.00	$0.00	$180.96
(132)	410,110	$397,807.21	$391,380.77	$6,426.44	1.6%	$0.00	$0.00	$6,233.65	$0.00	$0.00	$192.79
(133)	435,293	$421,854.15	$415,033.07	$6,821.08	1.6%	$0.00	$0.00	$6,616.45	$0.00	$0.00	$204.63
(134)	460,471	$445,896.91	$438,681.28	$7,215.63	1.6%	$0.00	$0.00	$6,999.16	$0.00	$0.00	$216.47
(135)	485,655	$469,944.80	$462,334.53	$7,610.27	1.6%	$0.00	$0.00	$7,381.96	$0.00	$0.00	$228.31

C & I HLF Extra-Large:

							Difference due to:				
(136)											
(137)	Annual	Proposed	Current				DAC				
(138)	Consumption (Therms)	Rates	Rates	Difference	% Chg	GCR	Base DAC	ISR	EE	LIHEAP	GET
(139)											
(140)	486,528	$411,860.28	$412,010.77	($150.49)	0.0%	$0.00	$0.00	($145.98)	$0.00	$0.00	($4.51)
(141)	538,924	$455,548.12	$455,714.79	($166.67)	0.0%	$0.00	$0.00	($161.67)	$0.00	$0.00	($5.00)
(142)	591,320	$499,235.08	$499,417.96	($182.88)	0.0%	$0.00	$0.00	($177.39)	$0.00	$0.00	($5.49)
(143)	643,718	$542,924.44	$543,123.53	($199.08)	0.0%	$0.00	$0.00	($193.11)	$0.00	$0.00	($5.97)
(144)	696,109	$586,607.66	$586,822.95	($215.29)	0.0%	$0.00	$0.00	($208.83)	$0.00	$0.00	($6.46)
(145)	748,506	$630,296.21	$630,527.73	($231.52)	0.0%	$0.00	$0.00	($224.57)	$0.00	$0.00	($6.95)
(146)	800,903	$673,984.80	$674,232.52	($247.72)	0.0%	$0.00	$0.00	($240.29)	$0.00	$0.00	($7.43)
(147)	853,294	$717,667.99	$717,931.89	($263.91)	0.0%	$0.00	$0.00	($255.99)	$0.00	$0.00	($7.92)
(148)	905,692	$761,357.35	$761,637.46	($280.11)	0.0%	$0.00	$0.00	($271.71)	$0.00	$0.00	($8.40)
(149)	958,088	$805,044.34	$805,340.67	($296.33)	0.0%	$0.00	$0.00	($287.44)	$0.00	$0.00	($8.89)
(150)	1,010,485	$848,732.93	$849,045.49	($312.56)	0.0%	$0.00	$0.00	($303.18)	$0.00	$0.00	($9.38)

Note: Bill Impacts are based on rates approved and currently in effect as of November 1, 2021

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Testimony of
Melissa Little

DIRECT TESTIMONY

OF

MELISSA A. LITTLE

December 17, 2021

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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 New England Regulation 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, FY 2020 in Docket No. 4916, FY 2021 in Docket No. 4996 and the Gas ISR Plan filing for FY 2022 in Docket No. 5099; 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, FY 2020 in Docket No. 4915, FY 2021 in Docket No. 4995, and the Electric ISR Plan filing for FY 2022 in Docket No. 5098.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to sponsor Section 3 of the FY 2023 Gas ISR Plan ("Gas ISR Plan" or "Plan"), which describes the calculation of the Company's revenue requirement for FY 2023 in Attachment 1 of that section. The revenue requirement is based on the FY 2023 Gas ISR Plan capital investment described in the testimony of Company Witnesses Amy Smith and Nathan Kocon.

II. <u>Gas ISR Plan Revenue Requirement</u>

Q. Please summarize the revenue requirement for the Company's FY 2023 Gas ISR Plan.

A. As shown in Attachment 1, Page 1, Column (b), the Company's FY 2023 Gas ISR Plan revenue requirement totals $42,436,970, or an incremental $4,195,084 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 $6,439,207 comprised of the Company's return, taxes and depreciation expense associated with FY 2023 proposed non-growth ISR incremental capital investment in gas utility infrastructure of $162,924,000, as calculated on Attachment 1, Page 18; (2) the FY 2023 revenue requirement on incremental non-growth ISR capital investment for FY 2018 through FY 2022 totaling $29,176,179; and (3) FY 2023 property tax expense of $6,821,584, as shown on Attachment 1 at Page 27, 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 2023 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 2024 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 2023 is provided in Section 3 of the Gas ISR Plan.

