



NARUC

National Association of Regulatory Utility Commissioners

Natural Gas Distribution Infrastructure Replacement and Modernization:

A Review of State Programs

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A product of the DOE-NARUC Natural Gas Infrastructure Modernization Partnership
Administered by the National Association of Regulatory Utility Commissioners
Center for Partnerships & Innovation

About the Natural Gas Infrastructure Modernization Partnership

The Natural Gas Infrastructure Modernization Partnership (NGIMP) is a cooperative effort between the U.S. Department of Energy (DOE) and the National Association of Regulatory Utility Commissioners (NARUC). The NGIMP convenes state regulators, federal agencies, and other natural gas stakeholders to learn more about emerging technologies pertaining to critically important issues around enhancing infrastructure and pipeline safety. This focus includes discussing natural gas pipeline leak detection and measurement tools and learning about new technologies and cost-effective practices for enhancing pipeline safety, reliability, efficiency, and deliverability. The NGIMP is chaired by Commissioner Diane X. Burman, of the New York State Public Service Commission, who also chairs the NARUC Committee on Gas.

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Foreword

*The Honorable Diane X. Burman
Chair, DOE-NARUC Natural Gas Infrastructure Modernization Partnership
Chair, NARUC Committee on Gas
Commissioner, New York State Public Service Commission*

As chair of the Natural Gas Infrastructure Modernization Partnership (NGIMP), I am truly pleased to submit this educational handbook. This handbook is another work product of several ongoing NGIMP collaborations that have spanned the life of the partnership between the U.S. Department of Energy (DOE) and National Association of Regulatory Utility Commissioners (NARUC). The NGIMP seeks to bring together public utility commissioners, DOE leaders, and other stakeholders directly involved in

the nation's natural gas infrastructure. The NGIMP has convened technical workshops, organized infrastructure and innovation tours, produced handbooks and reports, and hosted other important gatherings to encourage collaboration and education on emerging technologies and practices in natural gas infrastructure modernization with the goal of further advancing safety and reliability.

Natural gas is an essential fuel for the U.S. economy, providing fuel for heating, electricity, and other services to customers. However, natural gas delivery infrastructure is aging, and technologies that were novel at the time of installation may no longer hold that position. Thus, thoughtful communication among state regulators on what states are doing to promote and facilitate such replacement is appropriate. State public utility commissioners oversee the safety, reliability, and affordability of gas infrastructure, working closely with local gas distribution companies (LDCs) and gas utilities to ensure that customer revenues are disbursed to further the public interest. Commissions and state legislatures have instituted a number of policies and regulations setting forth objectives and methods to remove and replace aging infrastructure. Consequently, the NGIMP decided to produce this informational handbook summarizing state programs currently in use.

This handbook is designed to assist regulators by summarizing the current landscape for natural gas modernization and, in so doing, analyze various state approaches to the prioritization, financing, and execution of natural gas infrastructure upgrades. It covers relevant programs in 41 states and the District of Columbia. In addition to being an educational tool for regulators, it is my hope that this handbook serves as a resource for gas LDCs and gas utilities, pipeline safety regulators, state and local governments, consumer and environmental groups, and other critical stakeholders to understand commissions' roles in assuring the safe, reliable, and affordable operation of natural gas infrastructure. I want to first recognize Andreas Thanos of the Massachusetts Department of Public Utilities and Chair of the NARUC Staff Subcommittee for Gas and Kiera Zitelman of NARUC's Center for Partnerships & Innovation for their leadership in jointly authoring this handbook. I wish to also thank the Chair and Vice Chair of the NARUC Subcommittee on Pipeline Safety: Commissioner Jay Balasbas of the Washington Utilities and Transportation Commission and Commissioner Ethan Kimbrel of the Illinois Commerce Commission, respectively, for reviewing this handbook. This handbook also benefited from the comments of several commission staff: Lisa Gorsuch, Oregon Public Utilities Commission; Eric Lounsberry, Illinois Commerce Commission; Patti Lucarelli, Rhode Island Public Utilities Commission; Kevin Speicher, New York Public Service Commission; and Jim Zolnieriek, Illinois Commerce Commission. Danielle Sass Byrnett and Regina Davis at NARUC and Jeff Loiter at the National Regulatory Research Institute assisted in reviewing and publishing this handbook. As regulators, utilities, and other stakeholders continue to work together in deciding how to properly, appropriately and responsibly upgrade existing infrastructure, NARUC and the NGIMP will continue to foster communication among states as to best regulatory practices and replicable methods. It is my hope that state commissioners and other interested readers will find this handbook both educational and useful.

Sincerely yours in dedicated public service,
Diane X. Burman, Esq.

Contents

Glossary5

Executive Summary6

Background7

 State Regulatory Context.7

 National Replacement Status8

 State Approaches.10

Regional Summaries11

 West11

 Southwest14

 Midwest15

 Northeast19

 Southeast24

Discussion31

Conclusion31

Appendix 1 – Bare Steel & Cast Iron Main Miles and Service Count by State and Utility Ownership.32

Appendix 2 – Additional Useful References35

Glossary

Local distribution company (LDC) refers to a utility responsible for the procurement, distribution, and retail sale of natural gas to residential, commercial, and industrial customers. LDCs may be owned by shareholders (“investor-owned”) or by a municipal or county government.

Lost and unaccounted for gas (LAUF) is primarily an accounting concept for gas distribution. State and federal agencies have varying definitions for LAUF¹. In general, LAUF is the difference between the total amount of gas purchased by an LDC and the amount delivered to customers. In many instances, volumes reported in LAUF include not only emissions or gas lost to leaks but also company use, theft, and meter errors.

Lost gas is a subset of LAUF that includes all natural gas that escapes from the distribution system.

Methane emissions is a subset of lost gas that includes the methane portion of natural gas that actually reaches the atmosphere. Not all LAUF or even lost gas results in methane emissions because not all gas escaping the distribution system reaches the atmosphere.

Mains are natural gas distribution pipelines that serve as a common source of supply for more than one service line.

Service lines are the pipelines that transport gas to a customer’s meter or piping.

Rate continuity, a basic rate-making principle, is intended to ensure that any rate structure changes should be made in a predictable and gradual manner that allows ratepayers reasonable time to adjust their consumption patterns. Rate structure changes should not result in rate shock.

¹ See Table 1-1: Definitions of Lost and Unaccounted For Gas. ICF International. “Lost and Unaccounted for Gas.” Prepared for Massachusetts Department of Utilities. December 23, 2014. <https://www.mass.gov/files/documents/2016/08/vt/icf-lauf-report.pdf>.

Executive Summary

Utility commissions across the country have reviewed and continue to review infrastructure modernization programs to replace aging natural gas delivery infrastructure. In certain states, the programs are a result of regulatory filings, whereas in others, modernization and replacement policies were developed pursuant to legislative action. The goal of each of these programs is the same: to ensure that the infrastructure upgrades and/or replacements necessary for the safe, efficient and reliable delivery of natural gas are completed. Utility accounting does not always allow cost recovery for projects that do not generate revenue. A gas distribution company can only earn a return on investment on infrastructure projects that can be seen as “used and useful.” An investment in upgrades, although useful, does not create infrastructure that is used. Therefore, absent a special regulatory or legislative mandate, the cost of necessary upgrades would be borne solely by the utility.

There is no definitive best regulatory approach to addressing infrastructure replacement and modernization. In considering local distribution company (LDC) proposals to improve and replace infrastructure, commissions take into consideration the age of the infrastructure, factors affecting the ability of the LDCs to recover associated costs (e.g., changes to customer rates or bills in the broader context of socio-economic conditions), reliability, safety, environmental benefits, and the interests of the consumers themselves, including for rate continuity.

This handbook addresses the current landscape for natural gas infrastructure modernization state programs at LDCs. The primary goal of this handbook is to aid in communication among state regulators on what states are doing to promote and facilitate such replacement. State regulators can play a significant role in supporting and encouraging appropriate and responsible infrastructure modernization efforts. Ultimately, each jurisdiction needs to develop an approach that meets its specific regulatory obligations and ensures the safety of natural gas customers and the integrity of the system.

Background

In 2013, the National Association of Regulatory Utility Commissioners (NARUC) demonstrated leadership by prioritizing the issue of accelerated pipeline replacement. NARUC adopted a resolution entitled: “Resolution Encouraging Natural Gas Line Investment and the Expedited Replacement of High-Risk Distribution Mains and Service Lines”² calling on state public utility commissions (commissions) to consider sensible programs aimed at replacing the most vulnerable pipelines as quickly as possible along with the adoption of rate recovery mechanisms that reflect the financial realities of the particular LDC³ in question. The 2013 resolution further resolved that commissions should explore, examine, and consider adopting alternative rate recovery mechanisms as necessary to accelerate the modernization, replacement, and expansion of the nation’s natural gas pipeline systems. The common method of modernizing natural gas infrastructure is generally through risk-based integrity management programs centered on ensuring safety and reliability at just and reasonable rates for consumers. Many policymakers and stakeholders have been interested in accelerating the ongoing efforts to replace aging infrastructure while also embracing new technologies and mechanisms to ensure that the modernization efforts are done to provide even greater capacity to reliably serve more customers.

Safety is one of the most important drivers for LDC pipeline and infrastructure replacement programs. Methane emissions reduction has also become a secondary driver for many stakeholders. The September 2018 gas pipeline explosions in Massachusetts helped to underscore the continued pressing need for LDCs, state energy regulators, federal regulators, and other stakeholders to work together to improve the safety and efficiency of the gas distribution network.

The Pipeline Hazardous Materials Safety Administration (PHMSA) recently highlighted the importance of the continued collaboration between regulators and stakeholders on developing proper policies that include mechanisms that give LDCs the financial capability to replace aging infrastructure. In fact, PHMSA issued its final rule, “Pipeline Safety: Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements, and Other Related Amendments,” on September 16, 2019. The final rule, also referred to as the “gas mega rule,” addresses congressional mandates, National Transportation Safety Board recommendations, and comments raised through public input. The amendments in the “gas mega rule” are the product of a collaborative process between PHMSA and, among others, the Gas Pipeline Advisory Committee (GPAC).⁴ The amendments address integrity management requirements and other requirements that focus on:

- (a) The actions an operator must take to reconfirm the maximum allowable operating pressure of previously untested natural gas transmission pipelines and pipelines lacking certain material or operational records;
- (b) The periodic assessment of pipelines in populated areas not designated as “high consequence areas;”
- (c) The reporting of exceedances of maximum allowable operating pressure;
- (d) The consideration of seismicity as a risk factor in integrity management;
- (e) Safety features on in-line inspection launchers and receivers;
- (f) A 6-month grace period for 7-calendar-year integrity management reassessment intervals; and
- (g) Related recordkeeping provisions.⁵

2 National Association of Regulatory Utility Commissioners. “Resolution Encouraging Natural Gas Line Investment and the Expedited Replacement of High-Risk Distribution Mains and Service Lines.” July 24, 2013.
<https://pubs.naruc.org/pub.cfm?id=53A08441-2354-D714-5173-84C451721EC4>.

3 See glossary.

4 GPAC comprises individuals representing state regulatory agencies, industry and public groups. All GPAC members are appointed by the U.S. Secretary of Transportation:
<https://www.phmsa.dot.gov/standards-rulemaking/pipeline/gas-pipeline-advisory-committee-gpac-committee-roster-and-biographies>.

5 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. 49 CFR Parts 191 and 192: Docket No. PHMSA-2011-0023; Amdt. Nos. 191-26; 192-125. RIN 2137-AE72. “Pipeline Safety: Safety of Gas Transmission Pipelines: MAOP Reconfirmation, Expansion of Assessment Requirements, and Other Related Amendments. Final Rule.” October 1, 2019.
<https://federalregister.gov/d/2019-20306>.

State Regulatory Context

One of the basic elements of traditional utility ratemaking is the requirement that a cost-benefit analysis be conducted to determine whether proposed investments are worthy of inclusion in rate base (i.e., whether the cost can be socialized among customers). As with most elements of a rate proceeding, a level of uncertainty is associated with a review of a cost-benefit analysis. This uncertainty with regard to cost recovery may cause an LDC to be very conservative in its infrastructure replacement efforts. Rate continuity,⁶ environmental or land-owner objections to expanding natural gas infrastructure, and the lack of readily available, skilled and properly licensed labor present additional barriers to infrastructure replacement efforts. To make matters worse, because of the costs associated with excavating, replacing, and resurfacing, most utilities would rather seek to expand the system to accommodate future load growth than commit their limited resources to upgrade infrastructure that will not increase throughput,⁷ and therefore will not increase their revenue.

For an LDC to receive compensation for the investment (i.e., for the investment to become part of rate base and earn a commission-authorized rate of return for the LDC), traditional ratemaking requires that the LDC demonstrate that the investment was incurred prudently and the resulting plant is “used and useful” in providing service to ratepayers. While upgrades to existing infrastructure are “useful,” these investments do not create infrastructure that is used, making them unlikely to be allowed by the regulator as part of rate base. The difficulty here is twofold. First, there is no universally accepted economic mechanism to determine the prudence of replacing an aging, possibly leaking main or distribution line. Second, increasing the size of the existing main to accommodate future load growth will cause the regulatory agency to disallow all or part of the investment, so as not to increase costs for existing customers. As described below, although the specific details vary among jurisdictions and even among LDCs in a given jurisdiction, the resulting outcome is the same—a carefully crafted mechanism that recognizes the need for infrastructure replacement or safety upgrades.

According to publicly available information, LDCs have sought some sort of rate relief for the task of replacing aging infrastructure since 1988.⁸ Since then, 41 states and the District of Columbia have developed rate mechanisms to encourage the replacement of older or problematic pipes within their distribution systems.

National Replacement Status

Between 1990 and the writing of this handbook, the use of plastic pipelines has increased by 214 percent, whereas cast iron pipes and unprotected steel pipes have decreased by 58 percent and 50 percent, respectively.⁹ The number of miles and services of unprotected bare steel and cast iron pipes has been decreasing steadily over the years. PHMSA reports that as of 2017, 20 states¹⁰ and Puerto Rico have eliminated cast and wrought iron gas distribution pipes.¹¹ PHMSA data from 2018 indicates that there were 22,868 miles of cast iron mains and 44,093 miles of bare steel mains out of a total of 1,306,781 miles of mains; and 6,985 miles of cast iron service lines¹² and 1,859,473 miles of bare steel service lines^{13, 14} out of a total of 69,351,181 miles of service lines. These numbers translate to 5.1 percent of total mains and 2.7 percent of total service lines being cast iron or bare steel (**Figure 1** and **Figure 2**). Factoring in ownership of cast iron and bare steel main miles

6 See glossary.

7 See glossary.

8 American Gas Association. “State Infrastructure Replacement Activity.” May 22, 2014. https://www.energy.gov/sites/prod/files/2015/03/f21/AGA%20Compendium%20StateReplacementActivity_May_2014.pdf.

9 American Gas Association. “Natural Gas: Safety, Resilience, Innovation: 2019 Playbook.” http://playbook.aga.org/?utm_source=google&utm_medium=banner&utm_campaign=2019_AGAPlaybook&utm_term=playbook#p=28.

10 Alaska, Arizona, Colorado, Hawaii, Iowa, Idaho, Montana, New Mexico, North Carolina, North Dakota, Nevada, Oklahoma, South Carolina, South Dakota, Utah, Vermont, Washington, Wisconsin, Wyoming, and Puerto Rico.

