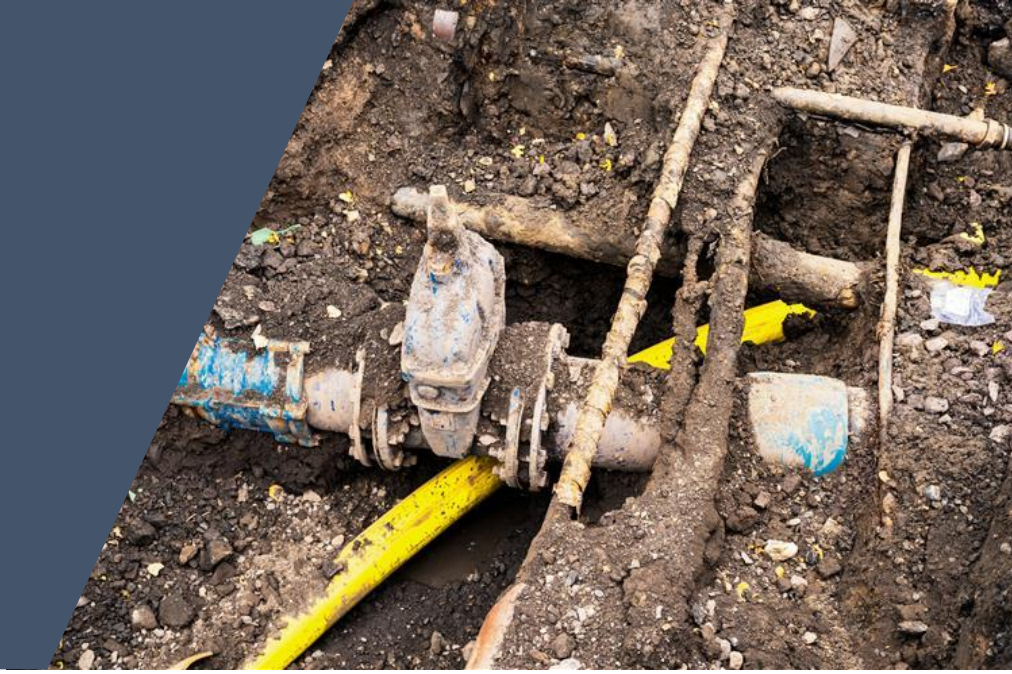


Service Line NPAs: Unlocking Savings and Driving Electrification

November 7, 2025

Service line non-pipeline alternatives (NPAs) provide a practical path to reduce gas utility costs, support electrification, and give customers more choice in their energy future.

By Joe Dammel, Jack Teener, Olivia Prieto, Mike Henchen

Gas utilities in the United States are spending significant sums to replace aging infrastructure in their distribution systems. In recent years, a growing number of states have begun to investigate alternatives to avoid this spending, due to concerns about both the impact on customer bills and the state's emissions goals. As a result, some utilities are now required to consider alternatives to replacing distribution pipelines by conducting a non-pipeline alternative (NPA) analysis.

Many NPA frameworks focus on avoiding replacement of the larger gas mains, with few focused on the smaller service lines that connect customers to the gas system, which are also a source of significant utility replacement efforts. RMI estimates that utilities are spending upward of $7 billion per year on service line replacement.

This policy brief investigates service line replacement efforts and costs across the United States and introduces a framework for a novel and scalable service line NPA program that can help mitigate these costs and drive electrification efforts.

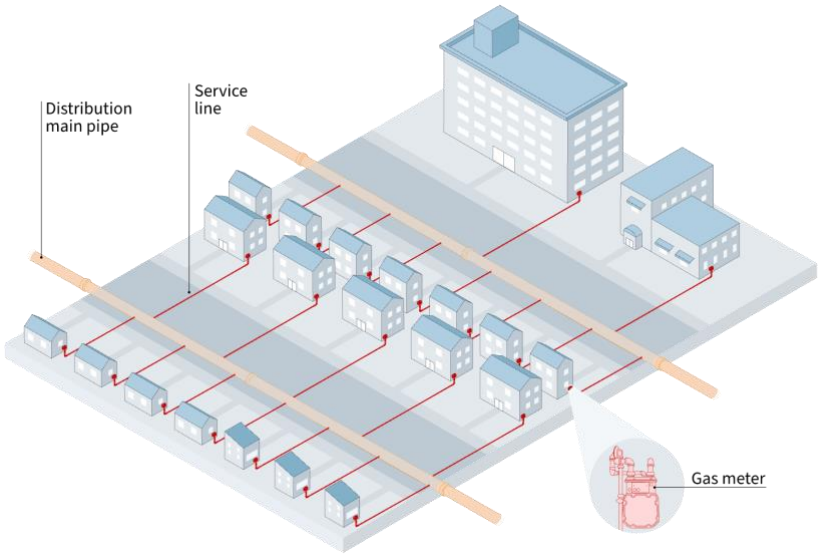
Service line replacement efforts in the United States