Q. Did the Company calculate the FY 2023 Gas ISR Plan revenue requirement in the same fashion as calculated in the previous ISR factor submissions?

A. Yes. Per the PUC's Order in Docket No. 5099 (FY 2022 Gas ISR Plan) and the resulting revisions to the Company's Gas tariff, RIPUC NG-GAS No. 101 at Section 3, Schedule

A, Sheets 4 and 5, the definition of ISR capital investment changed from "non-growth capital spending" to "non-growth capital investment recorded as in service" effective April 1, 2021. The Company has since reflected the impact of this change in its FY 2021 ISR Gas reconciliation, FY 2022 Gas ISR Plan and now its FY 2023 Gas ISR Plan revenue requirements. For the FY 2021 transition year, the vintage year FY 2021 ISR capital investment is calculated as the difference between FY 2021 ISR actual capital spending and the cumulative ISR capital spending included in the Construction Work in Progress ("CWIP") balance as of March 31, 2021. The FY 2022 and FY 2023 ISR vintage year ISR capital investments reflect the ISR capital investment projected to be in-service in the respective vintage year.

Q. Please explain the increase of FY 2023 Gas ISR Plan revenue requirement over the amount currently being billed for Gas ISR Plan?

A. As mentioned above, the Company's FY 2023 Gas ISR Plan revenue requirement is $4,195,084 higher than the FY 2022 Gas ISR Plan revenue requirement. Of the total $42,436,970 FY 2023 revenue requirement, $29,176,179 in capital investment revenue requirement and $3,781,890 in property tax recovery adjustment are associated with incremental non-growth ISR capital investment for FY 2018 through FY 2022, which have been approved in previous Gas ISR plan or reconciliation filings. The decrease in the FY 2023 revenue requirement compared to the approved FY 2022 Plan revenue requirement on that same investment totals $5,283,818 and is caused by the net impact of a $69 million decrease in FY 2021 capital investment due to the transition from "capital spending" to "capital in-service" per the PUC's Order in Docket No. 5099 stated above, the half-year convention applied in the year of service in the FY 2022 plan, and the lower estimated property tax rate in FY 2023 compared to the estimated FY 2022 property tax rate. As a result, the FY 2023 revenue requirement on vintage year FY 2018 through FY 2022 incremental non-growth ISR capital investment decreased by $5.3 million from the FY 2022 revenue requirement on the same investment. The remainder of the FY 2023 increase, or $9,478,902, is related to the FY 2023 proposed non-growth ISR incremental capital investment and the resulting increase in property tax expense due to that incremental investment.

Q. What is the potential impact of the Company's proposed ownership transfer on the FY 2023 Gas ISR Plan revenue requirement calculation?

A. On March 18, 2021, National Grid announced the proposed sale of Narragansett Electric Company to PPL Corporation. If the sale is approved by February 25, 2022, the target decision date, the Company anticipates the ownership transfer to occur in early March 2022. As a result, the Company would utilize all its available Net Operating Losses ("NOL") in FY 2022 to offset taxable income generated by the sale. The additional NOL utilization of $36.8 million from the sale would increase the deferred federal income taxes included in the calculation of incremental ISR rate base in the FY 2022 vintage revenue requirement calculations, thereby reducing rate base and ultimately the return on rate base recoverable through the ISR. The expected impact to the FY 2023 Gas ISR Plan revenue requirement would be a reduction of approximately $3.1 million. The expected impact to the FY 2022 Gas ISR revenue requirement would be a decrease of approximately $1.5 million, which would be reflected in the Company's FY 2022 Gas ISR reconciliation to be filed by August 1, 2022.

Q. Does the Company plan to update the FY 2023 Gas ISR Plan revenue requirement calculation subsequent to the date of this filing?