11 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. “Cast and Wrought Iron Inventory.” September 20, 2019. https://opsweb.phmsa.dot.gov/pipeline_replacement/cast_iron_inventory.asp.

12 See glossary.

13 American Gas Association. “Natural Gas: Safety, Resilience, Innovation: 2019 Playbook.” http://playbook.aga.org/?utm_source=google&utm_medium=banner&utm_campaign=2019_AGAPlaybook&utm_term=playbook#p=28.

14 Tables listing miles of bare steel and cast iron pipes by state and utility ownership (investor-owned versus municipal) are provided at the end of the handbook in Appendix 1.

Figure 1: Bare Steel Main Miles (left) and Service Count (right), 2005 – 2018

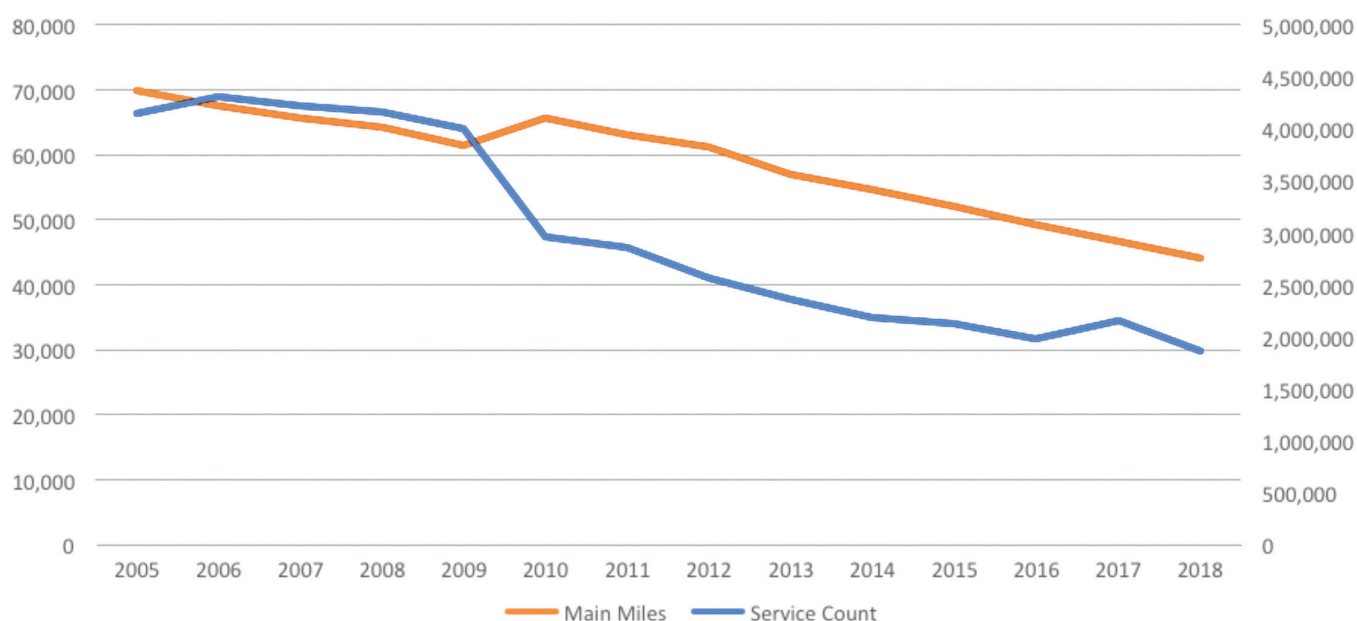
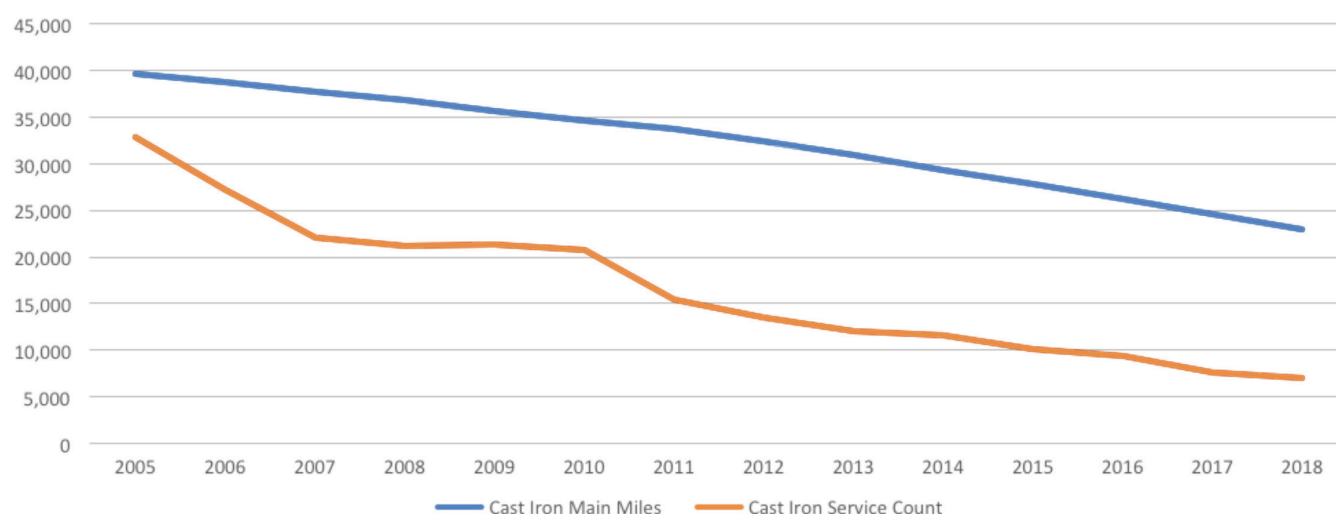


Figure 2: Cast Iron Main Miles and Service Count, 2005 – 2018



and service counts between investor-owned and municipal utilities during the 2005 – 2018 period in which PHMSA data is available, investor-owned utilities accounted for between 87 and 88 percent of cast iron main miles and 71 to 91 percent of cast iron service count; investor-owned utilities accounted for between 51 and 65 percent of bare steel main miles and between 90 and 94 percent of bare steel service count. See **Appendix 1** for data on cast iron and bare steel main miles and service counts by utility ownership.

Currently, no universal mechanism exists to properly evaluate the effectiveness of these programs, though multiple organizations in the public and private sectors are attempting to develop trackable metrics for quantifying methane leaks resulting from aging infrastructure.¹⁵ The Massachusetts DPU has considered the use of

15 U.S. Department of Energy. "DOE Announces \$13 Million to Quantify and Mitigate Methane Emissions from Natural Gas Infrastructure." September 8, 2016. <https://www.energy.gov/articles/doe-announces-13-million-quantify-and-mitigate-methane-emissions-natural-gas-infrastructure>.

one metric, lost and unaccounted for (LAUF) gas,¹⁶ as a method of screening which pipes are highest priority for replacement. Nationally, LAUF data reported to PHMSA and the Energy Information Administration (EIA) are used to evaluate the overall efficiency and infrastructure investment needs of gas distribution systems.¹⁷ There are several components comprising LAUF including, but not limited to, billing cycle adjustments, meter error, meter tampering, theft, and, to a lesser extent, methane releases associated with construction and pipe replacement, venting, and purging.¹⁸ LAUF, although a useful metric, cannot be relied upon to accurately measure the reductions in methane emitted into the atmosphere, and thus is an imperfect metric for the effectiveness of infrastructure replacement programs.

State Approaches

This handbook summarizes the approaches that 41 states and the District of Columbia have taken to encourage LDCs to replace cast iron and bare steel pipe, and does not attempt to highlight one model mechanism. The most effective approach for providing incentives depends on many factors, including but not limited to: legislative activity, age of infrastructure, cost of replacement, and the actual miles of pipe that need to be replaced. The handbook, therefore, provides summaries, which are grouped by geographic region. Readers should note that the handbook is unable to provide summaries for each state in uniform quality or quantity due to differences in readily available, publicly accessible data on infrastructure replacement. Future research in this area may involve interviews with individual state commissions to form a more complete assessment of each state's existing policies and programs.

Information about replacement activities is presented by geographic region: West, Southwest, Midwest, Northeast, and Southeast.¹⁹

16 See glossary.

17 ICF International. "Lost and Unaccounted for Gas." Prepared for Massachusetts Department of Utilities. December 23, 2014. <https://www.mass.gov/files/documents/2016/08/vt/icf-lauf-report.pdf>.

18 National Association of Regulatory Utility Commissioners. "Sampling of Methane Emissions Detection Technologies and Practices and Natural Gas Distribution Infrastructure: An Educational Handbook for State Regulators." July 2019. <https://pubs.naruc.org/pub/0CA39FB4-A38C-C3BF-5B0A-FCD60A7B3098>.

19 The states in each region are:
West: Alaska, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming
Southwest: Arizona, New Mexico, Oklahoma, Texas
Midwest: Iowa, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
Southeast: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia

Regional Summaries

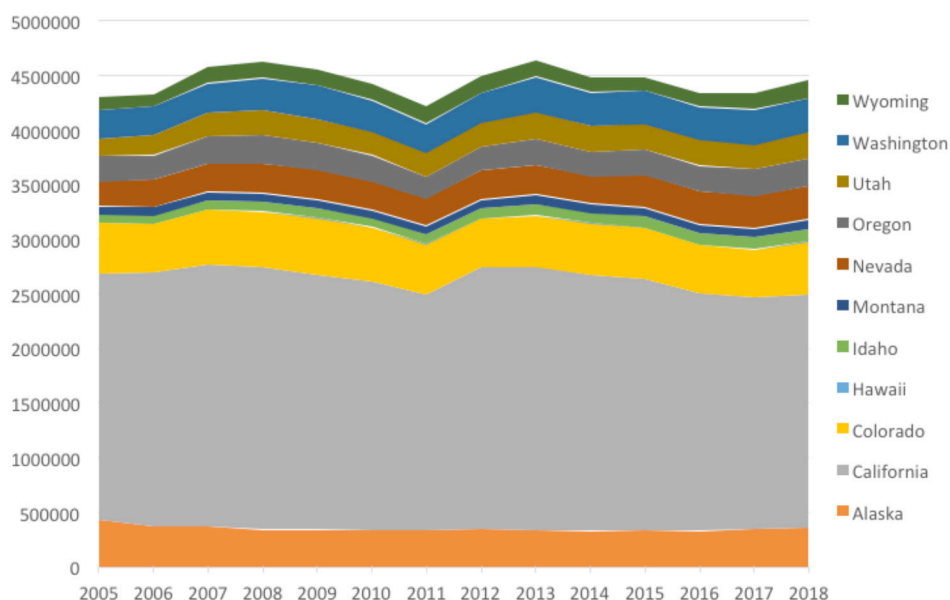
When looking at the various state or regional activities associated with infrastructure replacement and modernization, it is useful to compare the regions in regards to the miles of old infrastructure still in operation (**Figure 3**).²⁰ The Northeast ranks higher in all four areas: bare steel main miles, bare steel services, cast iron main miles, and cast iron service count, while the West is generally lowest.

Region	Bare Steel Main Miles	Bare Steel Service Count	Cast Iron Main Miles	Cast Iron Service Count
West	3,517	27,508	58	26
Southwest	6,665	307,936	466	0
Midwest	13,336	269,392	4,868	106
Northeast	13,787	86,0167	14,581	5,475
Southeast	6,788	394,470	2,896	1,378

West

According to the EIA, aggregate natural gas consumption data for the Western region is driven primarily by consumption in the state of California. **Figure 4** shows that consumption across the region fluctuated between 2005 and 2018. See **Appendix 1** for state-specific data.

Figure 4: Natural Gas Consumption, West Region, 2005 – 2018²¹



20 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. "Gas Distribution Cast/Wrought Iron Pipelines." September 20, 2019. <https://portal.phmsa.dot.gov/>.

21 U.S. Energy Information Administration. "Natural Gas Consumption by End Use." December 31, 2019. https://www.eia.gov/dnav/ng/ng_cons_sum_a_epg0_vc0_mmcfa.htm.

PHMSA reports that of the 11 states in the region, nine still have bare steel and one has cast iron mains (**Figure 5**). Nevada and Utah do not have any remaining bare steel or cast iron.

Figure 5: Bare Steel and Cast Iron Main Miles and Service Count, West				
State	Bare Steel		Cast Iron	
	Main Miles	Service Count	Main Miles	Service Count
Alaska	8	0	0	0
California	3,284	2,045	58	26
Colorado	119	18,752	0	0
Hawaii	94	6,416	0	0
Idaho	1	0	0	0
Montana	2	9	0	0
Oregon	2	68	0	0
Washington	1	51	0	0
Wyoming	5	167	0	0

Activity

Between 2010 and 2013, the **California** Public Utilities Commission (CPUC) reviewed and made determinations on proposals by San Diego Gas & Electric, Southern California Gas,²² and Southwest Gas to collect costs associated with infrastructure replacement and reliability. In essence, although the specifics of each application by the LDCs were different, the CPUC authorized, subject to modifications, the LDCs to develop a mechanism to collect varying levels of revenue associated with the LDCs' infrastructure monitoring and replacement programs.²³

In September 2011, the **Colorado** Public Utilities Commission approved Public Service Company's Pipeline System Integrity Adjustment (PSIA), designed to collect the costs of the company's Pipeline System Integrity Projects.²⁴ Atmos Energy submitted an unopposed settlement in September 2015, to separately recover system safety integrity costs through the System Safety Integrity Rider.²⁵ The settlement identified the integrity projects and type of pipeline that were eligible for collection through the SSIR. The rider was intended to allow the company to recover capital investments associated with integrity projects. Xcel Energy and SourceGas received approvals for similar proposals.

22 California Public Utilities Commission. "Decision 14-06-007: In the Matter of the Application of San Diego Gas & Electric Company (U902G) and Southern California Gas Company (U904G) for Authority to Revise Their Rates Effective January 1, 2013, in Their Triennial Cost Allocation Proceeding." June 12, 2014. https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Natural_Gas_Pipeline/Plans_and_Reports/D1406007.pdf.

23 California Public Utilities Commission. "Public Utilities Code Section 748 Report to the Governor and Legislature on Actions to Limit Utility Cost and Rate Increases." May 2012. <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6060>. California Public Utilities Commission. "Public Utilities Code Section 913.1 Annual Report to the Governor and Legislature: Actions to Limit Utility Costs and Rates." May 2018. https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/Office_of_Governmental_Affairs/Legislation/2018/SB%20695%20Report%202018%20FINAL.pdf.

24 Public Utilities Commission of Colorado. "Docket No. 11AL-734G, Tariff No. 6 – Gas." September 7, 2011. http://www.dora.state.co.us/pls/efi/efi_p2_v2_demo.show_document?p_dms_document_id=129363&p_session_id=.

25 Public Utilities Commission of Colorado. "Docket No. 15AL-0299G: In the Matter of Advice Letter No. 518, File by Atmos Energy Corporation to Place in Effect Tariff Sheet Changes to Be Effective on June 1, 2015; Stipulation and Settlement Agreement between Atmos Energy Corporation, Trial Staff of the Colorado Public Utilities Commission, the Colorado Office of Consumer Counsel, and Energy Outreach Colorado." September 24, 2015.