Today, natural gas customers have little to no choice regarding service line replacement. Although utilities notify customers in advance about upcoming projects affecting their home or neighborhood, customers are not required to act or accept these replacements. The replacement proceeds by default and is typically the only option. A service line NPA program offers another way. But before describing how this program would work, we will first dive into the problem itself: the costly replacement of gas service lines.

Gas service lines connect customer buildings with the gas distribution system, as displayed by Exhibit 1, below. They are smaller than gas mains and typically connect only one building or meter. There are over 70 million service lines in the United States, comprising nearly 1 million miles of distribution pipe (compared to 1.4 million miles of distribution main).[1]

Exhibit 1

Gas service lines connect customers to the gas distribution system



For much of the past 15 years, natural gas utilities have undertaken a concerted effort to spend capital with a focus on replacement of aging, leak-prone distribution infrastructure. The cost of this and other capital initiatives has grown significantly over that time, with utilities spending $28 billion on their distribution systems in 2023, nearly three times greater than spending in 2013, adjusting for inflation. [2]

Exhibit 2

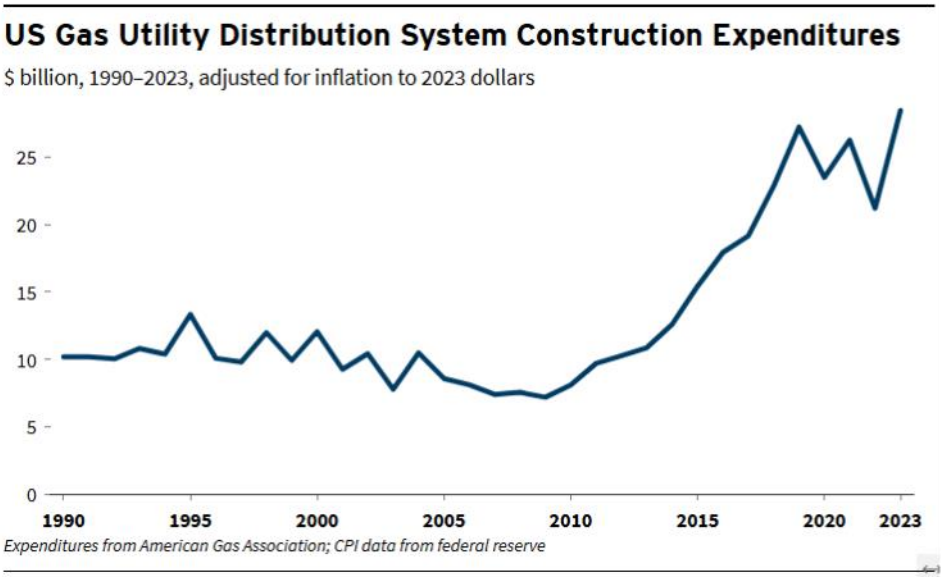
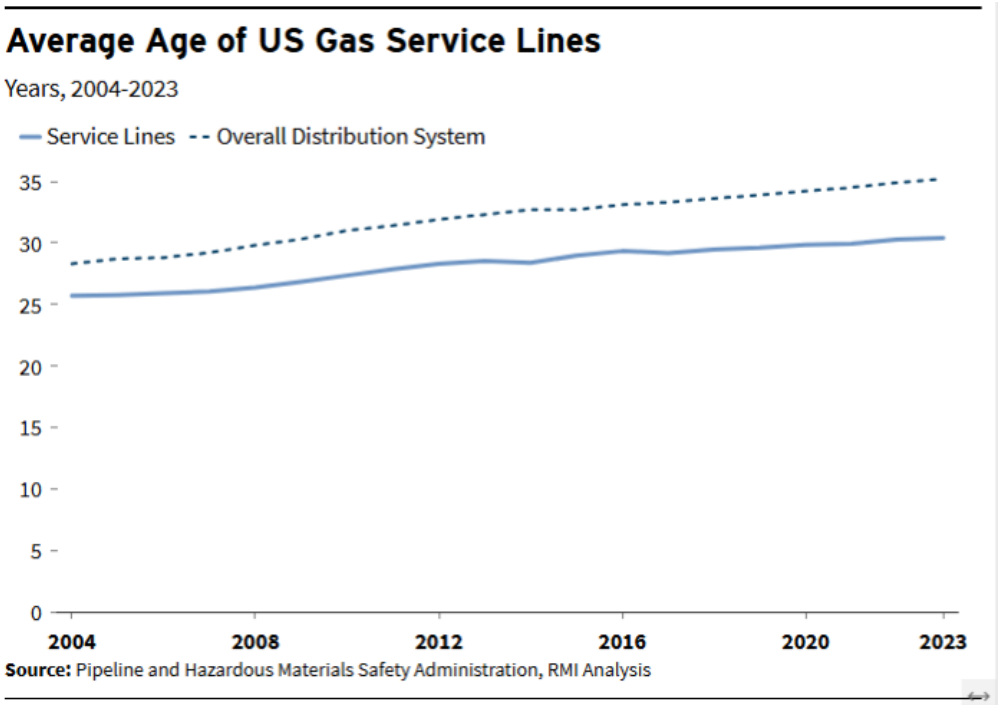


