

# Get the Facts: Pipeline Safety

## **Q: How many miles of natural gas pipeline are there in the United States and what regulations are in place to help ensure public safety?**

The natural gas industry operates an extensive system of 2.6 million miles of distribution and transmission pipelines that stretch across the country to provide service to more than 178 million Americans. The design, construction, operation, inspection and maintenance of all operating pipelines are subject to state and federal regulations and requirements. According to the U.S. Department of Transportation, pipelines are the safest, most environmentally-friendly and most efficient and reliable mode of transporting natural gas. More information is available [here](#).

## **Q: What types of materials are used for natural gas distribution pipelines?**

Distribution pipelines are predominantly made of plastic, steel, cast iron, and wrought iron. New pipelines are typically made of plastic for intermediate and lower operating pressures, and cathodically protected steel for higher operating pressures.

## **Q. Who provides oversight to ensure that pipeline operators are complying with safety regulations?**

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration ([PHMSA](#)) is the federal regulatory agency responsible for the oversight of pipeline safety in the United States.

The pipeline safety regulations apply to all pipelines in the United States. Through annual certifications and agreements, individual states have enforcement responsibility for pipelines within their own state. A state agreement with PHMSA requires a state to adopt and enforce the federal regulations. These states may enforce both the federal regulations and their own regulations, which are consistent with, and at least as strict as, the federal regulations.

Pipelines are the safest, most environmentally-friendly and most efficient and reliable mode of transporting natural gas.

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

For a complete listing of the state regulations which go beyond the federal regulations in pipeline safety, see [this document](#) written by the National Association of Pipeline Safety Representatives.

## **Q. How does the public know the industry is committed to safety?**

Safety is and always will be the natural gas industry's first priority. Natural gas utilities spend more than \$26 billion annually to help enhance the safety of natural gas delivery systems. Natural gas utilities are subject not only to their own stringent internal controls but must also meet rigorous federal and state oversight. Inspections are performed regularly by state regulators to help ensure that compliance is being met.

The American Gas Association's member utilities have adopted a Safety Culture Statement which you can view [here](#).

AGA members also made a formal commitment to take additional actions beyond those required by current regulations for the purpose of enhancing safety for their customers and the public. View the commitment [here](#).

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## Q. How do natural gas utilities educate their customers and the public on pipeline safety issues?

All-natural gas pipeline operators are required to develop and implement a pipeline safety public awareness program to help educate the public in the vicinity of the pipeline, as well as state and local emergency response personnel, public officials and excavators.

Pipeline safety education methods are determined based upon the intended audience, but delivery methods may include print materials, personal contact, telephone calls, public service announcements, billboards, community events and open houses. Pipeline operators continually review the public awareness materials and distribution methods to help ensure the intended stakeholders are adequately informed and, when possible, collaborative efforts are identified.

Public awareness information includes:

- Pipeline purpose and reliability,
- Potential hazards and preventative measures taken by the operator,
- Actions to take in protecting pipelines from excavation activities,
- Leak recognition and response, and
- Emergency preparedness specific to each jurisdiction.

Individuals living in the vicinity of a pipeline receive public awareness information at a minimum of once every two years.

**\$26  
Billion**

**Natural gas utilities spend \$26 Billion annually to help enhance the safety of delivery**

## Q: How do natural gas utilities identify a pipeline leak?

Regulations require natural gas utilities to perform periodic surveys throughout their system. These surveys utilize instruments that can detect the presence of methane and provide information about concentration levels, which help the utility determine the risk posed by the leak. In addition to these surveys, utilities rely on the public to call whenever they suspect a gas leak. (*See FAQ regarding on signs of a natural gas leak*) Customers should never hesitate to call the local gas utility immediately whenever they suspect a gas leak.

## Q. What are natural gas utilities doing to replace and maintain natural gas pipelines?

Natural gas utilities actively work with federal, state, and local regulators to maintain the nation's natural gas pipeline system and replace pipe as necessary. In the past decade, natural gas utilities have installed updated plastic pipe – the leading in advanced utility pipeline materials – at a rate of 30,000 miles per year. Pipeline operators use a complex risk management process to inspect pipe, determine if leaks are occurring, when and where repairs are required and when a particular pipeline needs to be replaced. This process is known as DIMP, which stands for Distribution Integrity Management Program, and has been formally required by PHMSA since 2011. Each operator's DIMP plan is audited by their state regulator or PHMSA to help ensure that risk mitigation is optimized, accounting for asset conditions, system size, operating environment and customer base.