The **Nevada** Public Utilities Commission issued regulations²⁶ that established a process for the recovery of eligible costs associated with the accelerated replacement of natural gas pipelines to address safety and reliability concerns.

After having approved a couple of individual LDC proposals for the recovery costs associated with pipe replacement, the **Oregon** Public Utilities Commission (PUC) opened an investigation entitled Recovery of Safety Costs by Natural Gas Utilities. The PUC issued a decision on March 6, 2017.²⁷ The decision established guidelines to enable the LDCs to collect costs associated with infrastructure improvement projects between rate proceedings, as well as a requirement that the LDCs file annual safety project plans for PUC staff and stakeholder review. In essence, the Oregon regulation allows for the recovery of costs associated with discrete, identified, safety-related capital investments. Further, the regulations establish a PUC-imposed and/or adjusted cost recovery cap. NW Natural, the largest LDC of the three serving Oregon, has one of the most modern distribution systems in the country with no identified cast iron pipe or bare steel main. The final known bare steel was removed from the system in 2015 and cast iron pipe removal was completed in 2000. Since the 1980s, NW Natural has taken a proactive approach to replacement programs and partnered with the PUC and Washington Utilities and Transportation Commission on progressive regulation to further safety and reliability efforts for the distribution system.

In 2010 the state of **Utah** first dealt with the recovery of costs associated with the replacement of high pressure natural gas feeder lines by approving an Infrastructure Replacement Adjustment for Questar Gas. The Utah authorization was further expanded by a Public Service Commission order issued in 2014.²⁸

The **Washington** Utilities and Transportation Commission, having recognized that it is in the public interest for all gas companies to take a proactive approach to replacing pipe that presents an elevated risk of failure,²⁹ established a policy that allows the state's LDCs to recover infrastructure replacement costs annually, consistent with a 20-year master pipeline replacement plan (updated every two years) outside of general rate proceedings.

The **Wyoming** Public Service Commission approved a settlement³⁰ in the application of Black Hills Energy, a division of Cheyenne Light, Fuel and Power Company, for "Authority to Place into Effect a Pipeline Safety and Integrity Mechanism." The approved settlement allows the LDC to recover revenue requirements associated with pipeline infrastructure investments as long as these investments are made for projects approved by the commission.

26 Public Utilities Commission of Nevada. "Docket No. 12-11010, Order: Investigation and Rulemaking to Address a Recovery Mechanism for the Accelerated Replacement of Gas Infrastructure." January 8, 2014. http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2010_THRU_PRESENT/2012-11/33626.pdf.

27 Public Utility Commission of Oregon. "Order No. 17-084: Investigation into Recovery of Safety Costs by Natural Gas Utilities." March 6, 2017. <https://apps.puc.state.or.us/orders/2017ords/17-084.pdf>.

28 Public Service Commission of Utah. "Docket NO. 13-057-05 Report and Order: In the Matter of the Application of Questar Gas Company to Increase Distribution Rates and Charges and Make Tariff Modifications." February 21, 2014. <https://pscdocs.utah.gov/gas/13docs/1305705/2510161305705rao.pdf>.

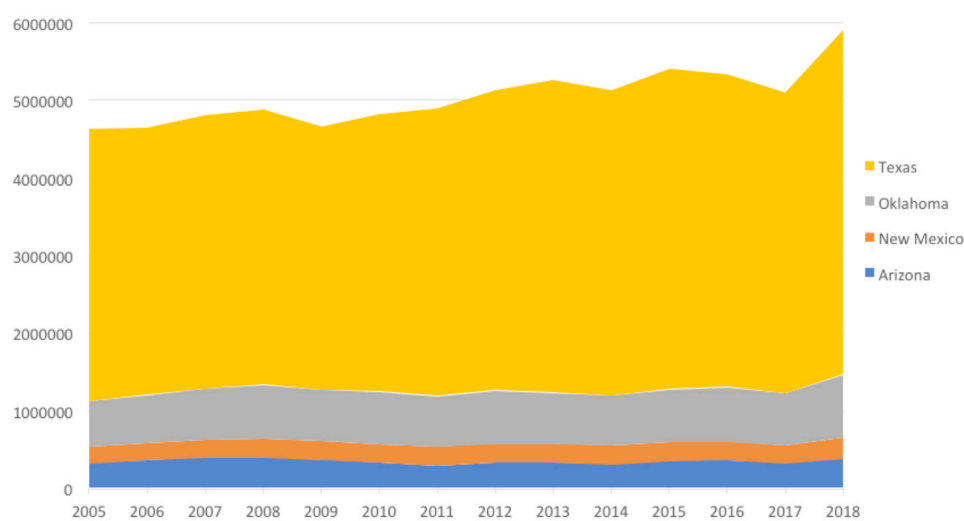
29 Washington Utilities and Transportation Commission. "Docket No. UG-120715: Commission Investigation into the Need to Enhance the Safety of Natural Gas Distribution Systems." May 17, 2012. <https://www.utc.wa.gov/docs/Pages/DocketLookup.aspx?FilingID=120715>.

30 Wyoming Public Service Commission. "Docket No. 30003-66-GA-15, Order No. 23533: In the Matter of the Application of Black Hills Energy, a Division of Cheyenne Light, Fuel and Power Company, for Authority to Place into Effect a Pipeline Safety and Integrity Mechanism." <https://dms.wyo.gov/SearchDocket.aspx>.

Southwest

As shown in **Figure 6**, natural gas consumption in the Southwest has increased in the past decade. The major natural gas consumer in the region is Texas. Slight changes in consumption in Texas affect the total for the region. For more details by state, refer to **Appendix 1**.

Figure 6: Natural Gas Consumption, Southwest Region, 2005 – 2018³¹



According to PHMSA, all four states in the region have bare steel mains, while only Texas has cast iron mains. Texas has the highest number of bare steel main miles and bare steel service count (**Figure 7**).

Figure 7: Bare Steel and Cast Iron Main Miles and Service Count, Southwest

State	Bare Steel		Cast Iron	
	Main Miles	Service Count	Main Miles	Service Count
Arizona	465	6,958	0	0
New Mexico	71	9,883	0	0
Oklahoma	1,190	57,023	0	0
Texas	4,939	234,072	466	0

Activity

Beginning in 2012 the **Arizona** Corporation Commission (ACC) approved two programs proposed by Southwest Gas intended to allow the company to recover costs associated with its proposed Customer Owner Yard Line, a program to survey and replace customer yard lines, as well as the company’s Vintage Steel Pipe replacement program.³² Essentially, the ACC’s approval capped per-therm recovery and allowed Southwest Gas to recover costs associated with leak surveying and vintage steel pipe replacement.

31 U.S. Energy Information Administration. “Natural Gas Consumption by End Use.” December 31, 2019. https://www.eia.gov/dnav/ng/ng_cons_sum_a_epg0_vc0_mmc_f_a.htm.

32 Arizona Corporation Commission. “Docket No. G-01551A-10-0458: In the Matter of the Application of Southwest Gas Corporation for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of Its Properties throughout Arizona.” January 6, 2012. <https://docket.images.azcc.gov/0000133931.pdf>.

Arizona Corporation Commission. “Docket No. G-01551A-10-0458: In the Matter of the Application of Southwest Gas Corporation for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of the Properties of Southwest Gas Corporation Devoted to Its Arizona Operations.” April 11, 2017. <https://docket.images.azcc.gov/0000178902.pdf>.

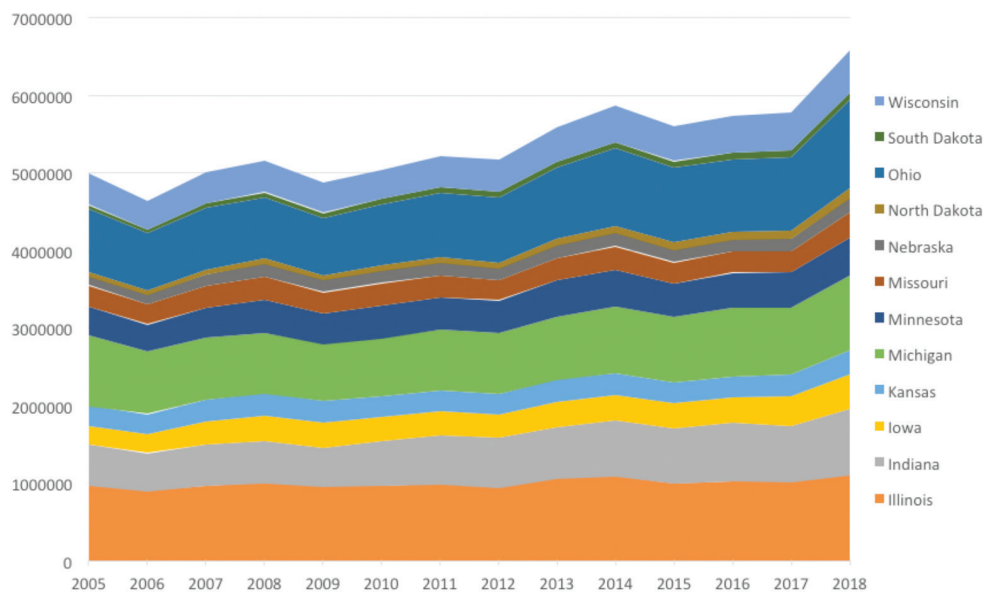
In Oklahoma, CenterPoint relies on an annual rate stabilization mechanism (PBRC) to change its rates annually to reflect higher capital investments, including system maintenance/rehabilitation and public improvements.³³

On May 24, 2003, the **Texas** Legislature passed Bill SB 1271, “An act relating to incentives to encourage gas utilities to invest in new infrastructure.”³⁴ The bill, which was signed by then-Governor Rick Perry on June 20, 2003, and became effective on September 1, 2003, established the Texas Gas Reliability Infrastructure Program (GRIP).³⁵ The Texas statute allows an LDC to make an interim adjustment to recover costs associated with additional invested capital without filing a full rate case.³⁶ Further, when the Texas Railroad Commission adopted a comprehensive pipeline safety rule that required all state LDCs to survey their pipeline distribution systems for the greatest potential threats for failure and make replacements,³⁷ it allowed the recovery of costs of such programs via a deferral mechanism.³⁸

Midwest

As seen in **Figure 8**, the Midwest has experienced a steady increase in consumption over the past decade. Illinois, Ohio, Michigan, and Indiana are the largest consumers of natural gas in the region. For more details, refer to **Appendix 1**.

Figure 8: Natural Gas Consumption, Midwest Region, 2005 – 2018³⁹



33 Corporation Commission of Oklahoma. “Cause No. PUD 201700078: In the Matter of the Application of CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Oklahoma Gas, for Approval of Its Performance Based Rate Change Plan Calculations for the Twelve Months Ended December 31, 2016.” August 4, 2017. <https://www.occeweb.com/ap/ReptRecomm/IHREPT/2017/17pud78.pdf>.

34 Legislature of the State of Texas. “S.B. No. 1271: An Act Relating to Incentives to Encourage Gas Utilities to Invest in New Infrastructure.” May 16, 2003. <https://capitol.texas.gov/tlodocs/78R/billtext/pdf/SB01271F.pdf#navpanes=0>.

35 For a brief explanation of Texas’s GRIP, see: CenterPoint Energy. “Houston Division GRIP Filing FAQs.” <https://www.centerpointenergy.com/en-us/Documents/GripFilings/2018HoustonGripFiling/FAQs-Houston-GRIP-Filing.pdf>.

36 State of Texas. “Utilities Code Title 3. Gas Regulation; Subtitle A. Gas Utility Regulatory Act; Chapter 104. Rates and Services; Subchapter A. General Provisions.” <https://statutes.capitol.texas.gov/Docs/UT/htm/UT.104.htm>.

37 Texas Administrative Code. “Title 16: Economic Regulation, Part 1: Railroad Commission of Texas, Chapter 8: Pipeline Safety Regulations.” [https://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=8](https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=8).

38 Texas Administrative Code. “Title 16: Economic Regulation, Part 1: Railroad Commission of Texas, Chapter 8: Pipeline Safety Regulations, Subchapter C: Requirements for Natural Gas Pipelines Only, Rule §8.209: Distribution Facilities Replacements.” [https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=8&rl=209](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=8&rl=209).

39 U.S. Energy Information Administration. “Natural Gas Consumption by End Use.” December 31, 2019. https://www.eia.gov/dnav/ng/ng_cons_sum_a_epg0_vc0_mmcf_a.htm.

According to PHMSA, all 12 states in the region have bare steel; Ohio, Kansas, and Michigan have the largest number of bare steel miles and services (**Figure 9**). Seven states—Illinois, Indiana, Kansas, Michigan, Missouri, Nebraska, and Ohio—also have cast iron mains.

Figure 9: Bare Steel and Cast Iron Main Miles and Service Count, Midwest

State	Bare Steel		Cast Iron	
	Main Miles	Service Count	Main Miles	Service Count
Iowa	141	6,548	0	0
Illinois	199	17,009	1,152	56
Indiana	496	20,334	125	22
Kansas	3,237	72,339	6	0
Michigan	1,066	30,286	2,389	11
Minnesota	218	842	0	0
Missouri	883	10,363	718	0
North Dakota	9	71	0	0
Nebraska	494	6,198	281	4
Ohio	6,565	103,655	197	13
South Dakota	27	1,745	0	0
Wisconsin	1	2	0	0

Activity

On September 7, 2011, the **Iowa** Utilities Board adopted a rule allowing the state's natural gas utilities to implement automatic adjustment mechanisms for recovery of a limited number of capital infrastructure investments outside of a general rate case, including those that will result by new government mandates or by complying with state or federal pipeline safety mandates.^{40, 41}

On July 5, 2013, the **Illinois** General Assembly passed SB 2266. The legislation allows gas LDCs to recover, through a rider, costs associated with incremental investments in infrastructure upgrades.⁴² On January 7, 2014, the Illinois Commerce Commission (ICC) approved Peoples Gas Light and Coke Company's (Peoples Gas) proposal to develop a Qualifying Infrastructure Plant (QIP) Surcharge intended to recover a return on, and Depreciation Expense related to, Peoples Gas' investment in QIP. The ICC approved similar proposals for both Northern Illinois Gas Company⁴³ and Ameren Illinois Company⁴⁴ on July 30, 2014, and January 6, 2015, respectively.

40 Iowa Utilities Board. "Docket No. RMU-2011-0002: Recommending Adoption of Proposed Rule Establishing an Automatic Adjustment Mechanism for Natural Gas Utilities, with Certain Revisions." September 2, 2011. <https://efs.iowa.gov/cs/groups/external/documents/docket/mdaw/mtiw/~edisp/080284.pdf>.

41 Iowa Code. "Chapter 19: Service Supplied by Gas Utilities." September 17, 2014. <https://www.legis.iowa.gov/docs/iac/chapter/04-01-2015.199.19.pdf>.

42 Illinois General Assembly. "SB2266: An Act Concerning Regulations." <http://www.ilga.gov/legislation/fulltext.asp?DocName=&SessionId=85&GA=98&DocType=SB&DocNum=2266&GAID=12&LegID=73858&SpecSess=&Session=>.

43 Illinois Commerce Commission. "Docket No. 14-0292, Order: Application for Approval of a Tariff Pursuant to Section 9-220.3 of the Public Utilities Act." July 30, 2014. <https://www.icc.illinois.gov/docket/files.aspx?no=14-0292&docId=217091>.