Exhibit 3



Service line replacements comprise a significant portion of utility capital spending. We estimate that roughly 700,000 service lines are replaced in the United States each year, which equates to a replacement rate of approximately 1 percent per year.[i] Costs to replace service lines can vary widely depending on the utility, ranging from $4,000 to nearly $40,000 in some areas.[ii] Assuming a cost of $5,000 to $10,000 per service line, US utilities are spending $3.5 to $7 billion in service line replacement each year.

Spending to replace the aging inventory of service lines is likely to increase given the current trends in service line replacement across the United States. This is an affordability challenge, as ratepayers will be responsible for recovery of these costs well into the future. And continued burning of the gas delivered through these pipes contributes to greenhouse gas emissions, challenging states' emissions reduction goals. On the other hand, simply halting service line replacement poses safety and reliability risks, especially for service lines comprised of leak-prone pipe. A service line NPA program could address these challenges by saving gas ratepayers money, reducing emissions, and retiring old gas infrastructure.

What is a non-pipeline alternative (NPA)?

A non-pipeline alternative project is when a utility analyzes and selects an alternative to constructing a new gas pipeline. Most current NPA projects, proposals, or regulatory frameworks consider alternatives to replacement of gas mains, not service lines. The types of alternatives to be considered can vary, but often include targeted electrification, geothermal heat pumps, increased energy efficiency for existing homes, or re-lining or repairing existing gas pipelines. Utilities may be required to conduct an NPA based on the size or type of project.

Service line NPA timeline: phases, milestones, and representative example

Phase	Utility	Customer	Time prior to service line replacement	Hypothetical Timeline
Utility planning	Infrastructure planning for future years	No action	1–5 years (variable)	Utility plans to replace service line in 2028 and identifies customers whose service lines will be replaced on that year
Notice	Notifies customer of planned service line replacement and of NPA program	Receives notice of replacement and NPA information	1–5 years (utility will provide specific year for replacement)	In 2025, utility sends customers notice of 2028 replacement and of service line NPA option.
Outreach & Opt in	Continues to conduct outreach to customers	Decides to opt in or not, and plans any work/upgrades necessary to electrify		Between 2025–2027 the utility sends outreach to customers, and customers are given the option to opt into service line NPA program
Implementation	Provides customer with savings incentive	**Participants:** Installs any required electric appliances **Non-participant:** No action	Prior to planned service line replacement date	Between 2027–2028 customers would have a deadline to opt-in prior to service line replacement date
Completion or replacement	**Participants:** Terminates gas service **Non-participants:** Replaces service lines for everyone else	**Participants:** No action **Non-participants:** No action (gets a new service line)		In 2028 customers who opted into the program get their gas service retired, everyone else get a new line installed

A service line NPA program, as described in the figure above, may be a new concept, but it incorporates traditional utility regulation principles and elements of existing utility programs, including existing NPAs for gas main replacement. Here are four design principles to consider:

A service line NPA program should:

1. Enable widespread and simple customer participation;
2. Generate benefits for non-participating gas ratepayers;
3. Help to support the utility in achieving successful outcomes; and
4. Support the commission in advancing state policy goals, such as affordability and climate emissions reductions.