While the primary objectives of efforts to manage infrastructure are to preserve public safety and reliability, it is also important to responsibly manage costs to avoid placing an undue financial burden on utility customers. The adoption of innovative cost recovery mechanisms by public utility commissions enables utilities to accelerate the modernization of the nation's underground infrastructure delivering natural gas to homes and businesses.

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Currently 42 states have accelerated pipe replacement programs. The National Association of Regulatory Utility Commissioners has approved a resolution encouraging state regulators and industry to consider sensible programs aimed at replacing the most vulnerable pipelines as quickly as possible and to explore, examine and consider adopting alternative rate recovery mechanisms in order to accelerate the modernization, replacement and expansion of the nation's natural gas pipeline systems.

## Q: How do I learn more about the progress the industry is making in replacing its pipelines?

The U.S. Department of Transportation has created a website to illustrate the progress pipeline operators are making in the replacement of aging gas distribution pipelines. PHMSA now provides access to an annually-updated [online inventory](#) that lists high-risk pipeline infrastructure mileage by state. Specifically, the dynamic inventory highlights efforts to replace pipelines constructed of cast or wrought iron and bare steel.

## Q. Is age a factor in pipeline safety?

Age is only one factor to consider for pipeline replacement, as an older pipeline can still provide safe and reliable service. Each pipeline is unique, and the risk of it sustaining damage or deterioration is influenced by many factors, including: the operating history of the pipeline; how well the pipeline has been protected from corrosion; material; how the pipeline was constructed; and the environment around the pipeline.

## Q. Where can I find more information about the regulations that govern the natural gas pipelines in the United States?

The federal regulations are posted [here](#).

## Q. Has there been a recent increase in the number of natural gas pipeline accidents occurring in the United States?

The dedicated efforts of America's natural gas utilities to upgrade and modernize our nation's natural gas infrastructure have led to an approximately 40 percent decline in pipeline incidents over the past decade. Annual pipeline accident information from 1990 through 2014 is available at PHMSA's website [here](#).



## Q. What causes natural gas pipeline incidents?

Excavation damage is the leading cause of most serious pipeline failures. Accident information is grouped into eight cause categories: excavation damage, corrosion, natural forces, other outside force damage, material or welds, equipment, incorrect operation and other. Accident cause information is available at [PHMSA's website](#).

Accidents involving natural gas are not always caused by a leak or break on a natural gas pipeline. For instance, natural gas may ignite due to a fire that happened first.

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## Q: How long does it take the natural gas utility to respond once a call has been made to report a suspected gas leak?

Response time depends on a variety of factors, some of which are beyond the direct control of the gas utility. For instance, the amount of traffic in the community will impact response time. Natural gas utilities prioritize their response and determine when to alert other emergency responders based upon the nature of the information provided by the caller and what he or she is observing. In general, odor complaints from customers are assigned a high priority, particularly when natural gas is smelled inside a structure.

## Q. What is the difference between transmission pipelines and distribution pipelines?

In general, a **transmission pipeline** is a larger diameter line operating at a higher operating pressure and transports the natural gas between states, counties, cities and towns. **Distribution pipelines** are generally the smaller diameter lines at lower operating pressures that deliver natural gas directly to local homes and businesses.

Transmission and distribution pipelines are managed and inspected differently by natural gas utilities, based upon the fundamental differences that exist between them. Federal and state regulations dictate specific requirements in operating both types of pipelines.

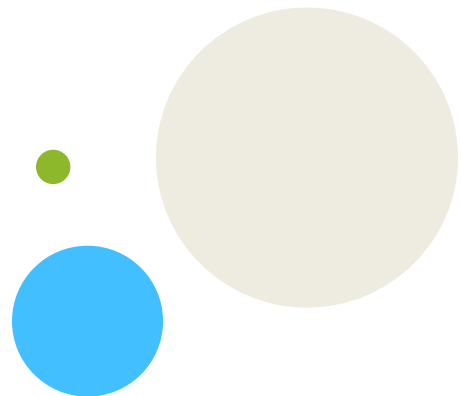
## Q. How do I access maps showing the location of the pipelines in an area?

PHMSA has created a National Pipeline Mapping System (NPMS) that shows the general location of all-natural gas transmission pipelines and other pipeline facilities in the United States. This map is available to the public [here](#). There is no map available to the public showing the location of natural gas distribution pipelines.

