

Evaluation of Pipeline Safety Performance

Report Summary – October 2026

In July 2026, the Future of Heat Initiative (FOHI) published a report entitled “Spending and Safety Outcomes in U.S. Gas Distribution Systems – An Assessment of DIMP & PHMSA’s Call to Action.” This report claims, among other things, that investment in replacing older, leak-prone (cast iron and bare/unprotected steel) natural gas distribution assets over the last 15 years has not resulted in industry-wide safety improvements.

The Blacksmith Group¹ examined FOHI’s claims and conducted an evaluation using data collected by the Pipeline and Hazardous Materials Safety Administration (PHMSA) and operator data. The complete findings will be provided in a report entitled “A 2026 Evaluation of Natural Gas Distribution Pipeline Safety Performance in the United States,” to be issued in October 2026.

The analysis identifies several areas where the FOHI report’s interpretation of gas system performance data leads to conclusions that are not supported by the broader evidence. Left unanswered, these conclusions could inform policy decisions that increase the risk associated with aging, leak-prone infrastructure in the United States and the Northeast.

Key Findings:

- **Safety performance of the natural gas distribution system has in fact improved.** National and local gas system performance data show investment in replacing leak-prone pipe has prevented deterioration, mitigated emerging risks, and reduced the likelihood and severity of catastrophic events, rather than FOHI’s conclusions, which rely solely on incident counts regardless of type.
- **Replacement of leak-prone pipe is the most effective and efficient long-term engineering solution to ensure gas system integrity.** FOHI argues that other methods are more cost-effective but do not reflect the pipe's actual condition, which often cannot be kept safely in service, even in the short term, with simple repairs.
- While FOHI claims most spending went to pipe replacement rather than leading risk drivers such as excavation damage, the **findings show that pipe replacement addresses multiple risk categories simultaneously and improves system integrity.**

¹ [The Blacksmith Group](#) is an independent consulting firm formed in 2006 that provides expertise on energy pipelines and LNG. Our leadership and personnel bring deep industry knowledge and experience in design, construction, operations, maintenance, risk management, integrity and safety management systems. We have advised Boards and senior executives following major incidents to prevent recurrence, and many others proactively, to prevent failures.

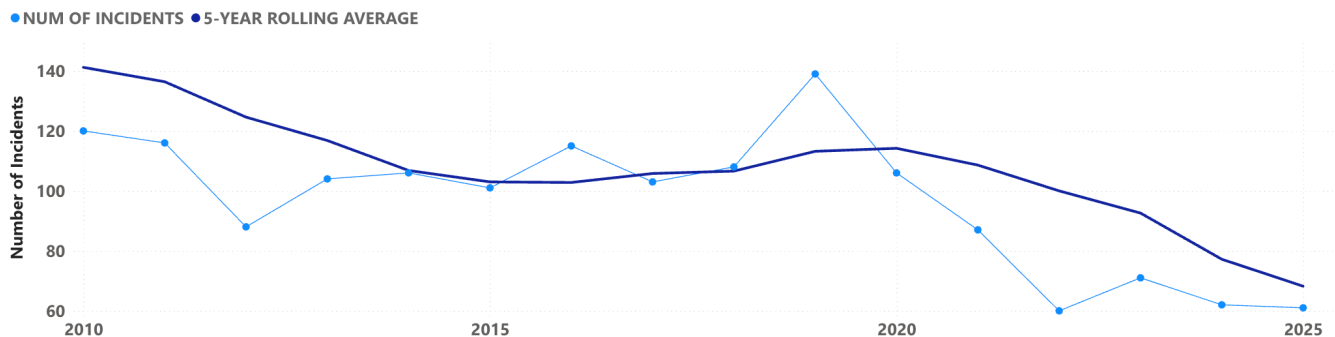
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- **Distribution Integrity Management Programs (DIMP) continue to evolve as an important, effective tool** to ensure gas system operators are addressing system risk, as demonstrated by a broad range of pipeline safety performance measures.
- FOHI's "low-replacement states" are actually states with lower leak-prone inventory. Between 2010 and 2025, these states actually replaced a higher percentage of their leak-prone inventory than Northeastern states, as baseline inventory levels varied by state. Furthermore, while FOHI highlights higher post-2011 incident rates in high-replacement states, **this metric is misleading as it includes incidents unrelated to asset failures and does not recognize the fact that high-replacement states started with older, riskier infrastructure that required replacement for long-term safety.**