Widespread and simple customer participation: A service line NPA program should be widely available and straightforward for customers to understand and participate in. Customers considering participation in a service line NPA should have early and consistent communication from the utility to help them understand the program, including the incentive amount and the implications of terminating

gas service. A well-designed program should also include coordination with complementary programs such as utility energy efficiency programs and connection with contractor networks to help potential participants understand the options and cost to electrify.

Ratepayer benefits: A service line NPA program should also deliver value for the remaining gas ratepayers by avoiding the costs associated with each service line. The benefit accruing to all remaining ratepayers would equal the cost of the service line replacement, minus any incentives paid to the participant and/or utilities, and the costs of decommissioning the existing service line. Regulators will need to consider the benefits across participants, ratepayers, and the utility.

Utility support: This program should also provide the utility with successful outcomes. This could be accomplished in several ways, including setting aside a portion of avoided costs as a utility incentive, allowing the utility to claim any emissions savings from avoiding the replacement, and/or establishing a cost recovery mechanism for costs associated with the program.

Advancing state policy goals: Finally, a service line NPA program will help the commission meet state policy goals such as affordability and climate emissions reductions. It will do so by driving down gas utility costs that will, in turn, mitigate rate impacts of infrastructure spending paid for by customers and by promoting customer end-use electrification, which in most cases will reduce climate emissions and help the state meet related climate goals such as heat pump adoption, where applicable.
A service line NPA that adheres to these design principles should deliver benefits to the participant, all ratepayers, the utility, and the state. Below, we discuss additional design considerations.

Program design questions

There are several important design questions to consider when developing a service line NPA program

How far in advance should a utility notify customers of the option to participate in a service line NPA program?

Advance notice will help give customers time to consider and plan for participation in a service line NPA program and will likely increase the overall participation rate. One way to approach the notification time is to align customer notice with the utility's service line replacement time horizon. Limited advance notice, such as less than a year, will limit the effectiveness of this strategy and likely only convert customers who were already planning to electrify their homes.

What does customer outreach look like?

In addition to advance notice, the utility could design its outreach efforts to engage customers both on the program itself and on resources to pursue electrification, such as connection to a contractor network and/or an overview of additional incentives the customer could take advantage of to defray the up-front costs of electrifying. A commission could also consider requiring utility outreach to cover the implications of terminating gas service and the responsibilities of customers who change their mind and want to reconnect to the gas system in the future. Since utility-led outreach efforts may not be the favored approach in all jurisdictions, commissions could consider requiring outreach to be conducted instead by local units of government, community-based organizations, or other non-utility groups.

How do you determine the avoided cost of a service line replacement?

The avoided cost of service line replacements is a key data point upon which the participant incentive, any utility incentive, and the net benefits to ratepayers will be calculated. It consists of two primary factors: the average cost of a service line replacement minus the cost to terminate/cap the existing gas service line. Given its importance from a design perspective, commissions may wish to gather a variety of data from utilities to calculate the avoided cost, including: average cost of service line replacements over time and by geographic location (e.g., urban vs. rural), the average cost of service line termination, and any other relevant information.

How should the utility set and deliver the participant incentive?

Once the avoided cost of service line replacement is determined, the next step is deciding how much to allocate to participant incentive. This can be shaped by several factors, including the up-front cost to electrify end uses, the availability of other incentives, and how the avoided costs are shared among ratepayers, and possibly the utility. While there is no single "correct" incentive level, it should not exceed the avoided cost of service line replacement.

How and when participants receive the incentive is another key choice. The simplest approach is for a utility to issue the incentive to the participant once it verifies that the customer intends to or already has completed necessary work to disconnect gas service. To ease the transition, utilities or partner organizations could provide additional support, including connecting the participant with qualified contractors, providing information about complementary incentives, and offering other guidance. Programs should also decide whether the incentive will be paid up front or post-disconnection, and whether it will be paid directly to the participant or through a contractor or implementer.