44 Illinois Commerce Commission. "Docket No. 14-0573, Order: Petition for Approval of the Rider QIP – Qualifying Infrastructure Plant Pursuant to Section 9-220.3 of the Public Utilities Act." January 6, 2015. <https://www.icc.illinois.gov/docket/files.aspx?no=14-0573&docId=223442>.

The **Indiana** state legislature passed SB 560⁴⁵ allowing gas LDCs to recover a Transmission Distribution System Improvement Charge (TDSIC). The legislation was enacted as public law 133-2013 on April 30, 2013.⁴⁶ Pursuant to this statute, several Indiana gas LDCs filed for and/or received approval to develop a tracking mechanism.

Kansas Senate Bill 414, “An Act concerning public utilities; relating to natural gas; enacting the gas safety and reliability policy act,” was approved on April 12, 2006.⁴⁷ Under the law, the Kansas Corporation Commission (KCC) can approve a Gas System Reliability Surcharge (GSRS) so long as the charge is within the range of 0.5 percent and 10 percent of revenues to recover new infrastructure replacement costs not already included in rates.⁴⁸ Since passage of the legislation, several gas LDCs have established a GSRS. On September 12, 2017, the KCC issued an order that determined it is in the public interest for gas LDCs to accelerate the replacement of unprotected bare steel mains, unprotected bare steel service/yard lines, and cast iron mains, all of which are prone to corrosion. The Accelerated Replacement Program (ARP), which is subject to certain rate continuity-related conditions,⁴⁹ has been established as a four-year pilot program.⁵⁰

Unlike Kansas and other states in the union, **Michigan’s** riders associated with infrastructure replacements resulted in proposals made by the gas LDCs to the commission.^{51,52} One of the first was a 2011 proposal by SEMCO Energy to recover the incremental capital-related costs associated with the accelerated removal and replacement of cast iron and unprotected steel service lines and mains (Main Replacement Program Rider). SEMCO’s MRP rider recovers costs that are not included in the company’s base rates.⁵³

Minnesota’s legislature passed a 2013 statute that addressed recovery of gas utility infrastructure costs.⁵⁴ The statute details how LDCs can collect gas infrastructure costs (GUIC). In particular, the legislature determined that GUIC reflect costs associated with infrastructure that: (a) does not serve to increase revenues by directly connecting the infrastructure replacement to new customers; (b) is in service but was not included in the gas utility’s rate base in its most recent general rate case; and/or (c) is planned to be in service during the period covered by the report submitted under subdivision 2, but in no case longer than the one-year forecast period in the report. Finally, the infrastructure investment does not constitute a betterment, unless the betterment is based on requirements by a political subdivision or a federal or state agency, as evidenced by specific documentation, an order, or other similar requirement from the government entity requiring the replacement or modification of infrastructure.

45 Indiana Legislature. “SB 560: Utility Transmission.” May 13, 2013. <https://legiscan.com/IN/text/SB0560/2013>.

46 Indiana General Assembly. “2017 Code, Title 8. Utilities and Transportation.” http://www.in.gov/legislative/pdf/acts_2013.pdf.

47 Kansas Legislature. “Senate Bill No. 414: An Act Concerning Public Utilities; Relating to Natural Gas; Enacting the Gas Safety and Reliability Policy Act.” April 12, 2006. <http://www.kansas.gov/government/legislative/sessionlaws/2006/chap99.pdf>.

48 “The commission may not approve a GSRS to the extent it would produce total annualized GSRS revenues below the lesser of \$1,000,000 or 1/2 percent of the natural gas public utility’s base revenue level approved by the commission in the natural gas public utility’s most recent general rate proceeding. The commission may not approve a GSRS to the extent it would produce total annualized GSRS revenues exceeding 10 percent of the natural gas public utility’s base revenue level approved by the commission in the natural gas public utility’s most recent rate proceeding.”

49 For instance, the KCC found that a \$0.40 per residential customer per month cap is a necessary protection for ratepayers.

50 State Corporation Commission of the State of Kansas. “Docket No. 15-GIMG-343-GIG, Order: In the Matter of a General Investigation Regarding the Acceleration of Replacement of Natural Gas Pipelines Constructed of Obsolete Materials Considered to Be a Safety Risk.” September 12, 2017. <http://estar.kcc.ks.gov/estar/ViewFile.aspx/20170912103542.pdf?Id=94709420-f731-4f6b-91ef-a236a53199b8>.

51 Michigan Public Service Commission. “Case No. U-16999, Order: In the Matter of the Application of Michigan Consolidated Gas Company for Authority to Increase Its Rates, Amend Its Rate Schedules and Rules Governing the Distribution and Supply of Natural Gas, and for Miscellaneous Accounting Authority.” June 6, 2014. <https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000000wd1WAAQ>.

52 Michigan Public Service Commission. “Case No. U-16855, Order: In the Matter of the Application of Consumers Energy Company for Authority to Increase Its Rates for the Distribution of Natural Gas and for Other Relief.” June 7, 2012. https://www.michigan.gov/documents/mpsc/u-16855_6-7-12_569455_7.pdf.

53 Michigan Public Service Commission. “Case No. U-16169, Order: In the Matter of the Application of SEMCO Energy Gas Company for Authority to Combine its MPSC Division and Battle Creek Division Rates, and for Authority to Increase Its Rates for the Distribution of Natural Gas, and for Other Relief.” January 6, 2011. https://www.michigan.gov/documents/mpsc/u-16169_01-06-2011_569541_7.pdf.

54 Minnesota Legislature. “H.F. No. 729, 4th Engrossment – 88th Legislature (2013 – 2014).” May 16, 2013. https://revisor.mn.gov/bills/text.php?number=HF729&type=bill&version=4&session=ls88&session_year=2013&session_number=0.

The **Missouri** legislature established the Infrastructure System Replacement Surcharge (ISRS) in the state's statute Chapter 393.⁵⁵ The relevant section states that:

"...beginning August 28, 2003, a gas corporation providing gas service may file a petition and proposed rate schedules with the commission to establish or change ISRS rate schedules that will allow for the adjustment of the gas corporation's rates and charges to provide for the recovery of costs for eligible infrastructure system replacements."

Similar to Kansas, the Missouri law states that:

"The commission may not approve an ISRS to the extent it would produce total annualized ISRS revenues below the lesser of one million dollars or one-half of one percent of the gas corporation's base revenue level approved by the commission in the gas corporation's most recent general rate proceeding. The commission may not approve an ISRS to the extent it would produce total annualized ISRS revenues exceeding ten percent of the gas corporation's base revenue level approved by the commission in the gas corporation's most recent general rate proceeding."

Several Missouri gas LDCs use an ISRS.

With the 2009 revisions to **Nebraska's** Statutes' Chapter 66, sections 1865,⁵⁶ 1866,⁵⁷ and 1867,⁵⁸ the state legislature detailed the process by which gas LDCs may apply to establish or change the recovery of costs associated with infrastructure system replacement via riders. Similar to Kansas and Missouri, the Nebraska law conditions the recovery of costs.

"The commission shall not approve any infrastructure system replacement cost recovery charge rate schedules if such schedules would produce total annualized infrastructure system replacement cost recovery charge revenue below the lesser of one million dollars or one-half percent of the jurisdictional utility's base revenue level approved by the commission in the jurisdictional utility's most recent general rate proceeding. The commission shall not approve any infrastructure system replacement cost recovery charge rate schedules if such schedules would produce total annualized infrastructure system replacement cost recovery charge revenue exceeding ten percent of the jurisdictional utility's base revenue..."

Several Nebraska gas LDCs currently take advantage of these riders.

Ohio's infrastructure replacement mechanisms were established through rate proceedings.⁵⁹ The Cincinnati Gas and Electric Company (Duke) was authorized, on May 30, 2002, to recover costs associated with the company's new, accelerated main replacement program (AMRP). Columbia Gas of Ohio received approval for its Infrastructure Replacement Tracker, filed with the Public Utilities Commission of Ohio (PUCO) on March 3, 2008. The PUCO issued its approval of the LDC's proposal on April 8, 2009. In December 2009, the East Ohio Gas Company d/b/a Dominion East Ohio received approval, subject to modifications, to recover through an automatic adjustment mechanism, costs associated with a pipeline infrastructure replacement program (PIR). Other LDCs have received PUCO approval to recover infrastructure replacement costs via a rider.

55 Missouri Revisor of Statutes. "Chapter 393.1012. Rate Schedules, Procedures to Establish or Change." August 28, 2003. <http://revisor.mo.gov/main/OneSection.aspx?section=393.1012&bid=22192&hl=>.

56 Nebraska Legislature. "Nebraska Revised Statute 66-1865: Jurisdictional Utility; Application and Proposed Rate Schedules; Filing; Commission; Powers." <https://nebraskalegislature.gov/laws/statutes.php?statute=66-1865>.

57 Nebraska Legislature. "Nebraska Revised Statute 66-1866: Jurisdictional Utility; Prior Filing Not Subject to Negotiations; Application for Infrastructure System Replacement Cost Recovery Charge; Duties; Public Advocate; Duties; Commission; Powers; Change in Rate Schedules." <https://nebraskalegislature.gov/laws/statutes.php?statute=66-1866>.

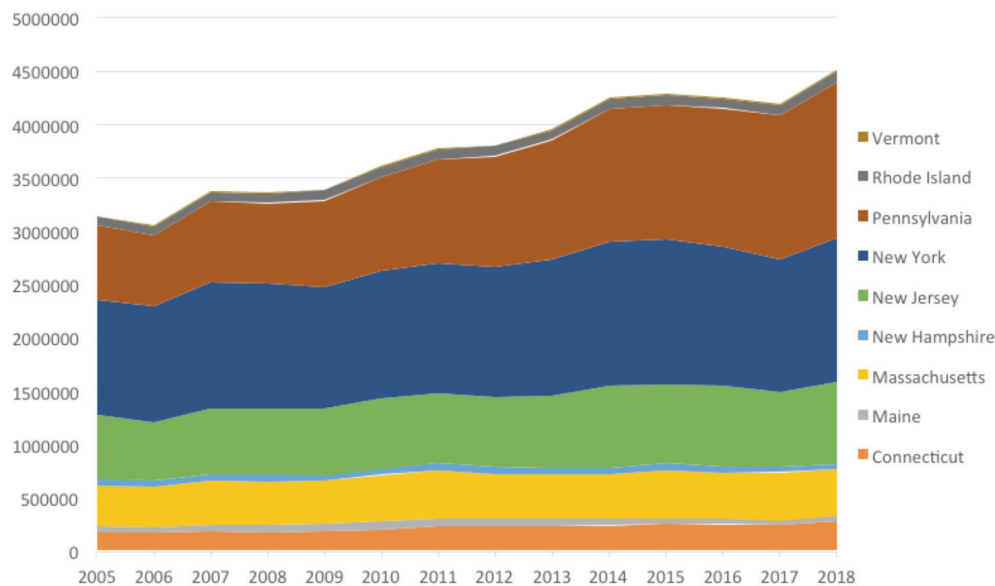
58 Nebraska Legislature. "Nebraska Revised Statute 66-1867: Jurisdictional Utility; Prior Filing Subject to Negotiations; Application for Infrastructure System Replacement Cost Recovery Charge; Duties; Affected Cities; Powers; Commission; Powers; Change in Rate Schedules." <https://nebraskalegislature.gov/laws/statutes.php?statute=66-1867>.

59 Public Utilities Commission of Ohio. Dockets available at <http://dis.puc.state.oh.us/AdvS.aspx>.

Northeast

Growth in natural gas consumption in the Northeast has slowed during the past several years, as shown in **Figure 10**. This is primarily due to a lack of necessary infrastructure to deliver natural gas into the region. For state-specific details, refer to **Appendix 1**.

Figure 10: Natural Gas Consumption, Northeast Region, 2005 – 2018⁶⁰



Eight of the nine states in the region have bare steel and cast iron mains, with Vermont lacking any bare steel or cast iron. Pennsylvania, New York, New Jersey, and Massachusetts are the four states that rank the highest in the bare steel service count (**Figure 11**).

Figure 11: Bare Steel and Cast Iron Main Miles And Service Count, Northeast

State	Bare Steel		Cast Iron	
	Main Miles	Service Count	Main Miles	Service Count
Connecticut	139	37,182	1,221	17
Massachusetts	1,288	147,075	2,925	1,373
Maine	1	98	36	24
New Hampshire	7	5,255	81	14
New Jersey	588	184,769	3,911	0
New York	5,152	213,570	3,175	3,847
Pennsylvania	6,415	238,492	2,532	73
Rhode Island	199	33,726	700	127

⁶⁰ U.S. Energy Information Administration. "Natural Gas Consumption by End Use." December 31, 2019. https://www.eia.gov/dnav/ng/ng_cons_sum_a_epg0_vc0_mmcf_a.htm.

Activity

The Public Utility Regulatory Authority of **Connecticut** (PURA) has authorized gas LDCs to replace high-risk infrastructure expeditiously and recover the associated costs through the Distribution Integrity Management Program (DIMP). In a recent rate decision on the application of Yankee Gas Services Company to amend its rate schedules, PURA stated that “[PURA] has been clear and consistent for many years now that high risk infrastructure must be replaced expeditiously. In Docket No. 13-06-08, Application of Connecticut Natural Gas Corporation to Increase Its Rates and Charges, Docket No. 17-05-42, Application of The Southern Connecticut Gas Company to Increase Its Rates and Charges, and Docket No. 10-12-02, Application of Yankee Gas Services Company for Amended Rate Schedules, the Authority approved 20-year cast iron and bare steel replacement programs for Connecticut’s gas companies.”⁶¹ Further, PURA states that “[t]he Authority sees no reason to deviate from this standard” and ordered Yankee Gas to spend “an amount which will allow the Company to completely replace its cast iron and bare steel facilities in no more than 11 years and completely replace its copper services, small diameter coupled steel mains, coupled steel services, and unprotected coated steel mains and services in no more than 14 years. The additional expenditures through this order will be recovered through the DIMP rate mechanism.”

Prior to 2014, **Massachusetts** gas LDCs had separately sought and received regulatory approval to use a targeted infrastructure reinvestment factor. However, in 2014, the Massachusetts Legislature passed An Act Relative to Natural Gas Leaks (the “Gas Leaks Act”).⁶² The Gas Leaks Act permitted LDCs to submit to the Massachusetts Department of Public Utilities (DPU) annual plans to repair or replace aged natural gas infrastructure in the interest of public safety and to reduce LAUF⁶³ gas. Massachusetts G.L. c. 164, § 145, requires the gas LDCs to:

“submit to the Department annual plans to repair or replace aging or leaking natural gas infrastructure. [Said plans] shall include, but not be limited to: (i) eligible infrastructure replacement of mains, services, meter sets, and other ancillary facilities composed of non-cathodically protected steel, cast iron, and wrought iron, prioritized to implement the federal gas distribution pipeline integrity management plan (“DIMP”) annually submitted to the Department and consistent with 49 C.F.R. §§ 192.1001 through 192.1015; (ii) an anticipated timeline for the completion of each project; (iii) the estimated cost of each project; (iv) rate change requests; (v) a description of customer costs and benefits under the plan; and (vi) any other information the Department considers necessary to evaluate the plan.”

