Recent pipeline accidents, such as those in Allentown, Pa., and San Bruno, Calif., have raised concerns about pipeline safety and the consequences of the aging natural gas infrastructure in the United States. Currently, there are more than 2.4 million miles of natural gas pipeline infrastructure in the country that supplies 177 million Americans with natural gas. Natural gas utilities spend more than $19 billion annually to help enhance the safety of the natural gas distribution system and to upgrade and expand service.

According to the U.S. Department of Transportation, however, more than 50 percent of the natural gas pipelines in the United States were constructed in the 1950s and 1960s, with some constructed even earlier. Approximately 3 percent of natural gas pipelines are made of cast iron and other pipelines are constructed from bare steel. While these techniques were considered safe at the time, neither is used today and the natural gas industry and state lawmakers and regulators are working to replace these older pipelines.

Natural gas pipelines are regulated by the U.S. Department of Transportation’s Pipeline Hazardous Materials Safety Administration, commonly referred to as PHMSA. PHMSA establishes federal safety standards for interstate pipelines and partners with state pipeline safety agencies on enforcement and inspection of intrastate pipeline infrastructure. States can also regulate intrastate pipelines more strictly than the federal requirements.

Ashley Duckman, manager of state affairs at the American Gas Association, noted that the natural gas industry has a priority of removing and replacing pipeline no longer in service, including cast iron, bare steel and older plastic pipe.

“Safety is fundamental,” she said.

With the tremendous growth in natural gas production, the natural gas industry is also expanding its distribution to serve new customers. According to Mike Fessler, director of regulatory affairs for UGI Utilities, which operates in Pennsylvania, UGI alone has converted more than 45,000 households to natural gas at a savings of $50 million. With low natural gas prices, demands to switch to the energy source are high. UGI spends approximately $40 million annually to extend natural gas service to new customers, said Fessler.

This creates an opportunity for “smart modernization,” said Duckman. “As we are taking pipe out, we
should be thinking about what we should be doing to get more distribution to the next customer.”

If designed appropriately, pipeline replacement can be conducted simultaneously with infrastructure expansion to increase pipeline capacity and pressure while also increasing safety.

But according to Duckman, legislative action is often needed to give regulators the authority to put replacement programs in place. Currently 37 states have or are considering an innovative infrastructure expansion program or policy.

Commissioner Pamela Witmer of the Pennsylvania Public Utilities Commission echoed this view. “To take advantage of the opportunity natural gas presents, we must have a good, strong infrastructure.”

With the fourth highest number of cast iron and bare steel pipes in the country, Witmer said Pennsylvania is especially vulnerable to pipeline safety issues. Approximately 4,500 miles of main in Pennsylvania was built prior to 1940.

Pennsylvania also has more than 100 days of freezing temperatures in an average year and a large amount of pipeline is colocated with water, electric and telecommunications infrastructure, said Witmer. The weather can cause pipelines to age at a faster rate and there is a risk natural gas pipeline could be damaged when other utilities dig into the ground to repair or replace their infrastructure. While the Public Service Commission oversees intrastate pipeline safety, utilities like UGI are currently working on aggressive capital replacement programs. According to Fessler, “UGI’s number one priority is replacing older pipe.” UGI’s program would eliminate all 335 miles of cast iron pipe in UGI’s system by 2026 and all 1,215 miles of bare steel and wrought iron pipe by 2041.

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