



**DYNAMIX**  
Engineering & Services Group

*Critical  
factors for  
gas pipeline  
operators to  
succeed  
under new  
regulations*



# **8 Considerations for PHMSA Mega Rule Compliance**

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# Introduction:

## What is the PHMSA Mega Rule?



The U.S. natural gas storage and transportation industry is marshaling to comply with new comprehensive regulations, known as the Mega Rule, that expands regulatory and reporting requirements for onshore gas transmission lines.

On October 1, 2019, the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a final rule that expanded Federal pipeline safety oversight to all onshore gas gathering pipelines, with an effective date of July 1, 2020.

The final rule, the result of a rulemaking process that began more than 10 years ago expanded the definition of a regulated gas gathering pipeline that was more than 50 years old. Tens of thousands of miles of gas pipelines came under federal pipeline safety regulations for the first time.

Also, for the first time, the final rule requires pipeline operators to report safety information for all gas gathering lines, representing more than 425,000 additional miles covered by Federal reporting requirements.

The rule was developed in response to several incidents on high pressure, unregulated lines, which have tragically resulted in fatalities, injuries, and large amounts of greenhouse gas (methane) emissions.

As the new rules wound their way through the system, many companies simply reduced their operating pressures to meet compliance regulations rather than remediate or replace to meet new standards for old materials. The unregulated lines pose risks in pipeline integrity and public safety through corrosion, excavation damage, and inadequate emergency response planning.

PHMSA estimated there were more than 400,000 miles of unregulated onshore gathering lines. In comparison, operators reported 320,000 miles of gas transmission lines in 2019.

Even though some gathering lines shared physical, functional, and operational characteristics and potential adverse effects from an incident as transmission lines, these lines were exempt from reporting requirements and safety standards. Investigation into incidents highlighted the gap between unregulated pipelines that presented at least as much risk as the transmission lines that were subject to regulations.

The final Mega Rule closed this gap by requiring all gas gathering facilities to submit incident reports and annual reports. In addition, the final rule adopts minimum safety standards for larger diameter gas gathering lines operating at higher pressures to help ensure that operators identify and address critical risks from these previously unregulated facilities.

In addition to safety, environmental impact mitigation was another impetus for the new rules. Research indicates that more than 1,000 metric tons of high-global-warming-potential methane gas are emitted, on average, with each pipeline rupture. A single rupture from a large, high-pressure gas pipeline can release more than 1,300 metric tons of methane emissions into the atmosphere.

Building on recommendation from the National Transportation Safety Board, Congress enacted the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 on January 3, 2012. The new mandate required PHMSA to expand integrity management regulations beyond pipelines located within a

High Consequence Area (HCA), for regulations requiring the verification of Maximum Allowable Operating Pressure (MAOP), and elimination of the “grandfather clause” in existing rules that allowed for selected pipe segments installed before 1970 to remain untested.

The Final Rule established two new categories for onshore gas gathering pipelines

1) All onshore gathering line operators are designated “Type R” and are subject to PHMSA’s annual reporting and incident reporting requirements

2) Specified previously unregulated rural gas gathering lines must comply with PHMSA damage prevention and, depending on the size of the pipeline, construction and operational requirements as “Type C” onshore gas gathering lines.

The Mega Rule creates formalized industry standards to ensure best practices are followed regarding construction, operations/maintenance, and abandonment of gas infrastructure. Another goal is to minimize and eventually eliminate venting, flaring and fugitive methane emissions.