Further, the plans submitted should not exceed 20 years, or should provide a reasonable target end date considering the allowable cost recovery cap. In a series of orders issued in April 30, 2015, the DPU approved the gas LDCs’ Gas System Enhancement Plans.⁶⁴ The Massachusetts LDCs anticipate that they will replace all leak-prone pipes within 20 years. Only Eversource anticipates that it will complete the necessary replacements in 25 years.

61 Public Utilities Regulatory Authority of Connecticut. “Docket No. 18-05-10, Decision: Application of Yankee Gas Services Company d/b/a/ Eversource Energy to Amend Its Rate Schedules.” December 12, 2018.
https://www.eversource.com/content/docs/default-source/investors/yg-rate-review-final.pdf?sfvrsn=3b28cc62_0.

62 General Court of the Commonwealth of Massachusetts. “Chapter 149: An Act Relative to Natural Gas Leaks.” June 26, 2014.
<https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter149>.

63 See glossary.

64 Department of Public Utilities, Commonwealth of Massachusetts. “DPU 14-134, Order: Petition of Bay State Gas Company d/b/a Columbia Gas of Massachusetts for Approval of Its 2015 Gas System Enhancement Plan, Pursuant to G.L. c. 164, § 145, for Rates Effective May 1, 2015.” <https://www.mass.gov/doc/dpu-14-134-bay-state-gas-gsep-order/download>.

Department of Public Utilities, Commonwealth of Massachusetts. “DPU 14-131, Order: Petition of the Berkshire Gas Company for Approval of Its 2015 Gas System Enhancement Plan, Pursuant to G.L. c. 164, § 145, for Rates Effective May 1, 2015.” <https://www.mass.gov/doc/dpu-14-131-berkshire-gas-gsep-order/download>.

Department of Public Utilities, Commonwealth of Massachusetts. “DPU 14-133, Order: Petition of Liberty Utilities (New England Natural Gas Company) Corp. for Approval of Its 2015 Gas System Enhancement Plan, Pursuant to G.L. c. 164, § 145, for Rates Effective May 1, 2015.” <https://www.mass.gov/doc/dpu-14-133-liberty-utilities-gsep-order/download>.

Department of Public Utilities, Commonwealth of Massachusetts. “DPU 14-132, Order: Petition of Boston Gas Company and Colonial Gas Company, each doing business as National Grid, for Approval of 2015 Gas System Enhancement Plan, Pursuant to G.L. c. 164, § 145, for Rates Effective May 1, 2015.” <https://www.mass.gov/doc/dpu-14-132-national-grid-gsep-order/download>.

Department of Public Utilities, Commonwealth of Massachusetts. “DPU 14-135, Order: Petition of NSTAR Gas Company for Approval of Its 2015 Gas System Enhancement Plan, Pursuant to G.L. c. 164, § 145, for Rates Effective May 1, 2015.” <https://www.mass.gov/doc/dpu-14-135-nstar-gsep-order/download>.

In **Maine**, infrastructure modernization has evolved through filings to the Maine Public Utilities Commission (PUC). The PUC approved a cost recovery mechanism for Northern Utilities' Cast Iron Replacement Program in Docket No. 2011-92, issued on November 29, 2011.⁶⁵ More recently, the PUC approved Northern Utilities, Inc.'s d/b/a Unitil Targeted Infrastructure Replacement Adjustment (TIRA) annual adjustment to recover costs associated with the Company's investments in targeted operational and safety-related infrastructure replacement and upgrade projects since its last base rate case.⁶⁶ The PUC approved a 14-year replacement program for Northern Utilities' cast iron and bare steel facilities in 2010. In 2018, Northern Utilities retired 3.59 miles of cast iron main, 1.20 miles of bare/unprotected steel or wrought iron main, and 0.40 miles of plastic pipe, on its low-pressure system. The cumulative project totals through 2018 are: 27.27 miles (out of approximately 70 miles in 2010) of cast iron retired, 8.91 miles (out of approximately 10 miles in 2010) of bare/unprotected steel retired, and 6.67 miles of plastic pipe retired.⁶⁷

According to **New Hampshire's** Public Utilities Commission (PUC), the state's aged gas infrastructure contains a limited amount of aged, worn, and leak-prone pipelines comprising, primarily, bare steel and cast iron. In 1990, the PUC ordered an accelerated bare steel replacement program for one of the state's gas operators. Since that time, the Commission has issued numerous safety related directives in many proceedings involving jurisdictional LDCs in regards to cast iron and/or bare steel.⁶⁸ There are two gas LDCs operating in New Hampshire: Liberty Utilities (Energy North and Keene) and Northern Utilities. Northern Utilities completed the replacement of cast iron and bare steel pipes in 2017 as agreed upon in order 24,906 (2008).⁶⁹ According to the PUC, Energy North has replaced approximately 2,450 bare steel services and approximately 48 miles of leak-prone distribution main under the CIBS program since 2009.⁷⁰ The CIBS program allows for annual revision of rates for certain allowable capital expenditures associated with an annual replacement program of selected cast iron and bare steel pipeline segments within Energy North's gas distribution systems.⁷¹

New Jersey's policies regarding infrastructure modernization and associated cost recovery, although subject to conditions set forth in NJSA 48:2-23, 48:2-21, and 48:2-21.2,⁷² have evolved via decisions of the New Jersey Board of Public Utilities (BPU). In 2009, the BPU approved accelerated infrastructure programs for five of the seven major utilities that had filed such plans. In total, the plans provided that the utilities would invest \$956 million in incremental infrastructure and energy efficiency programs over the following two years, and the costs

65 State of Maine Public Utilities Commission. "Docket No. 2011-92, Order Approving Stipulation: Northern Utilities Inc. d/b/a Unitil Proposed Base Rate Increase and Rate Design Modification." November 29, 2011.
<https://www.sec.gov/Archives/edgar/data/755001/000119312511326023/d263085dex991.htm>.

66 State of Maine Public Utilities Commission. "Case No. 2013-00133, Order: Northern Utilities Inc. d/b/a Unitil Proposed Increase in Base Rates (35-A MRSA Section 307)." April 29, 2014.
<https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/CaseMaster.aspx?CaseNumber=2013-00133>.

67 State of Maine Public Utilities Commission. "2018 Annual Report." February 1, 2019.
https://www.maine.gov/mpuc/about/annual_report/documents/2018AnnualReportFinalReport4.pdf.

68 See Commission Orders Nos. 22,386 (1996); 23,333 (1999); 23,470 (2000); 24,777 (2007); 24,906 (2008); 24,996 (2009); 25,127 (2010); 25,244 (2011); 25,370 (2012); 25,378 (2012); 25,530 (2013); 25,684 (2014); 25,798 (2015); 25,918 (2016); 26,036 (2017) and 26,154 (2018). All Commission orders are available for review at <https://www.puc.nh.gov/Regulatory/orders.htm>.

69 State of New Hampshire Public Utilities Commission. "DG 08-048: Unitil Corporation and Northern Utilities, Inc. Joint Petition for Approval of Stock Acquisition, Order No. 24,906: Order Approving Settlement Agreement." October 10, 2008.
<https://www.puc.nh.gov/Regulatory/Orders/2008orders/24906g.pdf>.

70 State of New Hampshire Public Utilities Commission. "Accelerated Cast Iron and Bare Steel Replacement Programs."
<http://www.puc.state.nh.us/Safety/Accelerated%20Cast%20Iron.html>.

71 State of New Hampshire Public Utilities Commission. "DG 11-040: National Grid USA et al., Transfer of Ownership of Granite State Electric Company and EnergyNorth Natural Gas, Inc. to Liberty Energy NH, Order No. 25,370: Order Approving Settlement, Granting Motions for Confidential Treatment and Waiver of Certain Filing Requirements." May 30, 2012.
<http://www.puc.state.nh.us/Regulatory/Orders/2012orders/25370g.pdf>.

72 Up-to-date statutes can be found at: <http://njlw.rutgers.edu/collections/njstats/showsections.php?title=48&chapt=2>.

of the various programs were to be recovered through various, separate adjustment mechanisms.⁷³ Gas LDCs submit their infrastructure replacement plans and associated cost recovery for review by the BPU. These plans are given different names by each utility, vary in scope and cost, and are reviewed individually by the BPU.

New York has been reviewing and approving individual plans submitted by the jurisdictional LDCs.⁷⁴ One of the first plans to be submitted and approved was the Corning Natural Gas 2006 proposal. National Grid Long Island, National Grid NYC, New York State Electric and Gas (NYSEG), Rochester Gas and Electric (RGE), National Grid Niagara Mohawk, National Fuel Gas Distribution Corporation (NFGD), Consolidated Edison, Orange & Rockland, and Central Hudson Gas & Electric all have submitted plans with the New York Public Service Commission (PSC). The plans vary by LDC and extent of miles of pipe removed as well as cost and cost recovery. For instance, National Grid Long Island has had a limited infrastructure replacement tracker, while Corning Natural Gas has had a limited cost recovery mechanism. Both National Grid Long Island and National Grid NYC track infrastructure replacement costs that are necessitated by city and state construction projects. In 2010, the PSC approved a leak-prone removal plan for NYSEG and RGE. Although both companies are to remove, at a minimum, 24 miles of leak-prone pipe per year, NYSEG will replace 1,200 services, and RGE 1,000 services per year. In 16-G-0257⁷⁵ issued on April 20, 2017, the PSC adopted a Leak-Prone Pipe (LPP) tracking mechanism for NFGD that was limited to incremental LPP costs reflecting the approved pre-tax rate of return, depreciation rates, property tax rates, and uncollectible rates. The surcharge mechanism will be available to NFGD for recovery of its incremental LPP costs for a period of three years or until modified by the Commission. To employ the surcharge during the period April 1, 2017 to March 31, 2018, NFGD must show that it removed and replaced incremental LPP above its budgeted levels and exceeded the carrying costs provided for in delivery rates for all its capital investments. The PSC has reviewed and authorized several cost recovery mechanisms to address the jurisdictional LDCs' infrastructure replacement efforts. Each order issued granting a recovery mechanism is uniquely tailored to each gas LDC's specific situation.

73 State of New Jersey Board of Public Utilities. "Docket No. EO09010056 and EO09010057: In the Matter of Energy Efficiency Programs and Associated Cost Recovery Mechanisms; In the Matter of the Petition of New Jersey Natural Gas Company for Approval of Energy Efficiency Programs with an Associated Cost Recovery Mechanism; Decision and Order Approving Stipulation." July 1, 2009. <https://www.state.nj.us/bpu/pdf/boardorders/7-1-09-2H%20NJ%20NATURAL%20GAS.pdf>.

State of New Jersey Board of Public Utilities. "Docket No. GR11060360: In the Matter of the Petition of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas Company for Approval to Revise Its Base Rates to Recover the Costs of Its Utility Infrastructure Enhancement Program ('UIE') and Related Tariff Revisions; Decision and Order Approving Stipulation for Provisional Cirt Rates." September 21, 2011. <https://www.state.nj.us/bpu/pdf/boardorders/2011/20110914/9-21-11-2G.pdf>.

State of New Jersey Board of Public Utilities. "Docket No. EO09010049, GO09010050, and ER09110936: In the Matter of the Petition of Public Service Electric and Gas Company for Approval of a Capital Economic Stimulus Infrastructure Investment Program and an Associated Cost Recovery Mechanism Pursuant to N.J.S.A. 48:2-21 and 48:21.1; Decision and Order." December 17, 2009. <https://www.bpu.state.nj.us/bpu/pdf/boardorders/2009/12-17-09-2G.pdf>.

74 Following is a sample of Public Service Commission orders on matters regarding natural gas infrastructure replacement: New York State Department of Public Service. "Case No. 08-G-1137: Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Corning Natural Gas Corporation for Gas Service." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=08-G-1137&submit=Search>.

New York State Department of Public Service. "Case No. 09-G-0716: Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of the New York State Electric & Gas Corporation for Gas Service." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=09-G-0716&submit=Search>.

New York State Department of Public Service. "Case No. 09-G-0718: Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Rochester Gas and Electric Corporation for Gas Service." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=09-G-0718&submit=Search>.

New York State Department of Public Service. "Case No. 06-M-0878: Joint Petition of National Grid PLC and KeySpan Corporation for Approval of Stock Acquisition and Other Regulatory Authorizations." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=06-M-0878&submit=Search>.

New York State Department of Public Service. "Case No. 13-G-0031: Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison of New York, Inc. for Gas Service." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=13-g-0031&submit=Search>.

New York State Department of Public Service. "Case No. 13-G-0136: Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of National Fuel Gas Distribution Corporation for Gas Service." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=13-G-0136&submit=Search>.

75 New York State Department of Public Service. "Case No. 16-G-0257: Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of National Fuel Gas Distribution Corporation for Gas Service." <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=16-G-0257&submit=Search>.

Pennsylvania Statute, Title 66, Chapter 13B, Section 1353⁷⁶ enables the Pennsylvania Public Utilities Commission (PUC) to approve an LDC-specific Distribution System Improvement Charge (DSIC) "... to provide for the timely recovery of the reasonable and prudent costs incurred to repair, improve or replace eligible property in order to ensure and maintain adequate, efficient, safe, reliable and reasonable service." As a result of Section 1353, the PUC reviewed and approved a series of proposals incorporating both a DSIC and Long-Term Infrastructure Improvement Plans (LTIP).⁷⁷ The infrastructure replacement plans approved by the PUC vary in length from 14 years to 48 years, depending on the LDC and whether the pipe is bare steel or cast iron. The PUC has also reviewed and approved plans shifting the geographic location of the infrastructure replacement projects as well as introducing new technological upgrades.

Just like Pennsylvania, the **Rhode Island** General Assembly passed legislation in 2010 that encouraged the Rhode Island Public Utilities Commission (PUC) to approve tracking mechanisms for infrastructure replacement activities. The law, Title 39, Public Utilities and Carriers, Chapter 39-1, Public Utilities Commission, Section 39-1-27.7.1, applies to both gas and electric distribution companies.⁷⁸ As a result, Narragansett Electric (d/b/a National Grid) established an Infrastructure Safety and Reliability (ISR) plan. The most recent PUC decision was issued on November 21, 2018. The PUC approved Narragansett Electric's proposed FY 2019 Revised Gas ISR Plan and associated compliance tariffs for usage on and after April 1, 2018.⁷⁹ National Grid's plan incorporates \$12.44 million in spending for the replacement of approximately 10 miles of leak-prone gas main consisting of cast iron and unprotected steel main. The company proposed to continue its program of replacing leak-prone gas mains by spending \$52.80 million for slightly less than 50 miles of leak-prone gas mains and 3,826 service relay, inserts, or tie-ins.

76 Pennsylvania Legislature. "Title 66, Chapter 13B, Section 1353: Distribution System Improvement Charge." <https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/66/00.013.053.000..HTM>.

77 Pennsylvania Public Utility Commission. "Docket No. P-2012-2338282: Petition of Columbia Gas of Pennsylvania, Inc. for Approval of Its Long-Term Infrastructure Improvement Plan and Petition of Columbia Gas of Pennsylvania, Inc. for Approval of Its Distribution System Improvement Charge." March 14, 2013. <http://www.puc.state.pa.us/pcdocs/1219012.docx>.

Pennsylvania Public Utility Commission. "Docket No. P-2017-2602917: Petition of Columbia Gas of Pennsylvania, Inc. for Approval of a Major Modification to its Existing Long-Term Infrastructure Improvement Plan and Approval of its Second Long-Term Infrastructure Improvement Plan." September 21, 2017. <http://www.puc.state.pa.us/pcdocs/1537714.docx>.