Pipeline replacement is fundamentally preventive, risk-based work. Its effectiveness cannot be measured solely by counting incidents after the fact, particularly when the purpose of the investment is to address known vulnerabilities before they result in leaks, failures, or serious safety incidents. Managing pipeline safety is not a binary choice. Repair, leak detection, damage prevention, and replacement all play important roles, but they address different risks and are not interchangeable alternatives. Affordability, project prioritization, and the use of repair technologies or non-pipeline alternatives are all important considerations, but they must be evaluated against the asset's actual condition and the level of risk each option can effectively address. Specifically, the report shows:

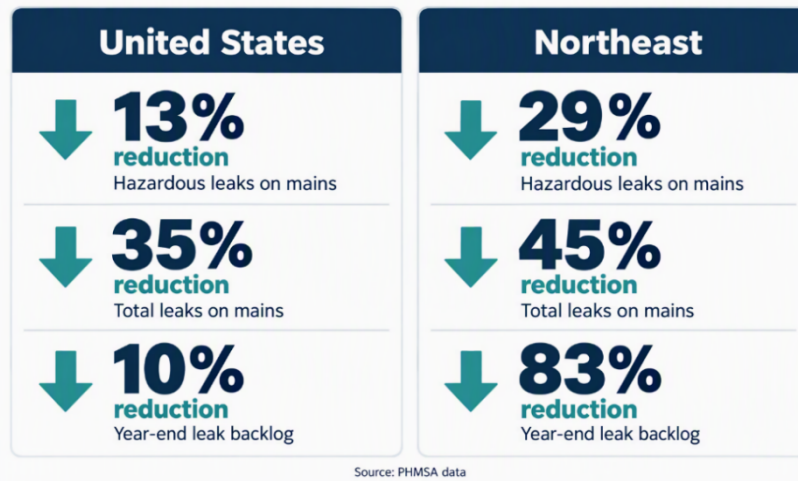
Safety has improved significantly as a result of the investment over the last 15 years

Safety performance of the natural gas distribution system has, in fact, improved significantly over the last 15 years. The number of reportable incidents in the overall system based upon PHMSA data has decreased over the last 15 years, as demonstrated in the chart, which includes all reported incidents.



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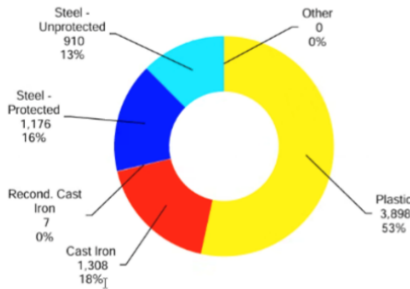
Leak Reductions Over the Last 15 Years



Also very importantly, leaks and associated emissions on natural gas distribution systems have decreased significantly over the last 15 years. Open, unrepaired leaks can turn into more serious situations. In addition, the decline in hazardous leaks (that must be repaired immediately) shows that replacement programs have in fact reduced higher-risk situations, especially in the Northeast where the leak-prone pipe inventory is large in comparison with other parts of the country due to the service years of the systems.

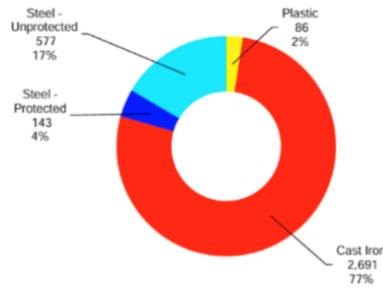
Safety issues occur disproportionately on leak-prone infrastructure

Main Inventory

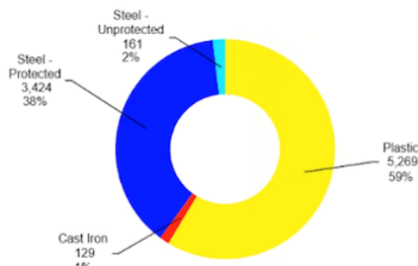


Operating Company 1

Main Leak Repairs
(Including Damages)

