

Economic and Environmental Benefits of Oil and Gas Pipelines

Submitted by David Marks, Eastern Energy Field Services 08/16/2021

The first section of this paper is a collection of short statements from various sources such as the Federal Energy Information Administration, the US Department of Transportation and The Faculty of Engineering at the University of Alberta to support the benefits of pipelines over other methods of transportation.

The second section is text gleaned from a 2020 report by Daniel Shea and Connor Shantz from the National Conference of State Legislatures titled Safe and Reliable Pipelines - A Primer for State Legislatures.

The third section is a brief discussion of further economic and safety benefits of our pipeline infrastructure.

SECTION ONE

US Department of Transportation data shows pipelines are the safest mode of energy transportation. Accidents are rare. According to the most recent numbers available, 99.99997% of gas and crude oil is moved safely through interstate transmission pipelines. For example, in every year from 2003 to 2013, pipelines experienced fewer occurrences per million barrels of oil equivalent transported than did rail.

Pipelines are the most efficient, and environmentally friendly way to transport energy resources across long distances. ... Pipelines transport two-thirds of America's petroleum products and natural gas.

Pipelines have been shown to be the least greenhouse gas (GHG) intensive way to transport oil and gas. In one study, The Faculty of Engineering at the University of Alberta found that pipelines reduced GHG emissions by anywhere between 61% to 77% versus rail for transporting oil and gas long distances.

Pipelines are generally regarded as a far better alternative to tanker trucks or freight trains. The risks inherent in transporting fuel through pipelines are analogous to the risks inherent in traveling by airplane.

The Alberta study concluded: "The evidence is clear: transporting oil and natural gas by pipelines is safe. Furthermore, pipeline transportation is safer than transportation by road, rail, or barge, as measured by incidents, injuries, and fatalities – even though more road and rail incidents go unreported."

SECTION TWO

The following text is a testimony to the role of state legislatures regarding the existence and continued operation of oil and natural gas pipelines. The information is gleaned from:

Safe and Reliable Pipelines - A Primer for State Legislatures

By Daniel Shea and Connor Shantz, February 2020, directly from The National Conference of State Legislatures

INTRODUCTION

Petroleum products provide approximately 65% of the energy used in the US, with oil and gas representing the largest share. Pipelines provide the least cost and safest method for transporting these products, which make them important to our critical energy infrastructure.

The ability to safely deliver oil and gas by pipelines is essential to the security of the United States, and a fundamental aspect of modern life, with significant economic and public health implications. The U.S. Department of Transportation's Pipelines and Hazardous Materials Safety Administration (PHMSA) oversees pipeline safety in coordination with state agencies. In fact, states have a significant role in regulating, implementing, and enforcing pipeline safety.

State legislatures are positioned to take essential steps to help reduce pipeline risks, including:

- Updating damage prevention laws to account for best practices, in coordination with PHMSA's guidance
- Enabling utility commissions to promote pipeline safety programs and replace aging infrastructure through cost-recovery mechanisms (*as an example, this is already happening through Peoples Natural Gas' replacement of cast iron and bare steel pipe*).
- Establishing and promoting pipeline safety standards, including funding for state inspection and oversight activities
- Establishing and funding emergency planning and management activities, in addition to public education campaigns

There are more than 2.7 million miles of pipelines that deliver trillions of cubic feet of natural gas and hundreds of billions of tons of oil every year across the US. The bulk of that system — 92.6% - is for natural gas, and 218,000 miles of petroleum pipelines make up the balance.

Even within the natural gas system, 88% is distribution lines that deliver gas to homes and businesses. However, the gas often travels long distances between production sites and end users, with over 300,000 miles of transmission lines and nearly 18,000 miles of gas gathering lines in service across the country.

THE IMPORTANT ROLE PIPELINES PLAY

The comprehensive pipeline system looks like this:

- **Gathering lines** that collect and move products from wells to storage or processing.
- **Transmission lines** that transport natural gas or liquids over long distances, connecting production to utilities, storage facilities, power plants, industrial customers, and municipalities. Petroleum transmission lines deliver crude oil to refineries, before moving refined products to market.
- **Distribution lines** that deliver gas for final consumption. Main lines deliver gas to industrial users and large consumers, while service lines move gas to homes and businesses.
- **Interstate pipelines** that move products across state lines. Approximately two-thirds of the lower 48 states are dependent on interstate pipelines. Interstate transmission lines account for more than two-thirds of all transmission lines in the U.S.
- **Intrastate pipelines** that operate *within* a state's boundaries. Pennsylvania has several intrastate pipelines.
- **Storage and peaking facilities** that help balance daily and seasonal variations in demand. There are over 400 natural gas storage facilities across 28 states—largely consisting of depleted natural gas fields. Pennsylvania has the largest single market-area storage facility in the country, located at Delmont.

Additionally, gas pipeline commodities also include byproducts of natural gas production. These include ethane, hydrogen, propane, and more. And with a focus on the environment, hydrogen pipelines will get a new emphasis as a zero-carbon alternative.

Again, pipelines are the safest and most cost-effective ways to transport natural gas and liquid products. Aging infrastructure and outdated materials are being replaced to maintain a standard of safety. Twenty-two states and Puerto Rico have eliminated cast iron distribution lines and nationally, cast iron mileage has decreased by 42% from 2005 to 2018. Changes in these materials have helped to improve the safe aspects of pipeline operations.

ROLE OF STATE LEGISLATURES

State legislatures play a significant role in promoting safety by overseeing regulators and passing legislation. They can direct regulators to adopt safety standards that are more stringent than federal requirements and financing mechanisms that offer incentives to replace older pipelines. They can also update statutes on excavation damage prevention and enhance civil penalties and enforcement or require that pipeline operators meet certain emergency planning requirements.