Pennsylvania Public Utility Commission. "Docket No. P-2013-2347340: Petition of PECO Energy Company for Approval of Its Long-Term Infrastructure Improvement Plan." May 9, 2013. <http://www.puc.state.pa.us/pcdocs/1229098.docx>.

Pennsylvania Public Utility Commission. "Docket No. P-2013-2347340: Petition of PECO Energy Company for Approval to Establish a Distribution System Improvement Charge for Its Gas Operations." September 3, 2015. <http://www.puc.state.pa.us/pcdocs/1381431.docx>.

Pennsylvania Public Utility Commission. "Docket No. P-2012-2337737: Petition of Philadelphia Gas Works for Approval of Its Long-Term Infrastructure Improvement Plan and Petition of Philadelphia Gas Works for Approval of Its Distribution System Improvement Charge." April 4, 2013. <http://www.puc.state.pa.us/pcdocs/1222702.docx>.

Pennsylvania Public Utility Commission. "Docket No. P-2013-2398835: Petition of UGI Central Penn Gas, Inc. for Approval of Its Long-Term Infrastructure Improvement Plan and Petition of UGI Central Penn Gas, Inc. for Approval of Its Distribution System Improvement Charge." September 11, 2014. <http://www.puc.state.pa.us/pcdocs/1311793.docx>.

78 Rhode Island Legislature. "Title 39: Public Utilities and Carriers, Chapter 39-1: Public Utilities Commission, Section 39-1-27.7.1: Revenue Decoupling." <http://webserver.rilin.state.ri.us/Statutes/title39/39-1/39-1-27.7.1.HTM>.

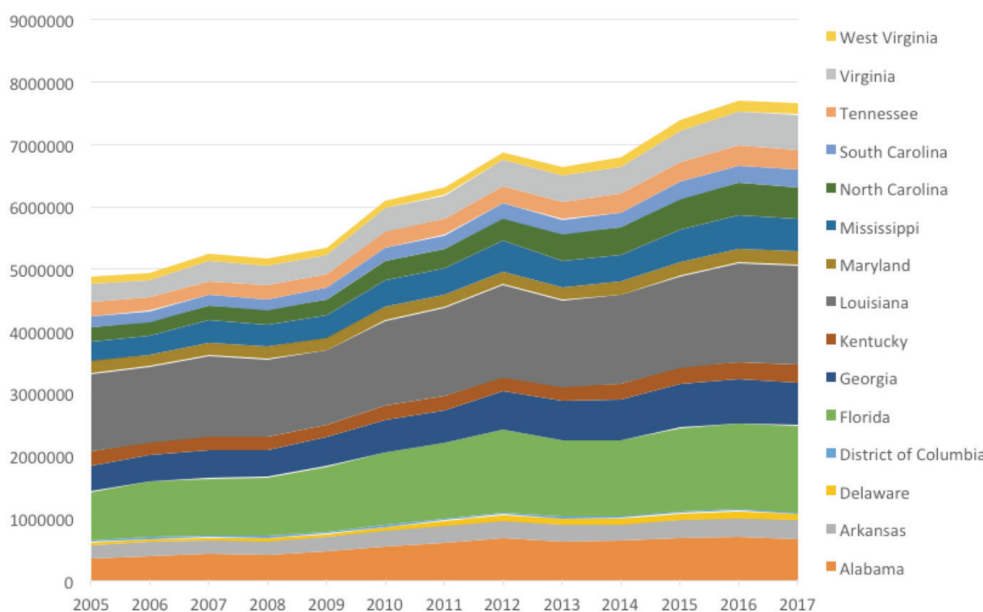
79 State of Rhode Island and Providence Plantations, Public Utilities Commission. "Docket No. 4781, Report and Order: In re: The Narragansett Electric Company d/b/a National Grid Gas Infrastructure, Safety, and Reliability Plan for FY 2019." March 7, 2018. [http://www.ripuc.org/eventsactions/docket/4781-NGrid-Ord23339%20\(11-21-18\).pdf](http://www.ripuc.org/eventsactions/docket/4781-NGrid-Ord23339%20(11-21-18).pdf).

Southeast

Of all the geographic regions, the Southeast has experienced the largest increase in natural gas consumption, as seen in **Figure 12**. Louisiana and Florida are the primary drivers behind the steady increase. For state-specific details, refer to **Appendix 1**.

Fourteen of 15 states in the Southeast region have bare steel mains (North Carolina does not). Alabama, Maryland, and West Virginia have the highest number of bare steel service count (**Figure 13**). In addition, 12 states have cast iron mains as well.

Figure 12: Natural Gas Consumption, Southeast Region, 2005 – 2018⁸⁰



Activity

On November 27, 1995, the **Alabama** Public Service Commission (PSC) approved the Cast Iron Main Replacement (CIMR) Factor, which was an element in Mobile Gas's general rate case. The 30-year program is designed to recover the annual revenue requirement level of depreciation, taxes, and return associated with cast iron main replacements. The tracking mechanism is applied to all rate classes and is updated annually to reflect incremental investment in cast iron main replacements. In accepting the company's proposal for a CIMR Factor, the PSC found that the "company has established a cast iron replacement program under which cast iron mains in the gas distribution system will be replaced over a 30-year period. This replacement program has been reviewed by the Commission and is necessary to maintain the integrity and safety of the Company's distribution system." The Commission indicated that there was "precedent both in Alabama and other jurisdictions for mechanisms such as this for cost recovery outside of a full ratemaking proceeding; where costs can be readily identified, segregated, and measured, where it is necessary for the Company to incur such costs, and where there are no offsetting revenues." In 2017, the PSC evaluated a CIMR for Mobile Gas.⁸¹ By order dated October 25, 2018, the Commission voted to modify and extend Rate Stabilization and Equalization for Spire Alabama through 2022. These modifications became effective October 1, 2018 and include the establishment of an Accelerated Infrastructure Modernization (AIM) Program intended to encourage the Company to accelerate the replacement of its aging gas distribution pipeline facilities.⁸²

⁸⁰ U.S. Energy Information Administration. "Natural Gas Consumption by End Use." December 31, 2019. https://www.eia.gov/dnav/ng/ng_cons_sum_a_epg0_vc0_mmcfa.htm.

⁸¹ Alabama Public Service Commission. "2017 Annual Report." January 10, 2018. <http://www.psc.state.al.us/News/Annual%20Report/2017%20PSC%20Annual%20Report.pdf>.

⁸² Alabama Public Service Commission. "2018 Annual Report." January 10, 2019. <http://www.psc.state.al.us/News/Annual%20Report/2018%20PSC%20Annual%20Report.pdf>.

Figure 13: Bare Steel and Cast Iron Main Miles and Service Count, Southeast

State	Bare Steel		Cast Iron	
	Main Miles	Service Count	Main Miles	Service Count
Alabama	542	145,835	777	214
Arkansas	785	18,692	0	0
Delaware	6	522	61	0
District of Columbia	23	6,499	406	0
Florida	562	19,726	66	0
Georgia	27	9,115	2	0
Kentucky	543	13,116	11	96
Louisiana	423	19,192	162	940
Maryland	184	70,827	1,164	25
Mississippi	537	13,628	35	1
South Carolina	4	371	0	0
Tennessee	36	511	12	4
Virginia	404	10,538	188	75
West Virginia	2,712	65,898	12	23

Through a series of decisions beginning in 1988, the **Arkansas** Public Service Commission (PSC) authorized the recovery of costs, including depreciation in certain instances, associated with the replacement of bare steel, cast iron and unprotected steel mains, unprotected coated steel mains, and mains that have been deemed unsatisfactory by a state or federal agency, as well as the relocation of meters deemed at risk. Those approvals were made in a series of decisions, affecting CenterPoint Energy,⁸³ SourceGas Arkansas,⁸⁴ and Arkansas Oklahoma Gas. In the case of Arkansas Oklahoma Gas, a settlement between the company and the state's Attorney General, the PSC effectively "... recognize[d] the prevailing and prudent attitude of utilities and regulators alike that aging infrastructure must be addressed in order to enhance the system safety."⁸⁵

83 Arkansas Public Service Commission. "Docket No. 06-161-U, Order No. 6: In the Matter of the Application of CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Arkansas Gas, for a General Change or Modification in Its Rates, Charges, and Tariffs." September 25, 2007. http://www.apscservices.info/pdf/06/06-161-u_196_1.pdf.

Arkansas Public Service Commission. "Docket No. 06-161-U: In the Matter of the Application of CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Arkansas Gas, for a General Change or Modification in Its Rates, Charges, and Tariffs (MRP & WNA Reports)." http://www.apscservices.info/efilings/docket_search_results.asp?casenumber=06-161-u.

Arkansas Public Service Commission. "Docket No. 10-108-U: In the Matter of an Interim Rate Schedule of CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Arkansas Gas Imposing a Surcharge to Recover Costs and Expenses Required by Law Relating to the Protection of the Public Health, Safety and the Environment and Application for Approval of a Related Tariff Revision." http://www.apscservices.info/efilings/docket_search_results.asp?casenumber=10-108-U.

Arkansas Public Service Commission. "Docket No. 12-045-TF: In the Matter of the Application of CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Arkansas Gas for a Proposed Tariff Revision Regarding Approval of Revisions to the Main Replacement Program Rider that Would Enable the Company to Include as Eligible for Expedited Replacement Steel Mains that Do Not Have a Cathodic Protection System."

84 Arkansas Public Service Commission. "Docket No. 13-079-U, Order No. 12: In the Matter of the Application of SourceGas Arkansas Inc. for Approval of a General Change in Rates and Tariffs." July 7, 2014. http://www.apscservices.info/pdf/13/13-079-u_189_1.pdf.

Arkansas Public Service Commission. "Docket No. 13-079-U: In the Matter of the Application of SourceGas Arkansas Inc. for Approval of a General Change in Rates and Tariffs." http://www.apscservices.info/efilings/docket_search_results.asp?casenumber=13-079-U.

85 Arkansas Public Service Commission. "Docket No. 13-078-U, Order No. 7: In the Matter of the Application of SourceGas Arkansas Inc. for Approval of a General Change in Rates and Tariffs." July 25, 2014. http://www.apscservices.info/pdf/13/13-078-u_129_1.pdf.

Arkansas Public Service Commission. "Docket No. 13-078-U: In the Matter of the Application of SourceGas Arkansas Inc. for Approval of a General Change in Rates and Tariffs." http://www.apscservices.info/efilings/docket_search_results.asp?casenumber=13-078-U.

In the **District of Columbia**, Washington Gas & Light originally established a pipe replacement program in 2007. The most recent Public Service Commission decision on the Company's Revised Accelerated Pipe Replacement Plan was issued on March 31, 2014.⁸⁶ The Revised Plan consists of three programs:

- (1) Bare and/or Unprotected Steel Service Replacement, with a 15-year completion target. This Program includes 23,600 service lines at an estimated cost of \$118 million;
- (2) Bare and Targeted Unprotected Steel Main Replacement, with a 15- year completion target. This includes 54 miles of steel main and 4,562 service lines at an estimated cost of \$97 million; and
- (3) Cast Iron Main Replacement, with a 40-year completion target.

The revised program – Cast Iron Main Replacement – will be expanded to include all of the cast iron main in the District of Columbia, including 66 miles of large-diameter cast iron. This Program includes 428 miles of main and 8,625 service lines at an estimated cost of \$800 million.⁸⁷

Delaware's Chapter 1, Subchapter III, Title 26 of the Delaware Code relating to Public Utilities, establishes a Distribution System Improvement Charge (DSIC) that allows gas LDCs to recover costs associated with activities that: (1) replace or renew electric and natural gas distribution facilities serving existing customers that have reached their useful service life, are worn out, are in deteriorated condition, or that negatively impact the quality and reliability of service to the customer if not replaced or renewed; (2) extend or modify distribution facilities to eliminate conditions which negatively impact the quality and reliability of service to the customer; (3) relocate existing distribution facilities as a result of governmental actions that are not reimbursed, including but not limited to relocations of mains, lines, and services, located in highway rights of way as required by the Department of Transportation; or (4) place in service new or additional distribution facilities, plant, or equipment required to meet changes in state or federal service quality standards, rules, or regulations.⁸⁸ Pursuant to the Delaware legislation, the Public Service Commission (PSC) issued Order No. 9282 on October 9, 2018, and a modification in Order No. 9290,⁸⁹ dated November 8, 2018. On November 30, 2018, Delmarva filed an application for authority to implement a DSIC rate for natural gas distribution, effective January 1, 2019. The petition was approved by the PSC on December 20, 2018 in Order No. 9314.⁹⁰ On May 31, 2019, both Delmarva and Chesapeake Utilities filed petitions to implement a DSIC effective July 1, 2019.⁹¹

Florida has relied solely on individual cases from gas LDCs before the Florida Public Service Commission (PSC). On November 19, 2018, the PSC approved the most recent Gas Reliability Infrastructure Program (GRIP) costs for Florida Public Utilities Company (FPUC), Florida Public Utilities Company - Fort Meade, and Florida

86 Public Service Commission of the District of Columbia. "Formal Case No. 1093, In the Matter of the Investigation into the Reasonableness of Washington Gas Light Company's Existing Rates and Charges for Gas Service, and Formal Case No. 1115, Application of Washington Gas Light Company for Approval of a Revised Accelerated Pipe Replacement Program, Order No. 17431." March 31, 2014.

<https://edocket.dcpsc.org/apis/api/filing/download?attachId=74435&guidFileName=6f69ba5d-1e77-416e-844f-14d6bf74573a.pdf>.

87 Washington Gas, a WGL Company. "Customer Education Plan: 2018 Annual Report." December 2018.

<https://www.washingtongas.com/-/media/a059cc4fe8054d159b9b41e728bb8b04.pdf>.

88 Delaware Code. "Title 26: Public Utilities, Chapter 1. Public Service Commission, Subchapter III. Rates, § 301 Rate Schedule and Rate Classifications." <http://delcode.delaware.gov/title26/c001/sc03/index.shtml>.

89 Delaware Public Service Commission. "Docket No. Reg. 64, Order No. 9290: In the Matter of the Adoption of Regulations Governing Administration of the Electric and Natural Gas Utility Distribution System Improvement Charge Provided for in 26 Del. C. § 315." November 8, 2018. <https://delafile.delaware.gov/AdvancedSearch/AdvancedSearchOrders.aspx>.

90 Delaware Public Service Commission. "Docket No. 18-1254, Order No. 9314: In the Matter of the Application of Delmarva Power & Light Company for Authority to Implement a Distribution System Improvement Charge (DSIC) Rate for Natural Gas Distribution Effective January 1, 2019 Pursuant to 26 Del. C. § 315." December 21, 2018. <https://delafile.delaware.gov/AdvancedSearch/AdvancedSearchOrders.aspx>.

91 Delaware Public Service Commission. "Docket No. 19-0358, Order No. 9406: In the Matter of the Application of Delmarva Power & Light Company for Authority to Implement a Distribution System Improvement Charge (DSIC) Rate for Natural Gas Distribution Effective July 1, 2019 Pursuant to 26 Del. C. § 315." June 19, 2019.

<https://delafile.delaware.gov/AdvancedSearch/AdvancedSearchOrders.aspx>.

Delaware Public Service Commission. "Docket No. 19-0357, Order No. 9405: In the Matter of the Application of Chesapeake Utilities Corporation for Approval to Implement a Distribution System Improvement Charge to Be Effective July 1, 2019." June 19, 2019. <https://delafile.delaware.gov/AdvancedSearch/AdvancedSearchOrders.aspx>.