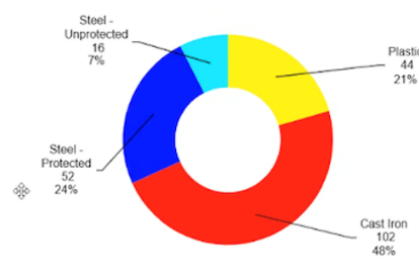


Main Inventory



Operating Company 2

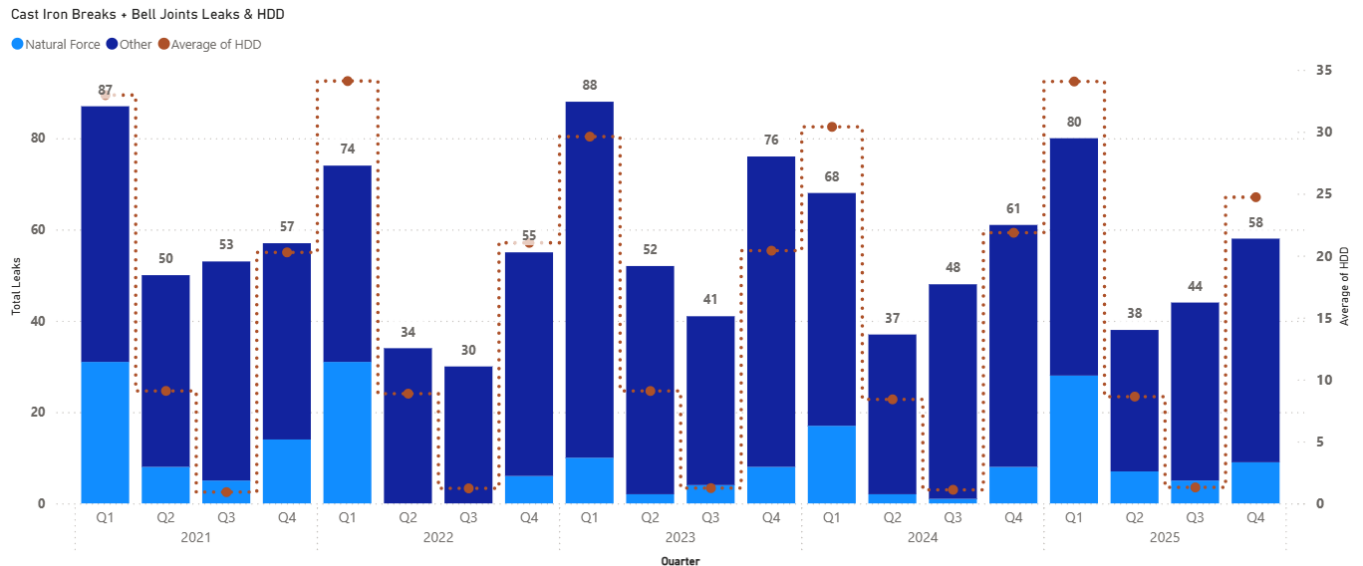
Main Leak Repairs
(Including Damages)



Leaks occur disproportionately more on leak-prone pipe compared to newer materials. As shown, cast iron is of particular concern. Cast iron was installed in the late 1800s and early 1900s, with bell-and-spigot joints every 12 feet. After a century of duty, these joints can leak extensively. In addition, subsurface movement from cold/frost, nearby excavation, and other ground movement can cause cast iron to break. This is especially risky in areas with full pavement or frost, which can prevent leaking gas from dispersing above ground and allow it to migrate into homes and businesses, posing a risk of explosion.

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The occurrence of these leaks and breaks is more prevalent in cold climate areas such as the Northeast due to frost and resulting ground movement and stress induced on leak-prone pipe, as shown in the following chart, which relates them to higher Heating Degree Days (HDD) and resulting periods of colder weather, which generally impacts frost depth.



While the cast iron pipe inventory has decreased significantly, leaks and breaks have not decreased proportionately, indicating that the remaining cast-iron pipe is worsening, increasing safety risk and reinforcing the need to maintain the pace of addressing this concern.

Repair is appropriate for certain issues but is not a broad alternative to replacement or rehabilitation

Pipe replacement, rehabilitation, damage prevention, leak detection and classification, and repair each address distinct risks and operating conditions; therefore, they are not interchangeable alternatives.



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Repair is appropriate for immediate hazards and localized defects; rehabilitation can extend useful life where conditions and application permit; replacement is warranted when degradation is systemic, leaks recur, or rehabilitation is prohibited, such as when structural integrity is compromised. Repair or rehabilitation are not effective and have limited safety value when the pipe has deteriorated significantly. Replacement is the only reasonable method of mitigating safety risk when pipe has deteriorated significantly as depicted in the pictures above.

