

AMERICAN GAS



FILLING THE GAP

UTILITIES ARE WORKING TO EXPAND ACCESS TO UNSERVED AND UNDERSERVED MARKETS

CLOSING THE DIGITAL DIVIDE

MAKING A DIFFERENCE: MEMPHIS LIGHT, GAS AND WATER

Illustration by Oli Winward

FILLING THE GAP

Utilities — working closely with policymakers and other stakeholders — are working to expand access to unserved and underserved markets. **BY JULIA BAILEY**

Natural gas is a crucial energy resource for 75 million American households and businesses. Yet, according to a recent report from the National Association of Regulatory Utility Commissioners Task Force on Natural Gas Access and Expansion, “Natural gas distribution service is not universal ... and is not the predominant heating source for most homes.” The reality is that certain areas of the country continue to be unserved or underserved by natural gas distribution service.

With their sights on increasing capacity to serve more customers, utilities—working closely with policymakers and other stakeholders—have been working to fill the gap through programs designed to modernize distribution systems through expansion, replacement and repair.

Adding Capacity—and Jobs—With Expansion Programs

Of the approximately 75 million residential natural gas customers in the U.S., only about 8% of those customers live in rural areas as defined by the census. That means a majority of rural America lacks access to natural gas. These areas rely heavily on bottled propane, heating oil and other more expensive fuels. According to census data, 5.9 million homes use propane for heating.

Rural populations, particularly in the New England, South Atlantic and East South Central regions, are a major unserved, or underserved, segment. The challenge in providing natural gas service to these rural communities can be largely attributed to

the high cost of expanding pipeline infrastructure to remote regions with low population densities.

Take Pennsylvania, where 27% of residents live in rural counties. There, the cost to extend a natural gas distribution pipeline to a new community averages \$1 million per mile and as much as \$1.25 million per mile. These costs promise to rise, thanks to increased municipal permitting, right-of-way and road restoration costs.

As energy consumers across the country continue to demand better access to natural gas, utilities working with states like Pennsylvania are actively seeking new ways to expand natural gas service to these unserved and underserved customers. Pennsylvania's Pipeline Investment Program, or PIPE, is one initiative that is providing grants for construction of the "last few miles of natural gas distribution lines to business parks, existing manufacturing and industrial enterprises," with the objective of creating new economic opportunities and access to natural gas for the state's residents.

Columbia Gas of Pennsylvania, one of the seven energy delivery companies of NiSource, which provides natural gas and electric service to nearly 3.5 million customers, has been investing millions of dollars annually to expand its system and replace facilities. In September 2019, the utility participated in a public-private sponsorship through PIPE for a \$7 million program designed to expand access to natural gas for customers in Centre Hall, a rural community in the center of the state.

As part of the project, Columbia Gas, which owns the point of delivery station and delivery system, built a 25,425-foot pipeline system. Thanks to the new pipeline, more than 100 residents and businesses were able to convert to natural gas. In addition to providing access to natural gas to Hanover Foods and other businesses in the area, the project created new jobs and economic opportunities.

"We have been proud to partner with the Commonwealth of Pennsylvania and local organizations on initiatives like the PIPE grant program," said Mark Kempic, president and chief operating officer at Columbia Gas. "By bridging the last few miles to commercial and industrial customers, PIPE is creating new economic opportunities and new jobs while expanding access to residential customers in those communities."

Meanwhile, in Ohio, Dominion Energy is finding that pipeline replacement projects are likewise expanding access and boosting economic growth. "In the Ohio-West Virginia area, we're seeing growth from pipeline replacement and pipeline

infrastructure projects, as well as a lot of industrial growth. A lot of manufacturing demand is coming back into that region,” Diane Leopold, chief operating officer of Dominion Energy Inc., said recently.

Launched in 2008, Dominion Energy Ohio’s \$4 billion Pipeline Infrastructure Replacement (PIR) project is expected to involve the eventual replacement of more than 5,500 miles (a quarter of the company’s 22,000-mile system) over 25 years. One of the most recent iterations of the program has been completed in Brooklyn and Cleveland, Ohio. The original lines in that area were installed in the 1930s and 1950s.

“PIR is a decades-long project to replace that bare-metal pipeline with either coated steel or plastic pipe, which is corrosion resistant,” said Jim Eck, vice president and general manager, Ohio and West Virginia distribution, Dominion Energy. “By the end of 2020, we will have replaced more than 2,000 miles of this pipe.”

Benefiting the Environment

Today, cast iron and bare steel pipes represent just 3.99% of distribution pipelines still in use, and PHMSA reports that pipeline operators in 22 states have eliminated cast-iron distribution lines and have also taken many uncoated steel, or bare steel, pipelines out of service.

For example, in 2011, New Jersey Natural Gas began taking steps to replace cast-iron pipelines. In cooperation with the New Jersey Board of Public Utilities, the utility launched an initiative called SAFE (Safety Acceleration and Facility Enhancement). The objective of this accelerated pipe replacement program was to replace, over five years, all cast iron and half of the bare steel from its distribution system.