Should a utility receive an incentive? If not, should it receive another regulatory benefit?

A service line NPA program, by encouraging customers to leave the gas system and removing the utility's opportunity to make a capital investment, runs counter to a gas utility's underlying business incentives. In other instances, such as utility energy efficiency programs, commissions and legislatures have established policy mechanisms to encourage utilities to pursue a program where the utility's interests are misaligned with the public interest. This encouragement has taken several forms, from financial incentives paid by ratepayers and awarded to utilities to regulatory policies such as regulatory asset treatment, revenue decoupling and speedy cost recovery that have helped utilities support these efforts. A service line NPA program could require similar encouragement for successful outcomes, and commissions will have to grapple with the question of whether to provide a benefit to utilities for successful program outcomes, and what form this benefit should take.

Should service line NPAs replace other types of NPAs, such as those that consider alternatives to gas main replacement?

No, a service line NPA program complements other NPA projects that often impact multiple customers and consider alternatives such as electrification, thermal energy networks, or repair/re-lining of the existing gas distribution main. Whereas these NPA projects often target a specific group of customers

with a detailed cost-effectiveness analysis, a service line NPA is designed to reach many customers with less utility analysis required. States can consider both approaches to NPAs in parallel.

What happens if a participant or a new customer at the premises requests restoration of gas service at some point in the future?

Utilities could be required to track participant outcomes, including whether a participant later requests restoration of gas service. In these cases, they could be subject to the same line extension policy as other customers, including payment of the full cost to connect for jurisdictions that have eliminated line extension allowances. Refund of the initial financial incentive could also be considered in order to prevent taking advantage of the system. New customers at a premises with terminated gas service could be subject to the same line extension policy as other new customers, but would not be required to refund any costs associated with the program. While some participants could change their mind, monitoring these cases will help the utility and commission adjust program terms with minimal impact to ratepayers.

In addition to the design considerations and questions, there are several categories of challenges or open questions related to service line NPA programs.

- Program design and implementation: A service line NPA program could require a high and consistent level of customer outreach and coordination from the utility, for a concept that utilities traditionally have little incentive to pursue. It could also take time to find the right amount for the incentive and could take several iterations to refine, depending on the outcomes of the program or other factors such as the cost-of-service line replacement.
- Distribution of benefits: There could be concerns regarding equitable outcomes depending upon the geographic location and customer profiles of outreach efforts and conversions. Although all customers stand to benefit from avoiding costs related to service line replacement, a utility should consider where it will target program outreach efforts to ensure that the program is being offered and delivered to a wide range of its customers.
- Existing regulatory environment: Commission regulatory authority and existing policy frameworks could support this program, including consideration of cost recovery, awarding participant and utility incentives, and answering questions of cost allocation between gas and electric ratepayers. Some states may already have a regulatory framework that could support a service line NPA program while others may wish to consider how this type of program could fit into future discussions of NPA regulatory frameworks.

Utility examples

There are two utilities that are piloting service line NPAs or similar projects related to service line replacement, with more in development.[iii]

Con Edison's Energy Exchange Program

In New York, Con Edison began implementing a service line NPA, the Energy Exchange Program, in late 2024.[3] This program targets the roughly 34,000 pre-1972 service lines that primarily serve residential and small business customers. It awards up to $10,000 in financial incentives for non-space heating

electric appliances and upgrades for customers living in single family homes, with additional incentives for multi-family homes and customers living in disadvantaged communities.[iv] According to Con Edison, the NPA avoids an estimated $28,000 in cost per participant.

The utility began by targeting approximately 1,900 low-use customers who had previously participated in its Clean Heat Program and were in disadvantaged communities. Interested customers can learn more about the process and eligibility on their webpage.[4] The initial phase of program will be capped at 100 participants and, as of May 2025 had 16 participants, four of which have been completed.[5]

Con Edison's Energy Exchange Program is one of the most developed service line NPA programs currently being implemented. It notably establishes a finite list of targeted service lines (the 34,000 pre-1972 lines) and provides both customer support (with pre-approved contractors and a healthy financial incentive) and a plan to roll the program out, including its initial emphasis on locating customers in disadvantaged communities. Con Edison's program also represents a high-touch example of customer outreach conducted by the utility. Not every utility will have the capability to deploy a similar outreach effort.

