

EXECUTIVE SUMMARY

For decades, natural gas has been touted as clean, safe, and reliable. The September 13, 2018 catastrophic failure in the gas distribution system that caused explosions and fires in the Merrimack Valley focused attention on the risks inherent in piping explosive gas through communities and into homes.



What happened in the Merrimack Valley is the result of rolling the dice with public safety. Massachusetts residents, homes, businesses, and communities remain vulnerable as long as the state continues to rely on gas. Yet despite the magnitude of the problem, both immediate and longer-term improvements can provide the state with safer energy.

In response to the Merrimack Valley disaster, Governor Baker ordered “an independent statewide examination of the safety of the gas distribution system and the operational and maintenance functions of gas companies in the Commonwealth.” This report is the response of citizens and scientists motivated by a desire for a safe, healthy, and just energy system.

The report analyzes documented incidents and publicly available data about the gas distribution system that add up to an urgent message to legislators, the executive branch, municipalities, and gas companies to take action now. It details ways that each of these decision-making entities can implement changes that will greatly enhance public safety in the near term and in the future.

In examining the gas distribution system, this report identifies three assumptions central to the engineering of the gas distribution system:

- Single-point failures can be prevented despite centralized distribution.
- Cost-effective gas pipe materials exist that can contain a gas underground for decades.
- Gas will only combust where it’s needed.

The report’s analysis of leak and incident data seriously undermines each of these assumptions.

- **Centralized Distribution** Three transmission lines enter the state and feed 21,700 miles of gas mains, then 1.3 million gas service lines. A breakdown anywhere on the line causes an outage to all downstream customers.
- **Pipe Materials** The materials used in the system—cast iron and wrought iron, bare steel, and plastic—are all subject to leaking. Iron leaks at joints, bare steel corrodes, and plastic melts when exposed to heat or electric arc.
- **Combustion Likelihood** Gas is much harder to contain than liquid. It accumulates in both building spaces and underground, where it leads to combustion incidents, worsens public health, damages trees, and has a significant impact on the climate.

Inadequate utility management compounds these safety issues. Chronic problems with an understaffed workforce, safety processes, and lack of equipment required for the job can be corrected. Data collection and reporting on both infrastructure conditions and incidents should be improved and shared with municipalities and citizens.

Insufficient government oversight of gas utilities also erodes public safety. Department of Public Utilities (DPU) oversight of gas companies should be strengthened by:

- Ensuring independence of regulators
- Standardizing data definitions and measurements across utilities
- Controlling for errors in utility data collection and releasing fact-checked data to the public
- Coordinating communication between utilities and municipalities
- Enforcing emergency preparedness protocols, such as ensuring accessibility of emergency shutoff valves, sharing data with electric utilities, and providing for expert review of emergency preparedness plans

Given the multiple problems inherent in continuing to rely on an explosive gas as an energy source and the Commonwealth's commitment to reduce its emissions dramatically over the coming decades, this report makes over 50 recommendations toward an overall strategy of triage and transition.

- **Triage** Reduce short-term risks to safety, health, and property by enhancing statewide gas leak classification standards and prioritizing the largest and most hazardous leaks for repair, not pipe replacement.
- **Transition** Eliminate long-term risks intrinsic to reliance on a combustible gas by deploying a managed, just transition to cleaner, safer, and more cost-effective heating and cooking solutions.

This recommendation is further supported by an economic analysis showing that large investment in the current system will result in stranded assets and the nearly certain demise of the current gas distribution companies.

Instead of rolling the dice by continuing to rely on gas, Massachusetts can strengthen public safety now while developing smart policies and implementing safer, innovative technologies to power homes, businesses, communities, and the Commonwealth into the future.