The existing inventory of cast-iron and unprotected/baresteel distribution main and related services amounted to approximately 580 miles when the first phase began in 2012. “On Dec. 26, 2015—even after spending years restoring pipeline damaged by the impact of Superstorm Sandy—we were able to achieve a significant milestone in our company’s history by retiring our last section of cast-iron main,” said Scott Edgerton, director, energy delivery support at NJNG.

Elimination of cast iron wasn’t the end of the story. In 2016, the New Jersey BPU approved SAFE II, a five-year, \$157.5 million program designed to replace the 276 miles of unprotected bare-steel pipe and associated services that remained a part of the

utility's distribution system. "Thanks to that program, we have replaced approximately 20,500 steel services and tied over 24,000 plastic services associated with that main," said John Wyckoff, vice president, engineering, at NJNG.

"Before SAFE, we were replacing approximately 10 to 12 miles of main per year," Wyckoff added. "Under SAFE, we have averaged 60 miles per year."

In fact, NJNG estimates that, thanks to the elimination of 148 miles of cast-iron main, 515 miles of steel main and 36,906 steel services between 2010 and 2017, it has realized a cumulative reduction of 61,907 tons of carbon dioxide equivalent annually. "We project that by the end of 2021, NJNG will have eliminated all of our known bare-steel main," said Edgerton.

Getting Technical

The U.S. Department of Energy is also backing efforts to repair and retrofit natural gas pipelines with its Rapid Encapsulation of Pipeline Avoiding Intensive Replacement, or REPAIR, program.

The \$38.5 million program is developing new technologies for teams to use in lining the inside of remaining legacy pipe systems, which include cast-iron and bare-steel pipes.

The REPAIR program is looking at smart coatings, inspection tools for use in verifying the integrity of the pipes, robotic tools for lining the pipe interiors, and mapping tools for producing 3D renderings of the pipes and surrounding infrastructure. The hope is that these strategies will further improve the safety of these pipes without the need for exterior piping.

In addition, U.S. utilities are testing other new technologies for their effectiveness in reducing emissions during pipeline repair. As part of an industry-leading initiative, Dominion Energy announced in February 2019 that it will be using Zero Emissions Vacuum and Compression, or ZEVAC®, devices to capture methane before maintenance or inspection so it can be recycled for use in other parts of the system.

Dominion is also replacing cast iron, bare steel and other equipment across its system with new, lower-emission equipment and expanding its leak detection and repair programs. Together, the three strategies are part of a plan to reduce methane emissions from Dominion's gas distribution system by 80% over the next two decades,

based on 2010 levels. With plans to produce enough carbon-negative renewable natural gas to offset any remaining emissions from its system, Dominion's gas distribution business is on track to achieve net zero emissions by 2040.

