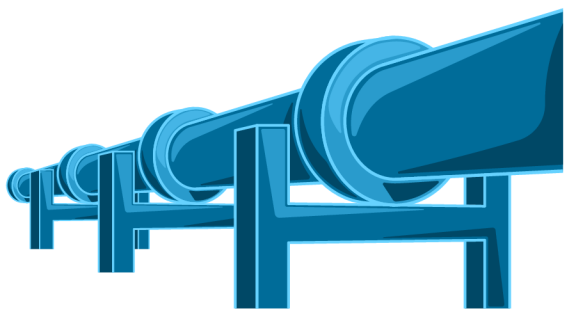


Pipelines

What Is It?

Pipelines are long, interconnected tubes that transport liquids or gases between different locations. Different types of pipelines transport products for different purposes, including collection (upstream), transmission (midstream), and distribution (downstream).



What Are They Made Of?

Pipelines are made from a variety of materials depending on the type of fluid being transported. Pipelines are commonly made from steel or plastic, but can also be made from copper, concrete, or advanced composites. All major pipelines have protective coatings and layers made specially to protect it from damage.

What Does It Cost?

The cost of a pipeline varies significantly by diameter and type, and new technologies and market fluctuations are changing the average cost every year. A new land pipeline costs over \$10 million per mile.



Space



There are approximately 2.6 million miles of non-distribution pipeline in the U.S., and most pipelines are located underground. Pipeline components such as pump stations and refineries are above-ground. Pump or compressor stations are built every 20 to 100 miles along a major pipeline and take up 5 to 10 acres.

Point

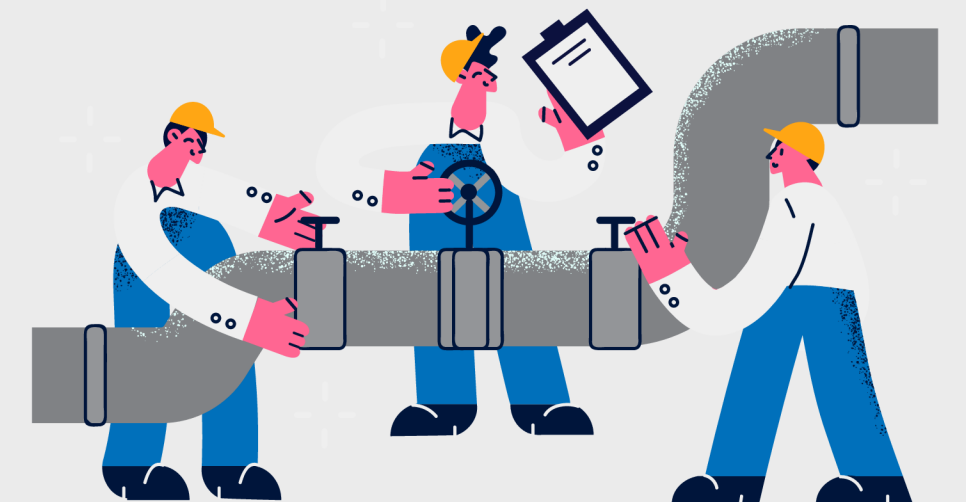
- Modern pipelines are typically built to last 40 to 50 years and can be extended with proper maintenance.
- Most pipelines are located underground.
- Most pipelines need dozens of inspections every year.
- There have been record low numbers of significant or serious pipeline incidents in recent years.
- Transporting resources through pipelines is safer and saves significantly on greenhouse gas emissions compared to transporting by train or truck, with pipelines losing less than 0.001% of transported material.

Counterpoint

- More than 60% of all U.S. pipelines are more than 50 years old, and around 20% are more than 75 years old.
- Pipeline projects often use eminent domain during construction.
- PHMSA has fewer than 250 total inspectors, and may be underfunded.
- Serious pipeline accidents have still killed hundreds and injured thousands of people in recent decades.
- Leaks from natural gas pipelines results in at over 1 million tons of methane released per year, and there was more than 37,000 barrels of oil and biofuel pipeline spillage yearly from 2010 to 2020.

How Does It Work?

1. Extraction: natural gas and crude oil are extracted from the ground using advanced drilling equipment. Other resources that may be transported in pipelines include water, CO₂, refined fuels, and slurry.
2. Transport: The extracted resources are collected and pumped into gathering pipelines, where they will be eventually taken to distribution or to refineries. Products may be processed to remove impurities before transport.
3. Monitoring and Pumping: All pipelines carrying potentially hazardous materials are closely monitored using various sensors. Resources also must keep moving through the midstream pipelines, necessitating pumping or compression stations for liquids and gases.
4. Distribution: Crude oil is delivered to refineries to become various petroleum products. Natural gas goes through gas processing before being delivered to gas-power plants or else moving on to distribution pipelines.
5. Delivery: Resources are pumped through distribution pipelines to their end-use location. Natural gas is transported to 72 million U.S. homes, and petroleum products are transported to gas-stations, airports, and truck-distribution centers.



Did You Know?

The longest refined oil-product pipeline in the U.S. is the Colonial Pipeline, stretching 5,500 miles between Texas and New York. It consists of three tubes and delivers 3 million barrels of fuel every day to the East coast.

What's Next?

Emerging technology ensures pipeline safety is continuously improving, and pipelines are one of the most efficient ways to move liquids and gases. Despite an overall slowing of new natural gas and crude oil production, pipelines will also be used to transport cleaner energy sources like hydrogen and bio-fuels.