Division of Chesapeake Utilities Corporation.⁹² The GRIP for FPUC and Chesapeake was originally approved in Order No. PSC-12-0490-TRF-GU (2012 order) allowing recovery of the cost associated with accelerating the replacement of cast iron and bare steel distribution mains and services through a surcharge on customers' bills.⁹³ Order No. PSC15-0578-TRF-GU established a GRIP for FPUC - Fort Meade and required Fort Meade to file its petition for GRIP factors concurrently with FPUC and Chesapeake.⁹⁴ On October 30, 2018, the PSC announced that it would continue funding for pipeline improvements. In the announcement, the PSC noted that it approved 2019 program surcharges for Peoples Gas System's (Peoples) Cast Iron/Bare Steel Pipe Replacement Rider (Rider), and the GRIP for FPUC, the Florida Division of Chesapeake Utilities Corporation (Chesapeake), and FPUC's Fort Meade, noting that an annual operations and maintenance expense and depreciation savings tracking mechanism is required for both pipeline improvement programs.⁹⁵

In **Georgia**, AGL Resources began a 15-year Pipeline Replacement Program (PRP) in 1998. The PRP was reviewed annually by the Public Service Commission (PSC) until the PSC established a fixed amount for the recovery of infrastructure replacement expenses. On April 12, 2001, the PSC issued an order approving, subject to conditions, United Cities' (currently Liberty's) proposal to replace 184 miles of cast iron pipes in Columbus, Georgia, over a 15-year period and 46 miles of bare steel pipe in Gainesville, GA over a 20-year period.⁹⁶ On January 19, 2010, the PSC approved Atlanta Gas Light's Strategic Infrastructure Development and Enhancement Program (STRIDE).⁹⁷ The PSC continues to review infrastructure replacement proposals.

In 2005, a new section in the **Kentucky** revised code was added to enable the Public Service Commission (PSC) to approve the recovery of costs associated with natural gas pipeline replacement programs.⁹⁸ Several gas LDCs have received approval for their programs.⁹⁹ More recently, the Kentucky PSC rejected a proposal by Atmos Energy to embed the pipeline replacement surcharge into its base rates.¹⁰⁰

In **Louisiana**, proposals to recover costs associated with pipeline replacement are reviewed on a company by-company basis. In a recent decision, the Louisiana Public Service Commission (PSC) approved a settlement between Entergy Gulf States Louisiana and PSC Staff authorizing the company to develop a Gas Infrastructure Investment Recovery Rider. The PSC decision further stipulated that Energy Gulf's rider shall sunset by September 30, 2024, and that Energy Gulf shall complete the replacement of the cast iron, bare steel, and vintage plastic pipe in its gas system within 10 years of rider implementation. Further, the company was directed to file

92 Florida Public Service Commission. "Docket No. 20180163-GU, Order No. PSC-2018-0547-TRF-GU: In re: Joint Petition for Approval of GRIP Cost Recovery Factors, by Florida Public Utilities Company, Florida Public Utilities Company-Fort Meade, and Florida Division of Chesapeake Utilities Corporation." November 19, 2018. <https://www.floridapsc.com/library/filings/2018/07177-2018/07177-2018.pdf>.

93 Florida Public Service Commission. "Docket No. 120036-GU, Order No. PSC-12-0490-TRF-GU: In re: Joint Petition for Approval of Gas Reliability Infrastructure Program (GRIP) by Florida Public Utilities Company and the Florida Division of Chesapeake Utilities Corporation." September 24, 2012. <http://www.psc.state.fl.us/library/filings/2012/06424-2012/06424-2012.pdf>.

94 Florida Public Service Commission. "Docket No. 150191-GU, Order No. PSC-15-0578-TRF-GU: In re: Joint Petition for Approval to Implement Gas Reliability Infrastructure Program (GRIP) for Florida Public Utilities Company-Fort Meade and for Approval of GRIP Cost Recovery Factors by Florida Public Utilities Company, Florida Public Utilities Company-Fort Meade and the Florida Division of Chesapeake Utilities Corporation." December 21, 2015. <http://www.psc.state.fl.us/library/Orders/2015/07966-2015.pdf>.

95 Florida Public Service Commission. "PSC Continues Funding for Pipeline Infrastructure Improvements." October 30, 2018. <http://www.psc.state.fl.us/Home/NewsLink?id=11687>.

96 State of Georgia Public Service Commission. "Docket No. 12509-U, Document No. 46368: In re: United Cities Gas Company Cast Iron and Bare Steel Pipe Replacement Program, Order Approving Pipe Replacement Surcharge." April 12, 2001. <http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=46368>.

97 Information including filings, comments and decisions can be found at: State of Georgia Public Service Commission. "Docket No. 8516: Rule Nisi Pertaining to the Deficiencies in the Operation of Its Pipeline System, and Other Matters." <http://www.psc.state.ga.us/factsv2/Docket.aspx?docketNumber=8516>.

98 Kentucky Legislature. "278.509: Recovery of Costs for Investment in Natural Gas Pipeline Replacement Programs." June 20, 2005. <https://apps.legislature.ky.gov/law/statutes/statute.aspx?id=14140>.

99 Commonwealth of Kentucky Public Service Commission. "Case No. 2018-00281: Electronic Application of Atmos Energy Corporation for an Adjustment of Rates." https://psc.ky.gov/PSC_WebNet/ViewCaseFilings.aspx?Case=2018-00281.

Individual cases (Frontier Gas, Columbia Kentucky, Delta Natural Gas, Duke Energy Kentucky and Burkesville Gas Company) can be found on the commission's website: https://psc.ky.gov/PSC_WebNet/SearchCases.aspx.

100 Commonwealth of Kentucky Public Service Commission. "PSC Denies Rate Increase to Atmos Energy." May 7, 2019. https://psc.ky.gov/agencies/psc/press/052019/0507_r01.pdf.

contemporaneously with the submission of each annual evaluation a comparison of actual and planned rider spending according to the most recently agreed spending by category that exceeds 10 percent.^{101, 102}

Maryland's Public Utilities Code § 4-210 (2013)¹⁰³ allows a gas company to recover costs associated with infrastructure replacement projects through a gas infrastructure replacement surcharge. The code specifies how the pretax rate of return is calculated and adjusted and what it includes. Further, the law, which does not apply to gas cooperatives, states that its purpose is to accelerate gas infrastructure improvements in the state by establishing a mechanism for gas companies to promptly recover reasonable and prudent costs of investments in eligible infrastructure replacement projects separate from base rates. According to the Maryland Public Service Commission (PSC), in 2014, three gas companies chose to develop and submit Strategic Infrastructure Development and Enhancement (STRIDE) Plans: Columbia Gas, BGE, and WGL. It is the responsibility of the PSC's Pipeline Safety Group to review the plans for the PSC and monitor the companies' progress in the implementation of each of the plans.¹⁰⁴ More recently, on December 12, 2018, the PSC approved Columbia of Maryland's proposed surcharges for the replacement of piping and other facilities.¹⁰⁵

On November 6, 2018, the **Mississippi** Public Service Commission (PSC) approved Atmos Energy Corporation's most recent filing of the company's System Integrity Rider. Atmos Energy first received approval of its proposal to establish a long-term system integrity plan and accelerate an investment program to make its system safer and ensure full compliance with federal pipeline safety directives in November 2018.¹⁰⁶ The provisions of Atmos' proposal included: an annual summary of operational metrics/savings/safety reports, a rolling five-year capital spending plan update including estimated rate impacts and rate recovery through a combination of fixed and volumetric rates.¹⁰⁷ CenterPoint Energy relies on a rate regulation adjustment rider (RRA) to reflect higher capital investments and O&M costs associated with pipeline safety. An annual commission review determines whether the mechanism should be adjusted.¹⁰⁸

Chapter § 62-133.7A of **North Carolina's** statutes enables the commission to: "...adopt, implement, modify, or eliminate a rate adjustment mechanism to enable the company to recover the prudently incurred capital investment and associated costs of complying with federal gas pipeline safety requirements, including a return based on the company's then authorized return."¹⁰⁹ Pursuant to § 62-133.7A, Piedmont Natural Gas and Public Service Company of North Carolina (PSNC) have received approval of their integrity management trackers. Piedmont Natural Gas submits monthly reports to the North Carolina Utilities Commission (NCUC) detailing the

101 Louisiana Public Service Commission. "Docket No. U-32682, Order No. U-32682-A: Entergy Gulf States Louisiana, L.L.C., Ex Parte. In Re: Rate Stabilization Plan Filing for Test Year 2012." January 21, 2015.
<http://lpscstar.louisiana.gov/star/ViewFile.aspx?id=8212861f-2745-42b6-854a-4722eb1f5cda>.

102 Louisiana Public Service Commission. "Docket No. U-32987, Order No. U-23987: In re: Request to Modify the Rate Stabilization Clause for Atmos Energy's Louisiana Regulatory Divisions Trans Louisiana Gas and Louisiana Gas Service." June 18, 2014.
<http://lpscstar.louisiana.gov/star/ViewFile.aspx?id=a10f07ec-e04f-4b3f-912e-3a15393aaf2c>

103 Maryland Legislature. "Article – Public Utilities, §4-210." http://mgaleg.maryland.gov/2019RS/Statute_Web/gpu/4-210.pdf.

104 Public Service Commission of Maryland. "2016 Annual Report."
<https://www.psc.state.md.us/wp-content/uploads/2016-MD-PSC-Annual-Report.pdf>

105 Public Service Commission of Maryland. "Case No. 9479, Order No. 88642: In the Matter of the Application of Columbia Gas of Maryland for Authority to Adopt a New Infrastructure Replacement and Improvement Plan and Accompanying Cost Recovery Surcharge Mechanism." April 11, 2018.
<https://www.psc.state.md.us/search-results/?q=9479&x.x=12&x.y=5&search=all&search=case>.

106 Public Service Commission of the State of Mississippi. "Docket No. 2015-UN-049: Re: System Integrity Rider, Atmos Energy Corporation, Order Approving Compliance Tariffs." November 6, 2018.
https://www.psc.state.ms.us/InSiteConnect/InSiteView.aspx?model=INSITE_CONNECT&queue=CTS_ARCHIVEQ&docid=559122

107 Atmos Energy. "RE: MPSC Docket No. 2015-UN-049 Compliance Tariff Filing in the Matter of a Comprehensive Review of Atmos Energy Corporation's Proposed Capital Budget for Fiscal Year 2018." September 5, 2017.
https://www.psc.state.ms.us/InSiteConnect/InSiteView.aspx?model=INSITE_CONNECT&queue=CTS_ARCHIVEQ&docid=392278.

108 Public Service Commission of the State of Mississippi. "Docket No. 2012-UN-139: In re: Notice of CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Mississippi Gas, of the Filing of Routine Changes in Its Rate Regulation Adjustment Rider and of the Initial Filing of Its Weather Normalization Adjustment-Rider WNA." October 26, 2018.
https://www.psc.state.ms.us/InSiteConnect/InSiteView.aspx?model=INSITE_CONNECT&queue=CTS_ARCHIVEQ&docid=558786

109 North Carolina Legislature. "Chapter 62, Public Utilities, Article 1. General Provisions."
https://www.ncleg.net/EnactedLegislation/Statutes/PDF/ByChapter/Chapter_62.pdf.

related expenses incurred, the cumulative integrity management plant investment, and the related activity.¹¹⁰ The company is required to file a three-year Integrity Management Plant Investment plan as well as an annual report by October 31. On October 28, 2016, the NCUC issued an order in PSNC's general rate case application authorizing PSNC to implement an Integrity Management Rider and establish regulatory accounting treatment for distribution of integrity management operations and maintenance expenses.¹¹¹ According to the NCUC, the tracker will allow the company to recover the capital related costs of compliance with federal pipeline and distribution integrity management requirements on an intra-rate case basis, facilitate timely recovery of costs related to capital investment needed to comply with federal law, and help avoid frequent general rate proceedings.¹¹²

South Carolina Code § 58-5-400 allows gas LDCs to efficiently recover costs associated with the expansion, improvement, and maintenance of local natural gas infrastructure.¹¹³ The South Carolina General Assembly requested that the Office of Regulatory Staff (ORS)¹¹⁴ study the Natural Gas Rate Stabilization Act of 2005 and make recommendations to the General Assembly by February 5, 2019. On February 5, the ORS recommended a more frequent review of the cost of service study for natural gas utilities, a change to the RSA statutory language to allow greater flexibility in rate design, and a limitation on the term of RSA election to no more than five years.¹¹⁵ Both investor-owned natural gas utilities, South Carolina Electric & Gas Company and Piedmont Natural Gas Company, file annual base rate updates pursuant to the Act.¹¹⁶

Tennessee Code provides that:

*"(2) (A) A public utility may request and the commission may authorize a mechanism to recover the operational expenses, capital costs or both, if such expenses or costs are found by the commission to be in the public interest, related to any one (1) of the following: (i) Safety requirements imposed by the state or federal government; (ii) Ensuring the reliability of the public utility plant in service; or (iii) Weather-related natural disasters. (B) The commission shall grant recovery and shall authorize a separate recovery mechanism or adjust rates to recover operational expenses, capital costs or both associated with the investment in such safety and reliability facilities, including the return on safety and reliability investments at the rate of return approved by the commission at the public utility's most recent general rate case pursuant to § 65-5-101 and subsection (a), upon a finding that such mechanism or adjustment is in the public interest."*¹¹⁷

Effectively, as with all other jurisdictions referred to in this document, the Tennessee Public Utilities Commission has the authority to approve a rider/cost recovery mechanism to recover expenses or capital costs associated with infrastructure replacement necessary to comply with federal and state safety requirements and/or to ensure reliability. Several jurisdictional LDCs use the mechanism/rider as allowed by the state's code.

110 Piedmont Natural Gas Company, Inc. "North Carolina Index of Tariff & Service Regulations." October 31, 2019. https://m.piedmontng.com/_media/pdfs/png/nc-tariffandserviceregulations.pdf?la=en.

111 Dominion Energy. "North Carolina Utilities Commission Approves Increase to PSNC Energy Base Rates and Implementation of an Integrity Management Tracker Mechanism." October 31, 2016. <https://www.psnenergy.com/about-us/newsroom/2016/10/31/north-carolina-utilities-commission-approves-increase-to-psnc-energy-base-rates-and-implementation-of-an-integrity-management-tracker-mechanism>.

112 North Carolina Utilities Commission Public Staff. "Annual Report to the General Assembly." 2016. <https://files.nc.gov/pubstaff/documents/files/Public%20Staff%202016%20Annual%20Report.pdf>.

113 South Carolina Legislature. "Title 58 – Public Utilities, Services and Carriers, Chapter 5: Gas, Heat, Water, Sewerage Collection and Disposal, and Street Railway Companies, Article 1: General Provisions." <https://www.scstatehouse.gov/code/t58c005.php>.

114 South Carolina Office of Regulatory Staff. <https://regulatorystaff.sc.gov/>.

115 South Carolina Office of Regulatory Staff. "Study of the Natural Gas Rate Stabilization Act of 2005." February 2019. <https://regulatorystaff.sc.gov/sites/default/files/Documents/Safety/Pipeline%20Safety/Study%20of%20the%20Natural%20Gas%20Rate%20Stabilization%20Act%20of%202005.pdf>.