## Q: Are all natural gas pipelines in my community and on my property operated by my local gas utility?

Natural gas utilities operate gas distribution lines up to the meter at a house or business. Generally, lines beyond the meter, or those lines inside a home, business, apartment complex, industrial park or business park, are the responsibility of the home or business owner. It is critical that property owners maintain their gas appliances and their fuel lines and have fuel lines inspected periodically by licensed technicians. Fuel lines are also buried lines that run from the gas meter to other structures on a property, such as a detached unit on a property, a shed, pole barn or pool heater. Fuel lines are also generally the responsibility of the property owner to maintain.

In addition to the pipelines operated by natural gas utilities, there are interstate transmission pipelines which supply gas to the local gas utility. Interstate pipelines are generally located along major roadways and transportation corridors that connect counties and cities.



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## Q. What is a “High Consequence Area” (HCA) and how can I tell if I live and work in an HCA?

“HCA” is not a term associated with the safety or condition of a particular pipeline. Instead, this industry term was created by the public, regulators and industry personnel to improve pipeline safety by focusing comprehensive inspections on certain transmission pipeline segments.

Natural gas transmission pipelines that are located in areas where people live and work or are known to congregate on a regular basis are then deemed as being in an “HCA.” By regulation, this subset of transmission pipelines then receives the greatest level of inspection and have an added layer of inspection to avoid accidents that otherwise would have the largest negative consequence on the public. These additional inspections are an added layer of protection supplemental to the safety requirements that apply to all-natural gas transmission pipelines.

## Q. What kind of testing is performed on natural gas pipelines to help ensure their safety?

There are several different types of [inspections](#) and testing that can be used to evaluate the condition of natural gas pipelines. Different types of inspections and testing methods are used, based upon a variety of factors for both transmission pipelines and distribution pipelines. The inherent differences that exist between distribution pipelines and transmission pipelines, and the different threats a pipeline may face, often dictate what type of inspections and tests are done.

## Q. What type of inspection is conducted on transmission pipelines?

All transmission pipelines have some form of periodic inspection. The purpose of inspection is to obtain information about the pipeline to determine if it has a leak or if it is not receiving adequate protection from the threat of corrosion.

In addition, pipeline rights-of-way are surveyed to ensure that population encroachment has not become an issue and that there are no excavation activities in the vicinity of the pipeline that may result in any damage.

In addition to these types of inspections, federal regulations specify that the level of inspection must be more rigorous on transmission pipelines in HCAs. This type of integrity inspection can be done by techniques known as In-Line-Inspection (ILI), Pressure Testing or Direct Assessment. While these three techniques have some fundamental differences in their application and in what circumstances they can be utilized, they are all designed to provide the pipeline operator detailed and comprehensive information on the condition of the pipeline and whether or not repairs are necessary. Due to the way pipeline systems are configured, there are actually tens of thousands of miles of transmission pipelines outside of HCAs that have had this formal integrity inspection.

Number of states that have accelerated replacement programs to help modernize natural gas infrastructure.

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## Q. How can I help ensure the pipelines in my neighborhood are safe?

1. Pay attention in order to help identify potential signs of a natural gas leak. There are several ways to detect a natural gas leak:

**Smell:** Because an odorant called mercaptan is added to natural gas by the utility to help you detect its presence, the best sign of a natural gas leak is if you smell something similar to rotten eggs.

**Sight:** Look for dirt blowing into the air, persistent bubbling in standing water, or discolored or dead vegetation around the pipeline area.

**Sound:** Listen for any unusual hissing or roaring sound.

In the event you think you smell, see or hear any of these signs of natural gas, leave the home, building or vicinity immediately and call your natural gas utility.



**Know what's below.  
Call before you dig.**

2. Be sure to call 811 at least three full days before you perform any digging work, even if it is something as simple as planting a tree in your yard. This will allow the local utilities to come and mark the location of any underground lines so that you can avoid damaging them when you dig: To learn more click [here](#).

3. Help make sure that all those who are performing any excavation work in your neighborhood have notified 811. This would include any work done in the public right-of-way, as well as work done by individuals in their yard. If a call to 811 has been made, underground utilities in the vicinity of the excavation site will come to the site prior to the start of excavation and will mark the location of their buried facility through painted lines, flags or other markers. If a call to 811 has not been made prior to excavation, this could possibly result in damage to underground facilities, including natural gas pipelines.

Information on how to respond to a potential leaks or these signs varies throughout the country based on a variety of factors, including climate and soil condition. To learn how transmission pipelines near you or your distribution utility addresses leak, contact them directly.

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