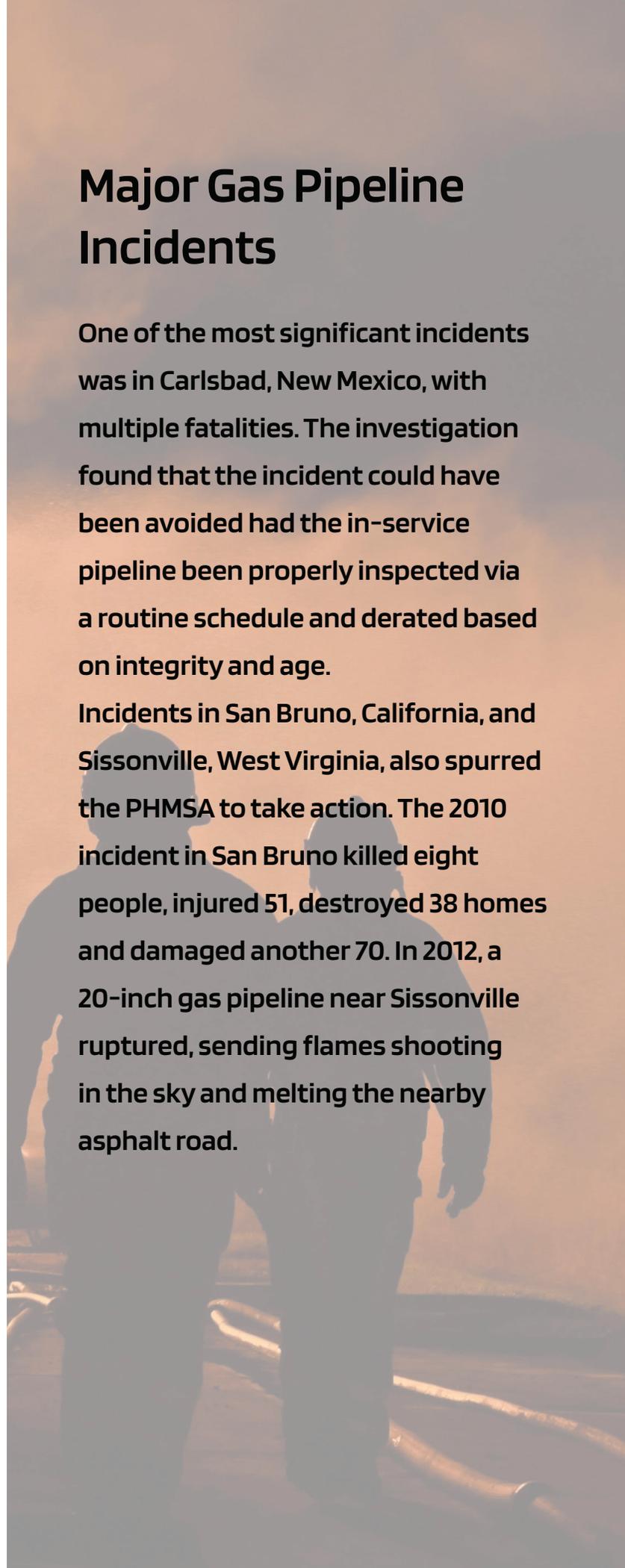
While the parameters of the Mega Rule are finalized, gas pipeline owners/operators are faced with the challenge of complying in an environment with a range of economic and procedural difficulties.

In this whitepaper, we will review some of the top considerations for your PHMSA compliance plan in the coming months and years.

## Major Gas Pipeline Incidents

**One of the most significant incidents was in Carlsbad, New Mexico, with multiple fatalities. The investigation found that the incident could have been avoided had the in-service pipeline been properly inspected via a routine schedule and derated based on integrity and age.**

**Incidents in San Bruno, California, and Sissonville, West Virginia, also spurred the PHMSA to take action. The 2010 incident in San Bruno killed eight people, injured 51, destroyed 38 homes and damaged another 70. In 2012, a 20-inch gas pipeline near Sissonville ruptured, sending flames shooting in the sky and melting the nearby asphalt road.**



# Mega Rule Compliance Challenges

As the timeline advances, owners and operators of gas gathering lines face the challenge of developing plans and gathering and directing resources to comply with these regulations. Given the complexity of the current environment and economy, few gas operators have the expertise and staffing to manage the program with in-house resources.