116 South Carolina Office of Regulatory Staff. "ORS Study of the Natural Gas Rate Stabilization Act of 2005." February 5, 2019. <https://regulatorystaff.sc.gov/news/2019-02/ors-study-natural-gas-stabilization-act-2005>.

117 Tennessee Code. "Title 65 Public Utilities and Carriers, Chapter 5 Regulation of Rates, Part 1 Public Utilities, § 65-5-103. Changes in Utility Rates, Fares, Schedules — Implementation of Alternative Regulatory Methods to Allow for Public Utility Rate Reviews and Cost Recovery in Lieu of a General Rate Case Proceeding." <https://law.justia.com/codes/tennessee/2010/title-65/chapter-5/part-1/65-5-103>.

In 2010, **Virginia** enacted the Steps to Advance Virginia's Energy Plan (SAVE) Act.¹¹⁸ Under the provisions of the Act, a natural gas utility may file a SAVE plan that provides a timeline for completion of the proposed eligible infrastructure replacement projects, the estimated costs of the proposed eligible infrastructure projects, and a schedule for recovery of the related eligible infrastructure replacement costs through the SAVE rider. Further, the filing LDC must demonstrate that the plan is prudent and reasonable. A SAVE plan does not require the filing of rate case schedules. The State Corporation Commission (SCC) has 180 days to approve such a plan. The SCC approved Washington Gas' SAVE rider in Case No. PUE-2010-00087.¹¹⁹ Customers receiving service under Rate Schedules 1, 1A, 2, 2A, 3, 3A, 4, 5, 5A, 6, 6A 7, 8 and 10 are subject to a SAVE Rider. Washington Gas' SAVE rider is computed annually and comprises a "current factor," that includes Return on Investment, Revenue Conversion factor, Depreciation, Property Taxes, and Carrying Costs; and a "reconciliation factor." The company files an annual reconciliation factor with the SCC by September 1 of each year. In addition to Washington Gas, Virginia Natural Gas and Columbia Gas of Virginia have approved SAVE plans.

West Virginia Code, Chapter 24, §24-2-1k "Natural Gas Infrastructure Expansion, Development, Improvement and Job Creation; Findings; Expedited Process; Requirements; Rulemaking"¹²⁰ recognizes the benefits of infrastructure improvements¹²¹ and details the process by which gas LDCs submit proposals to recover associated costs. The West Virginia Code provides detailed instructions on how utilities can recover the costs associated with infrastructure improvements.¹²² Mountaineer Gas and Dominion Hope have received approvals for their programs by the Public Service Commission of West Virginia.

118 Code of Virginia. "Title 56. Public Service Companies, Chapter 26. Steps to Advance Virginia's Energy Plan (SAVE) Act, § 56-604. Filing of Petition with Commission to Establish or Amend a SAVE Plan; Recovery of Certain Costs; Procedure." <https://law.lis.virginia.gov/vacode/title56/chapter26/section56-604/>.

119 Washington Gas Light Company – Virginia. "Va. S.C.C. No. 9, Third Revised Page No. 102, Superseding Second Revised Page No. 102: General Service Provisions (Continued)." January 5, 2015. <https://www.washingtongas.com/-/media/f56a24868c194d889e19c808576b661e.pdf#page=160>.

120 West Virginia Legislature. "Chapter 24. Public Service Commission, Article 2. Powers and Duties of Public Service Commission, §24-2-1. Jurisdiction of Commission, Waiver of Jurisdiction." <http://www.wvlegislature.gov/WVCODE/code.cfm?chap=24&art=2#01>.

121 "(5) A comprehensive program of replacing, upgrading and expanding infrastructure by natural gas utilities at reasonable cost to ratepayers will benefit the customers of the natural gas utilities, the public in West Virginia and the economy of the state, as a whole..."

122 "(f) Upon commission approval, natural gas utilities will be authorized to implement the infrastructure programs and to recover related incremental costs, net of contributions to recovery of return and depreciation and property tax expenses directly attributable to the infrastructure program provided by new customers served by the infrastructure program investments, if any..."

Discussion

Across the United States, utility commissions have reviewed and approved infrastructure modernization programs and are continuing to do so. In certain states, the programs are a result of regulatory filings, whereas in others, modernization and replacement policies were developed pursuant to legislative action. There is a plethora of acronyms to describe these programs — a practice common to the regulatory world. However, the goal of each of these programs is the same, regardless of the name or which governmental entity initiated the process: to ensure appropriate infrastructure upgrades and/or replacements are completed.

When this project was undertaken, there was no expectation that a definitive best regulatory approach to addressing infrastructure replacement and modernization would be found. Not surprisingly, this handbook demonstrates that policies and actions are not identical across the country, with states and LDCs implementing accelerated pipeline replacement programs in many different ways. In fact, within the same jurisdiction, one can find variations in how these programs are implemented or how the LDCs recover infrastructure recovery-related costs. In considering LDC proposals to improve and replace infrastructure, commissions take into consideration the age of the infrastructure, economic conditions that can affect the ability of the LDCs to recover associated costs, reliability, safety, environmental benefits, and the desires of the consumers themselves. Although high importance is assigned to the replacement of aging infrastructure, rate continuity is also an important factor considered by commissions when reviewing such proposals.

Conclusion

This handbook addresses the current landscape for the natural gas infrastructure modernization state programs at LDCs. The primary goal has been to facilitate communication among state regulators on what states are doing to promote and facilitate such replacement. To that end, there is no “one size fits all” approach. Rather, there is a recognition of the significant role that state regulators can play to support and encourage appropriate and responsible infrastructure modernization efforts. Barriers to such pipeline replacement can include high costs and uncertain cost recovery, as well as lack of consistent regulatory incentives. There are many examples of successful regulatory programs. The regulatory approach may vary, depending on, among other things, the circumstances of the individual LDC, the desired innovative financial ratemaking or cost recovery mechanism, and whether there are existing state legislative efforts to provide guidance on how best to replace and/or upgrade the infrastructure. The bottom line is that each jurisdiction needs to develop an approach that meets its specific regulatory obligations and ensures the safety of our natural gas consumers and the integrity of the system.

Appendix 1 – Bare Steel & Cast Iron Main Miles and Service Count by State and Utility Ownership

Figure A1. Bare Steel Main Miles and Service Count by State (PHMSA)¹²³

State	Main Miles	Service Count	State	Main Miles	Service Count
Alabama	542	145,835	Mississippi	537	13,628
Alaska	8	0	Missouri	883	10,363
Arizona	465	6,958	Montana	2	9
Arkansas	785	18,692	Nebraska	494	6,198
California	3,284	2,045	New Hampshire	7	5,255
Colorado	119	18,752	New Jersey	588	184,769
Connecticut	139	37,182	New Mexico	71	9,883
Delaware	6	522	New York	5,152	213,570
District of Columbia	23	6,499	North Dakota	9	71
Florida	562	19,726	Ohio	6,565	103,655
Georgia	27	9,115	Oklahoma	1,190	57,023
Hawaii	94	6,416	Oregon	2	68
Idaho	1	0	Pennsylvania	6,415	238,492
Illinois	199	17,009	Rhode Island	199	33,726
Indiana	496	20,334	South Carolina	4	371
Iowa	141	6,548	South Dakota	27	1,745
Kansas	3,237	72,339	Tennessee	36	511
Kentucky	543	13,116	Texas	4,939	234,072
Louisiana	423	19,192	Virginia	404	10,538
Maine	0	98	Washington	1	51
Maryland	184	70,827	West Virginia	2,712	65,898
Massachusetts	1,288	147,075	Wisconsin	0	2
Michigan	1,066	30,286	Wyoming	5	167
Minnesota	218	842			

¹²³ U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. "Gas Distribution Bare Steel Pipelines." September 18, 2019. <https://portal.phmsa.dot.gov/>.

Bare Steel Main Miles and Service Counts by Utility Ownership (PHMSA)¹²⁴

Figure A2. Bare Steel Main Miles by LDC Ownership, 2005 – 2018¹²⁵

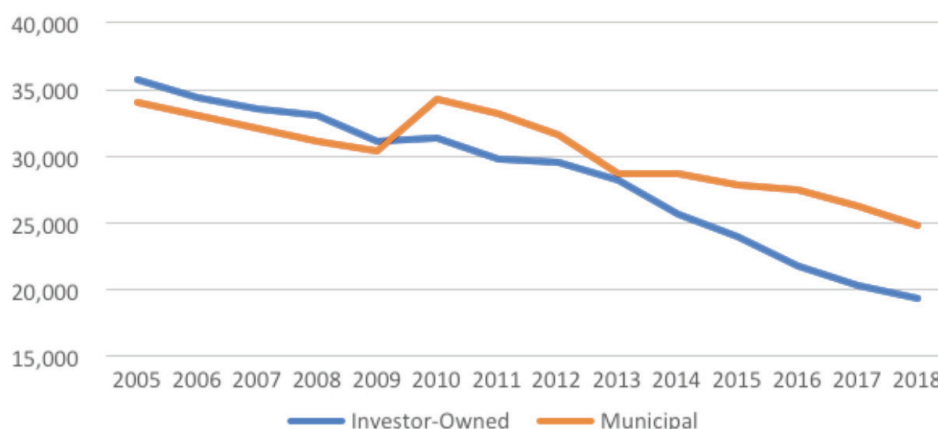


Figure A3. Bare Steel Service Count by LDC Ownership, 2005 – 2018¹²⁶

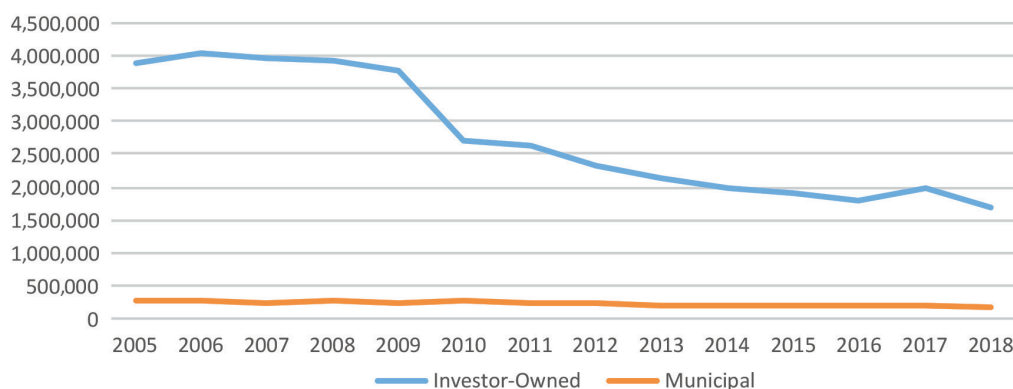


Figure A4. Cast Iron Main Miles and Service Count by State (PHMSA)¹²⁷

State	Main Miles	Service Count	State	Main Miles	Service Count
Alabama	777	214	Michigan	2,389	11
California	58	26	Mississippi	35	1
Connecticut	1,221	17	Missouri	718	0
Delaware	61	0	Nebraska	281	4
District of Columbia	406	0	New Hampshire	81	14
Florida	66	0	New Jersey	3,911	0
Georgia	2	0	New York	3,175	3,847
Illinois	1,152	56	Ohio	197	13

continued

¹²⁴ U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. "Gas Distribution Bare Steel Pipelines." January 20, 2020. <https://portal.phmsa.dot.gov/>.

¹²⁵ LDC ownership determined by report authors utilizing public information about company ownership.

¹²⁶ LDC ownership determined by report authors utilizing public information about company ownership.

¹²⁷ U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. "Gas Distribution Cast Iron Pipelines." September 20, 2019. <https://portal.phmsa.dot.gov/>.

State	Main Miles	Service Count	State	Main Miles	Service Count
Indiana	125	22	Pennsylvania	2,532	73
Kansas	6	0	Rhode Island	700	127
Kentucky	11	96	Tennessee	12	4
Louisiana	162	940	Texas	466	0
Maine	36	24	Virginia	188	75
Maryland	1,164	25	West Virginia	12	23
Massachusetts	2,925	1,373			

Cast Iron Main Miles and Service Counts by Utility Ownership (PHMSA)¹²⁸

Figure A5. Cast Iron Main Miles by LDC Ownership, 2005 – 2018¹²⁹

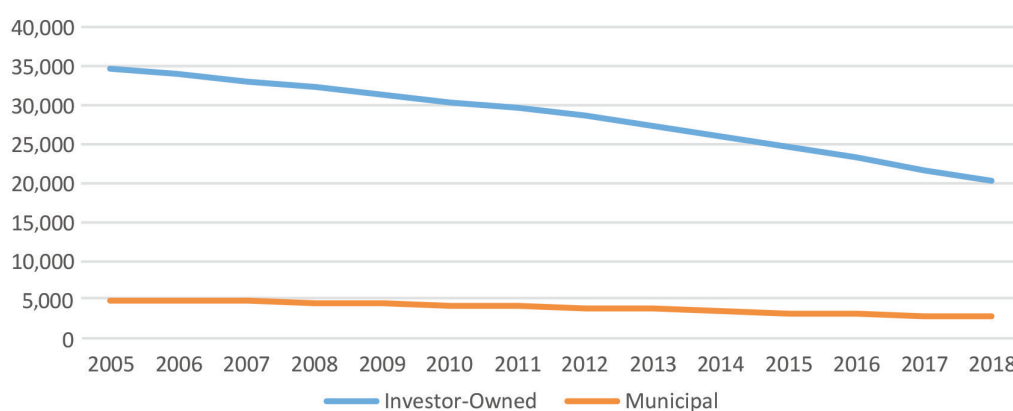
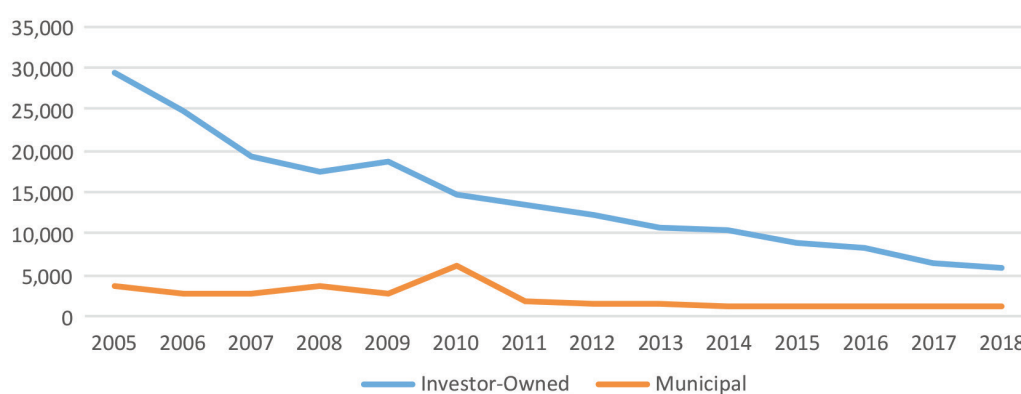


Figure A6. Cast Iron Service Count by LDC Ownership, 2005 – 2018¹³⁰



¹²⁸ U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. "Gas Distribution Cast/Wrought Iron Pipelines." January 20, 2020. <https://portal.phmsa.dot.gov/>.

¹²⁹ LDC ownership determined by report authors utilizing public information about company ownership.

¹³⁰ LDC ownership determined by report authors utilizing public information about company ownership.

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