A. Pending the outcome of the proposed transfer of ownership, the Company may need to submit a revised FY 2023 Gas ISR Plan revenue requirement due to the impact of additional NOL utilization triggered by the transaction as discussed above. When the sale occurs, the Company will then file a revised FY 2023 Gas ISR Plan revenue requirement in this docket, which will quantify the impact of any revisions to accumulated deferred income taxes on the FY 2023 Gas ISR Plan revenue requirement.

The Company generally files its federal income tax return in December for its most recently completed fiscal year, and that timing has required the Company in past ISR Plan dockets to file revised Gas ISR Plan revenue requirements reflecting the actual tax deductions or Net Operating Losses ("NOL") generated or utilized as submitted in its tax return. However, as the Company filed its FY 2021 federal income tax return in November of this year, the revenue requirement in this filing reflects the actual tax repair deductibility percentages and Net Operating Loss ("NOL") utilization on vintage FY 2021 ISR capital investment per the Company's filed income tax return. As such, the Company does not expect to submit a revised FY 2023 Gas ISR Plan revenue requirement calculation for purposes of reconciling estimated tax assumptions to actuals on vintage FY 2021 ISR investment.

III. Conclusion

Q. Does this conclude your testimony?

A. Yes.

Testimony of
Ryan Scheib

DIRECT TESTIMONY

OF

RYAN M. SCHEIB

DECEMBER 17, 2021

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I. <u>Introduction</u>

Q. Please state your names and business address.

A. My name is Ryan M. Scheib 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 Pricing group of the New England Regulation department of National Grid USA Service Company, Inc. ("Service Company"). In this position, I am responsible for preparing various regulatory filings for submission to the Rhode Island Public Utilities Commission ("PUC") on behalf of The Narragansett Electric Company d/b/a National Grid (the "Company") and the Massachusetts Department of Public Utilities on behalf of Massachusetts Electric Company and Nantucket Electric Company (together, "Mass. Electric").

Q. Please provide your educational background and professional experience.

A. I received a Bachelor of Science in Finance from University of Delaware in 2016. In 2016, I joined National Grid as an Associate Analyst in the New England Gas Pricing group and, in 2018, I was promoted to Analyst supporting the gas division of the Company. In June 2021, I was promoted to Senior Analyst supporting the Company and Mass. Electric.

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

A. Yes. I have testified before the PUC in support of the Company's Distribution Adjustment Charge ("DAC") filing in Docket Nos. 4955, 5040 and 5165, the Gas Cost Recovery filing in Docket Nos. 5066 and 5180, and the Company's FY 2021 Gas Infrastructure, Safety and Reliability Plan filing in Docket No. 4996.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to sponsor Section 4 of the Fiscal Year ("FY") 2023 Gas Infrastructure, Safety, and Reliability ("ISR") Plan ("Gas ISR Plan" or "Plan"), which describes the calculation of the proposed FY 2023 ISR factors and the customer bill impacts of the proposed ISR factors.

II. <u>Rate Design</u>

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 2023 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.[1] The Company also utilized the most recently available forecasted throughput for the period April 2022 through March 2023 that had been developed for the Company's 2021-22 Gas Cost Recovery filing in Docket No. 5180. 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's ISR factor to reflect the 1.91 percent uncollectible factor from the Amended Settlement Agreement in Docket No. 4770.

III. <u>ISR Factors</u>

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 2023 ISR factors per rate class

Rate Class	ISR Rate ($/therm)
Residential	$0.1391

[1] In Docket No. 5099, the PUC approved the Company's proposal to combine the allocated revenue requirements for the Residential Heating and Residential Non-Heating rate classes, thereby deriving one ISR factor applicable to all residential customers, until the Company's next Rate Case filing.

Rate Class	ISR Rate ($/therm)
Small C&I	$0.1434
Medium C&I	$0.0833
Large Low Load	$0.0862
Large High Load	$0.0800
XL-Low Load	$0.0431
XL-High Load	$0.0304

*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 2023 ISR factors result in an annual bill increase of $10.98 or 0.8 percent,[2] as shown in the proposed Gas ISR Plan at Section 4, Attachment 2. The annual impact of the proposed ISR factors for all rate classes is set forth in Section 4, Attachment 2 of the Plan.

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

Q. Does this conclude your testimony?

A. Yes.