Example: Con Edison's Energy Exchange Program

In this section, we will show how the Energy Exchange Program works with other utility rebate programs to enhance economics faced by a typical customer. "Janet" is a customer living in Flushing, NY, who receives gas and electric service from Con Edison. Janet lives in a detached, single-family house (approximately 2,000 sq. ft., pre-1980) and has a central, ducted air conditioner and gas-fired appliances for space heating, water heating, and cooking.

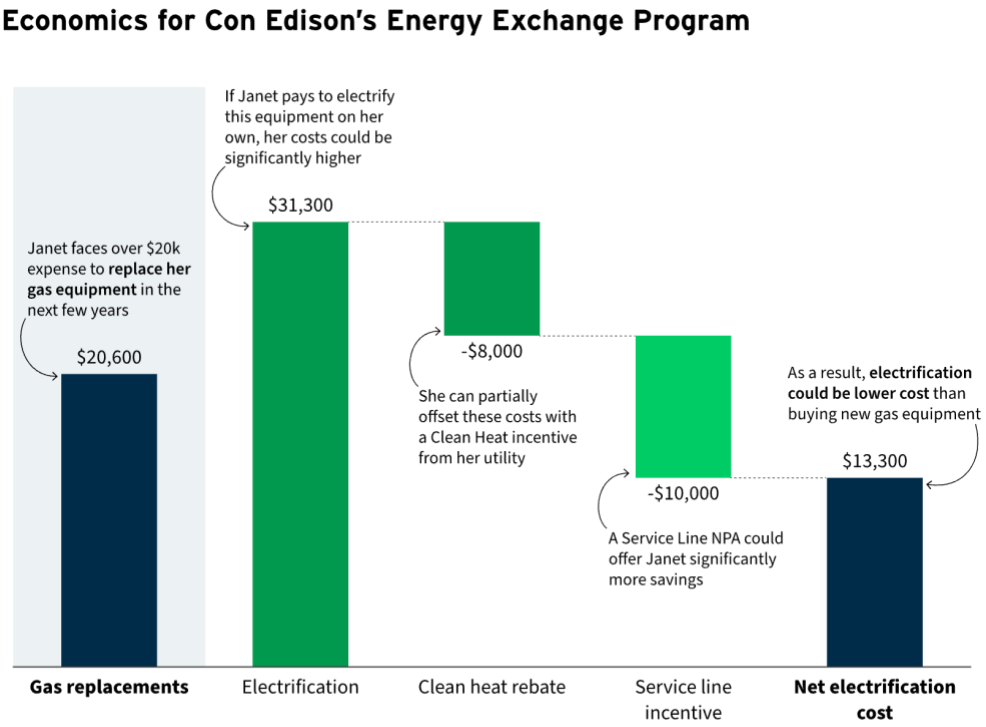
Janet knows that she will need to replace several of her appliances in the next five years, but up-front cost is a barrier. RMI's Green Upgrade Calculator estimates that converting all of the gas appliances to electric appliances at would be $31,300 (including an electric panel upgrade). This is almost $11,000 more than the $20,600 up-front cost to replace the existing gas appliances with new gas appliances. While Janet could utilize existing Con Edison rebates, such as the $8,000 Clean Heat rebate for an air-source heat pump, she decides to hold off on any changes.

Now assume that Con Edison is planning to replace Janet's gas service line in two years as part of a service line replacement effort. Without a service line NPA program, the gas utility would replace Janet's gas service line irrespective of her plans to electrify - in fact, the utility would have no insight into Janet's plan to electrify. Under this scenario, Janet would get a new gas service line at a cost to the utility of $28,000 even though she plans to fully electrify her home within the next five years. If, in the future, Janet electrifies and stops her gas service, the remaining value of her new service line would become a stranded asset and the utility would likely seek cost recovery of the remaining balance from ratepayers.

A service line NPA program could help to change the economics of Janet's electrification plan by reducing her up-front costs and accelerating her decision to electrify her home. With Con Edison's service line NPA rebates of up to $10,000 and together with the Clean Heat rebate of $8,000 for an air-source heat pump, the all-electric conversion up-front cost is now $7,300 cheaper than the all-gas replacement scenario for Janet (see Exhibit 4, below).