PREVENTING EXCAVATION DAMAGE

Excavation is one of the leading causes of pipeline damage in the U.S., with only corrosion and equipment failure accounting for more incidents. This is the reason it's important to present excavators with the most accurate information possible to avoid ruptures.

Over the past two decades, states have been working to reduce the prevalence of these incidents through damage prevention laws—often referred to as “one-call laws” or “811 laws.” To date, the laws have contributed to a reduction in the number of significant incidents caused by excavation damage, a decrease of about 30% since 2005.

At least 14 states—Alabama, Arkansas, Colorado, Indiana, Kansas, Maryland, Michigan, Missouri, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania and Tennessee — have revised their one-call laws.

The primary elements of effective laws include:

- **Excavator Notice**
- **Operator Response**
- **Positive Response**
- **Damage Notification**
- **Standards**
- **Enforcement**

For more information on state damage prevention laws, visit National Conference of State Legislatures's (NCSL's) online resource, [“How States Protect Pipelines from Excavation Damage.”](#)

PROMOTING EFFECTIVE RATE REGULATION

As we know, state regulators are tasked with protecting ratepayers. It's their job to ensure that rates remain reasonable and to ensure everyone has access to products. But they're also responsible for the regulation of pipeline operators. The revenues that operators receive help to fund programs tied to safety, such as maintenance and replacement initiatives.

In order for pipeline operators — often referred to as local distribution companies (LDCs) — to be able to fund these safety initiatives, public utility commissions must give them an opportunity to recover the associated costs. LDCs file rate cases with utility commissions that outline the company's operations, and are limited to what the utility commission approves.

So it's the role of utility commissions to balance public safety and cost, which is not always easy. If safety were the only concern, utility commissions would approve massive near-term rate increases to fund a sweeping effort to replace the riskiest pipes. But safety isn't the only consideration, given that drastic rate increases would make natural gas unaffordable for many. Commissions are bound to keep rates “just and reasonable.”

The District of Columbia, Puerto Rico, and all states except Alaska and Hawaii participate in PHMSA's pipeline safety program, with another 10 states also participating in PHMSA's underground natural gas storage program. In order to participate in these programs, states must adopt the minimum federal pipeline safety regulations.

States are free to enact their own regulations on pipeline and natural gas storage. PHMSA measures the performance of these programs with on-sight inspection, compliance, incident investigation and training, and by evaluating excavation damage prevention records and activities. PHMSA maintains public information regarding each state's pipeline safety program, and its performance metrics, which can be found on its State Pages website. Additionally, states can operate their own pipeline safety program, provided the program receives certification from PHMSA.

Pennsylvania has considered changes to state law that would enhance pipeline safety standards. Bills have been aimed to address training and certification for workers, requiring the study of state pipeline systems and the potential incentives that could enhance system safety and encourage pipeline replacement, limiting the siting of larger-diameter pipelines near certain facilities, and enhancing LDC maintenance program reporting requirements.

NCSL CONCLUSION

Given the important role pipelines play in delivering energy in a reliable and cost-effective way, lawmakers are working to ensure pipelines are protected from damage by third parties. They are also acting to make sure pipelines are maintained and upgraded to ensure public safety and environmental security. Through continued collaboration with PHMSA, states have the opportunity to partner with federal authorities to enhance the safe and reliable operations of the nation's pipeline system.

Our state legislature plays a significant role in establishing the parameters within which agencies operate. In recent years, state legislatures have pursued that initiative with new and updated legislation to enhance safety standards, strengthen enforcement, balance oversight, and offer incentives to increase safety.

SECTION THREE

FURTHER TESTIMONY to the ECONOMIC BENEFITS and SAFETY of PIPELINES

Pipelines generate \$billions and provide thousands of jobs in communities across the country. The revenue generated by the industry is used to help pay for jobs, health care, education, infrastructure, and other programs that are important to us all.

Pipeline transportation has numerous advantages such as flexibility, complete automation of loading and unloading operations, flexibility, low operating costs, and environmental friendliness. Pipelines are ideal for unidirectional flow of goods. Inflationary influences have minimal effect on transport costs.

Pipeline operators spend billions of dollars on new technologies and a gradual improvement over the last two decades as proof of their commitment to safety. And while corrosion is an issue for pipeline opponents, operators state that new pipelines are built and tested to meet all federal safety requirements. In fact, none of the 14 spills from the Keystone pipeline since 2010 were caused by corrosion, according to an investigation by the U.S. Department of State.

Andrew Black, the president of the Association of Oil Pipelines, a trade group whose members include pipeline operators notes: "Different operators use different pipe components, using different construction techniques, carrying different materials over different terrains," he said. Allowing operators to develop their own strategies for each pipeline is critical to properly maintaining its safety, he contended.

One safety measure is the widespread installation of automatic or remote-controlled shutoff valves, which can quickly stop flow in an emergency. These valves help to reduce the time to find and shut off critical valves. Operators use these valves already on most new pipelines but argue that replacing all valves would not be cost-effective and false alarms would unnecessarily shut down supplies.

Other measures focus on preventing leaks and ruptures in the first place. The industry already uses robotic devices called "smart pigs" to crawl through pipelines. These devices clear debris and take measurements to detect problems.

A BRIEF SUMMARY

- Pipelines are ideally suited to transport liquids and gases.
- Pipelines can be laid through difficult terrains as well as under water.
- Pipeline transportation involves very low energy consumption.
- Pipelines require less maintenance today with better use of technology and materials.
- New pipelines are safe, accident-free, and environmentally friendly in comparison to practices from prior decades.