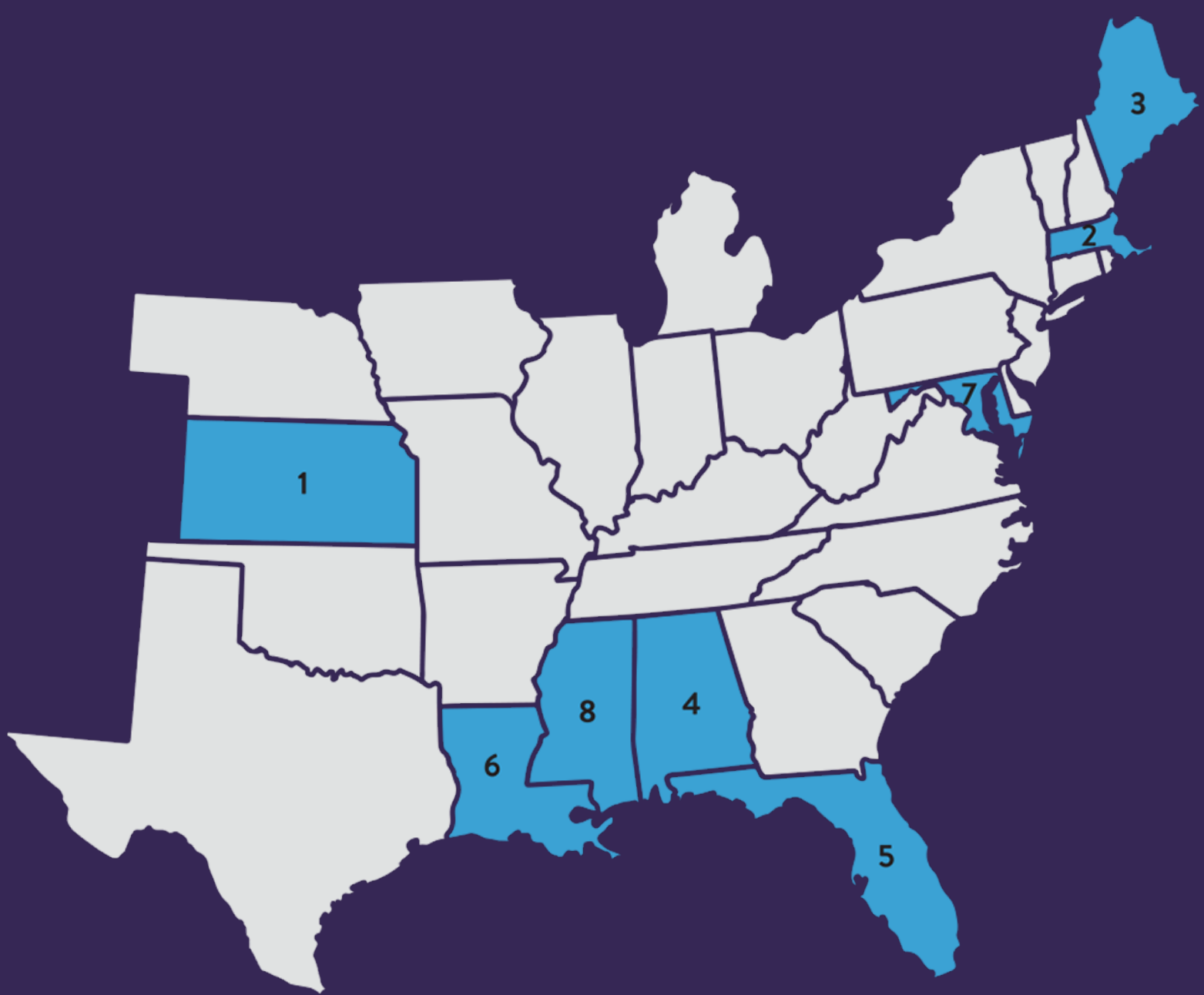
“Thanks to advances in technology and innovations in our operating procedures, we can capture methane on a much larger scale than we could have 10 years ago,” said Mark Webb, Dominion Energy's chief innovation officer. “We've tested and proven these technologies in some parts of our infrastructure, and now we're dramatically expanding them across the entire system.”

Clean, Safe, Reliable

Across the country, the large-scale investments being made to modernize the U.S. natural gas pipeline network will enhance system reliability and ensure that customers have greater access, while also protecting the environment and strengthening the economy by creating thousands of new jobs.

Looking ahead, the industry is committed to keeping natural gas as an essential resource for energy affordability and reliability and to expanding vital access for customers in unserved or underserved areas of the country. In other words, natural gas is building our future—and it's here to stay.

RECENT DEVELOPMENTS: NATURAL GAS EXPANSION AND REPLACEMENT ACTIVITY



1. Kansas

In 2017, the Kansas Corporation Commission established the Accelerated Replacement Program for gas local distribution companies to accelerate replacement of unprotected bare-steel mains, unprotected bare-steel service/yard lines and cast-iron mains.

2. Massachusetts

In 2014, the Gas Leaks Act was passed, which permitted LDCs to submit annual plans to repair or replace natural gas infrastructure in the interest of public safety. In 2014, the Department of Public Utilities approved the Gas System Enhancement Plans of the gas LDCs, most of which anticipate replacement of certain pipes within 20 years.

3. Maine

In 2018, Northern Utilities retired 3.59 miles of cast-iron main, 1.2 miles of

bare/unprotected steel or wrought-iron main and 0.4 miles of plastic pipe on its low-pressure system. Cumulative project totals through 2018 are 27.27 miles of cast iron, 8.91 miles of bare/unprotected steel and 6.67 miles of plastic pipe retired.

4. Alabama

In 2018, the Alabama Public Service Commission extended Rate Stabilization and Equalization for Spire Alabama through 2022, which included establishment of an Accelerated Infrastructure Modernization Program intended to support the company in accelerating replacement of its gas distribution pipeline facilities.

5. Florida

In 2018, the Florida Public Service Commission announced continued funding for pipeline improvements and noted approval for 2019 program surcharges for Peoples Gas System and Florida Public Utilities Company and FPUC-Fort Meade, and Chesapeake Utilities Corporation.

6. Louisiana

The Louisiana Public Service Commission recently ordered Entergy Gulf States Louisiana to complete the replacement of cast iron, bare steel and vintage plastic pipe in its gas system within 10 years.

7. Maryland

In 2018, the Maryland Public Service Commission approved a surcharge by Columbia of Maryland for replacement of piping and other facilities.

8. Mississippi

In 2018, Atmos Energy received approval 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.

Source: *National Association of Regulatory Utility Commissioners' Natural Gas*

Distribution Infrastructure Replacement and Modernization: A Review of State Programs, January 2020, pubs.naruc.org/pub/45E90C1E-155D-0A36-31FE-A68E6BF430EE