While the net up-front cost of $13,300 is still significant, advance notice built into the service line NPA program will help to give Janet time to plan her financial approach. If she decides to participate in the service line NPA, the utility would be able to avoid the $28,000 cost to replace her gas service line, less the costs associated with administering the program, Janet's incentive, and the utility's financial incentive.

Exhibit 4



Note: The upfront costs used in this example are estimated costs from RMI's Green Upgrade Calculator at the time of publication. Actual costs will depend on specific building characteristics and local prices.

Example: Washington Gas Light's Customer Choice Pilot

In Washington, DC, the gas utility Washington Gas Light (WGL) recently proposed a program, the Customer Choice Pilot, that has some elements of a service line NPA, although the proposal is lacking several key features described above. This program was filed in September 2024 as part of WGL's District SAFE Plan. The pilot as proposed would send customers one notice in 2025 for service lines set to be replaced in 2026. There are several ways the proposal could be modified to align with the design principles and considerations for a successful service line NPA described above. Notably, a successful program should consider a participant financial incentive along with consistent outreach over a period of time sufficient to enable the customer to plan to electrify.

There will be variation in utility approaches as more service line NPA programs are proposed and implemented. For utility service territories with high service line replacement costs and a large inventory of planned replacements, such as the example here, there is significant potential to design and deliver a successful service line NPA program offering.

Comparison of utility service line NPA programs and proposals.

Utility Program	Program Name	Advance Notice	Participant Incentive	Utility Support	Outreach
Con Edison (NY)	"Energy Exchange Program"	> 1 year	Up to $20k	20-year cost recovery + ROR; shareholder incentive	Extensive and targeted, w/ contractor connection; focus on disadvantaged communities
Washington Gas Light (DC)	"Customer Choice Pilot"	< 1 year	None		One mailer

The Energy Exchange Program was approved in NY PSC Case No. 22-G-0065; the Customer Choice Pilot was proposed in DC PSC Formal Case No. 1179.

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Next steps

Gas utilities are spending billions to replace service lines each year. A service line NPA program could help to deliver decades of cost savings for all ratepayers while helping participants electrify their homes and businesses. Before pursuing such a program, commissions and other stakeholders - with support from utilities - can review service line inventories and replacement plans to assess the program's potential scope, and refine design options using the questions and principles posed above.

Appendices

Appendix A: Calculation of # Service Lines Replaced/Year

The number of service lines replaced annually was derived by comparing year-over-year changes in the count of total services.

First, the amount of service lines installed in each year of interest (2004-2023) was estimated by taking the difference between the number of service lines in the most recent decade bucket in each year and the number of service lines in the most recent decade bucket for the prior year. This figure represents both service lines going to service new customers as well as service lines replacing old service lines. The amount of service lines installed each year to service new gas customers was estimated by taking the increase in total reported service lines for each year of interest (2004-2023). Last, the number of installations replacing old service lines was estimated by taking the difference between the amount of service lines installed in each year and the amount of service lines going to new customers. Exhibit A1 below summarizes the resulting estimates.

Annual Service Line Replacement Estimates

	Service Line Additions	Service Lines Going to New Customers	Service Line Replacements
2005	1,408,678	1,023,167	385,511
2006	1,459,663	1,145,686	313,977
2007	1,480,427	714,015	766,412
2008	1,297,834	524,729	773,105
2009	1,069,821	198,296	871,525
2010	759,676	338,511	421,165
2011	819,395	550,900	268,495
2012	971,357	213,270	758,087
2013	1,105,829	469,150	636,679
2014	1,443,329	139,061	1,304,268
2015	616,030	628,271	(12,241)
2016	1,128,291	381,195	747,096
2017	1,394,917	538,350	856,567
2018	1,311,231	445,384	865,847
2019	1,329,106	487,058	842,048
2020	1,094,390	596,910	497,480
2021	1,337,308	602,384	734,924
2022	1,387,256	579,249	808,007
2023	1,286,705	600,519	686,186

Source: Pipeline and Hazardous Materials Safety Administration

Noise Filtering and Adjustments for Leak-Prone Service Lines

Aggregating the number of LPPs in each year required some filtering of data and adjustments to anomalies in state-level data, such as sudden spikes or drops likely due to reporting errors. Adjustments included:

- Smoothing outliers by averaging adjacent years.
- Correcting negative year-over-year changes where no plausible removal program existed.
- Aligning totals with PHMSA's national aggregates for consistency.