There are many additional safety benefits resulting from replacement programs that go beyond reduction of incidents and leaks

Replacement programs and, where appropriate, rehabilitation technology applications provide significant safety enhancements that go beyond incident and leak reduction. They fortify the system from an integrity standpoint and increase system resiliency and reliability which provides multiple safety benefits, including:

- Excess flow valves installed, allowing for immediate shutdown of gas service in the event of unplanned high gas flow.
- Additional emergency sectionalizing valves installed, enhancing any needed emergency response.
- Gas service piping and meters/regulators moved outside, allowing for access for emergencies, inspection, and maintenance.
- Customer piping and equipment/appliances are checked for safety during relight process.
- Improved gas facility records, which can significantly reduce facility damage and resulting consequences due to excavation. Vintage infrastructure may have records that are 80 to 100 years old and are not as accurate as records created today.
- Reduced chance of customer outages due to water intrusion in leak-prone low-pressure gas systems due to water main breaks, water leaks, or storm flooding.
- Reduced responses to and repairs of hazardous leaks.
- Elimination of vintage, sometimes unmapped appurtenances such as stubs that are at high risk for excavation damage.

All of these added safety benefits reduce the likelihood and consequence of excavation damage and other incidents as well as reducing system-wide methane emissions.

Standards and Regulatory Requirements have continually evolved

Standards and regulatory requirements got their start as early as 1935. There has been extensive involvement with and input into standards and regulatory requirements over the years from a broad group of stakeholders. The U.S. Congress sets direction and authorizes improvements through legislation. Standards developing organizations such as the American Society of Mechanical Engineers (ASME) and the American Petroleum Institute API have developed and improved standards that address legislation and provide the technical foundation for regulations developed and improved by the U.S. Department of Transportation (DOT), each State, the Pipeline and Hazardous Materials Safety Administration (PHMSA), along with their state partners, represented by the National Association of Pipeline Safety Regulators (NAPSR). Oversight of PHMSA is provided by the DOT Inspector General, the Government Accountability Office (GAO), and the National Transportation Safety Board (NTSB). Public input into regulatory proceedings is provided to the Gas Pipeline Advisory Committee (GPAC), and other interested parties through public comments.

Standards and regulatory requirements have continually improved over time as technical capabilities increased and lessons were learned. One example is the creation of API 1173, a standard for Pipeline Safety Management Systems, that is being adopted and implemented across the industry.

Asset Management and DIMP have improved investment prioritization

Operators utilize overarching asset management processes for addressing risk and for capital and expense planning. The advent of DIMP brings greater structure and transparency to the asset management process of managing the diverse assets that comprise distribution systems. DIMP was promulgated by PHMSA on December 4, 2009, establishing a systematic framework for gas distribution operators to identify, assess, and mitigate pipeline safety risks. DIMP assessment processes have evolved over the last several years. With increasingly better asset data, qualitative as well as probabilistic methodologies, along with operational experience, are being employed to prioritize investment decisions.

Asset Management processes continue to improve. Assessment of system asset safety and emissions risks is done at strategic (for long-range goal setting) and tactical (for shorter-range, project) levels.

Implementation planning is a key part of the process. Implementation is not based solely on modeling output; realities and challenges of completing work, such as permitting, paving moratoriums, system operation, resources, and customer impacts, as well as opportunities for efficiencies are considered and incorporated into work plans.

It is critical to continue to address risky leak prone pipe

On April 30, 2026, Paul Roberti, Administrator of PHMSA and former Rhode Island Public Utilities Commissioner, wrote to the Chairman of the Massachusetts Department of Public Utilities:

“I...urge you to support the Massachusetts Gas System Enhancement Program for replacing cast-iron and other leak-prone pipe in natural gas distribution systems in the State of Massachusetts... Failing to support these replacement projects could increase the potential for pipeline incidents that may result in death, injury, or property damage.”

Conclusion

Replacement programs take a proactive and preventive approach to managing and reducing risk on natural gas distribution systems so catastrophic incidents don’t occur. Proactively replacing or rehabilitating these pipes avoids future risk of catastrophic failure, helps to reduce methane emissions, and increases distribution system reliability, benefiting the customers and communities that utilities serve.

Safety is not measured solely by the number of incidents that occur, but also by the effectiveness of the systems, processes, and risk mitigation provided by life cycle-based, prescriptive regulations in concert with DIMP and pipe repair, replacement and rehabilitation that address all of the risks on the natural gas systems, preventing incidents from occurring in the first place.

Eliminating or even slowing the pace of replacement and rehabilitation programs will increase the risk of more incidents as the condition of remaining leak-prone pipe continues to worsen. Safety remains the industry’s highest priority, and not addressing the riskiest assets in the distribution system would leave the customers and the communities that natural gas utilities serve at greater risk. We urge stakeholders to continue to work together to ensure these programs move forward to address these challenges, reduce these risks, and maximize safety value.