Appendix B: Estimation of Service Line Replacement Costs

There is no national breakdown of distribution system capital spending among distribution mains, service lines, and other infrastructure, but a sampling of utility-specific service line replacement programs and the prevalence of service lines composed of leak-prone material across the country suggest that service line replacement costs are a significant portion of overall distribution system spending for many gas utilities.

For instance, Con Edison in New York has identified roughly 34,000 of its pre-1972 gas service lines as "leak-prone" and targeted for replacement, out of roughly 378,000 service lines in its gas service territory.[6] Service line replacement costs for Con Edison are estimated to be approximately $28k per line.[7] Pacific Gas & Electric (PG&E) recently forecast a per-service line replacement cost of approximately $39k for over 900 planned replacements at a total forecasted cost of over $35 million in 2027.[8]

The utility cost data above may be higher than the national average given the location and age of the distribution systems for the utilities surveyed. Nevertheless, assuming that 700,000 service lines are replaced per year at a cost of $5,000 to $10,000 per service line, between $3.5 billion and $7 billion dollars per year are dedicated to service line replacement across the United States. This is up to one quarter of the roughly $28 billion of overall reported spending on utility distribution systems.

Exhibit B1

Utility	Cost/Service Line	Docket Reference	Notes
Con Edison (New York)	$34,000	Con Edison 2022 Rate Case, 22-G-0065, Benefit Cost Analysis: Non-Pipes Alternative to Gas Service Replacements (Jul. 2024)	Avoided SI replacement cost of $2.8 million for 100 service lines
Pacific Gas & Electric (California)	$39,000	PG&E General Rate Case, Ex. PG&E-3, Ch. 4 "Service Replacement Program Forecast Calculator"	
Peoples Gas (Illinois)	$5k to $7k	Peoples Gas 2023 Rate Case (ICC Docket no. 23-0068, 69); Co response to AG IR 3.02	Replaced approx. 11k SLs/yr via QIP 2019-22
CenterPoint Energy (Minnesota)	$4,100	CNP 2022 rate case	Copper service line replacement cost data
Public Service Co (Xcel) (Colorado)	$7,300	2025 GIP, 25A -0220G, p.127	Cost derived from cost to replace customer-owned yard line (avg cost + 25%)

Endnotes

[1] PHMSA, Annual Report Mileage for Gas Distribution Systems, https://www.phmsa.dot.gov/data-and-statistics/pipeline/annual-report-mileage-gas-distribution-systems (last updated Jul. 7, 2025).

[2] American Gas Association, Gas Utility Construction Capital Expenditure, accessed May 12, 2025, https://www.aga.org/research-policy/resource-library/gas-utility-construction-capital-expenditure/.

[3] Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Gas Service, N.Y. P.S.C. Matter No. 22-00218, Case No. 22-G-0065, Non-Pipes Alternatives Implementation Plan 12-19 (Nov. 18, 2024).

[4] ConEdison Energy Exchange Program, https://www.coned.com/en/save-money/rebates-incentives-tax-credits/rebates-incentives-tax-credits-for-residential-customers/energy-exchange.

[5] In the Matter of a Review of the Long-Term Gas System Plans of Consolidated Edison Company of New York, Inc. and Orange and Rockland Utilities, Inc., Docket No. 23-G-0147, Annual Updates to Its Long-Term Plan Consolidated Edison Company of New York, Inc. and Orange and Rockland Utilities, Inc., 7 (May 15, 2025).

[6] Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Gas Service.

[7] Con Edison 2022 Rate Case, Benefit Cost Analysis: Non-Pipes Alternative to Gas Service Replacements 7 (Jul. 2024) (citing avoided costs of service line replacements of $2.8 million for 100 customers).

[8] PG&E Rate Case, 2027 General Rate Case, Exhibit PG&E-3, Ch. 4 "Service Replacement Program Forecast Calculator."

Footnotes

[i] More details on the data, calculations, and assumptions can be found in Appendix A.

[ii] Appendix B contains examples of service line replacement costs for different utilities.

[iii] As a result of an August 2025 settlement, National Grid's utility in upstate New York, Niagara Mohawk, agreed to propose a service line NPA in early 2026 (dockets no. 24-E-0322, 24-G-0323).

[iv] According to Con Edison, customers may need to apply for incentives for space heating concurrently via the Clean Heat Program.