Challenges of complying include



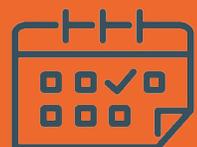
**Staffing.** Most operations are running lean, and hiring is difficult. Given the timeline, hiring the right staff with the right experience is not realistic.



**Expertise.** Performing the evaluations and analysis and any mitigation requires hard-won experience, education, and a specialized skill set.



**Process & cost.** Gas companies must develop a compliance plan based on their current situation and develop cost estimates to secure internal and external funding. The process will likely take longer and have higher expenses than initially estimated.



**Timetable.** While some deadlines seem years away, the complexity of the process and the shortage of resources means it's crucial to begin the process as soon as possible to avoid potential compliance enforcement.

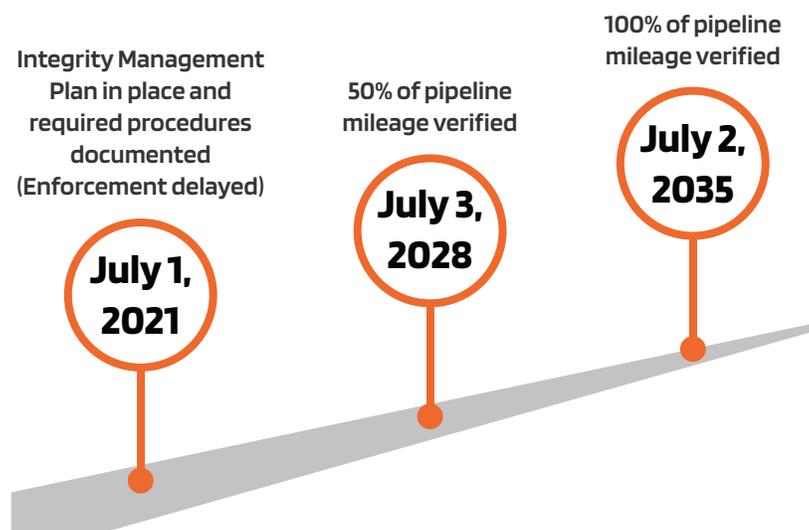
As your organization plans for the Mega Rule compliance plan, consider the benefits of embracing the opportunity to ensure asset integrity for regulatory oversight and enhance public awareness of the safety, efficiency, and environmental stewardship of your operation.

# Why You Should Develop Your PHMSA Compliance Plan Now

After more than ten years in development, PHMSA Gas Mega Rule officially went into effect on July 1, 2020. Pipeline operators have 14 years from July 1, 2020, to comply with Part 1 of the new gas mega rule.

The clock is now ticking for compliance. Although there may be some deferrals and delays in enforcement, it's critical for pipeline operators to take a strategic view of managing their compliance.

## Mega Rule Timeline



While the verification deadlines seem far off in the future, there's actually no time to waste. Verifying thousands of miles of remote pipelines is a time-consuming, manual process.

## What is PHMSA?

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is a U.S. Department of Transportation agency created in 2004, responsible for developing and enforcing regulations for the safe, reliable, and environmentally sound operation of the U.S.'s 2.6-million-mile pipeline transportation network. It is responsible for nearly 1 million daily shipments of hazardous materials by land, sea, and air. It oversees the nation's pipeline infrastructure, which accounts for 64 percent of the energy commodities consumed in the United States. It comprises the Office of Pipeline Safety (OPS) and the Office of Hazardous Materials Safety (OHMS). [PHMSA.DOT.gov](https://www.phmsa.dot.gov)

# 8 Considerations for PHMSA Mega Rule Compliance

*The new rules represent sweeping change for pipeline operators of all sizes, and compliance will be a daunting task. Understanding the scope and process is critical to ensure your compliance plans will do the job.*



## What is the PHMSA Mega Rule?

The Mega Rule consists of three major segments, and the first part is already in force.

### Part 1

The first phase of the Mega Rule applies to interstate and intrastate pipelines. It requires owners/operators to update incomplete pipeline records dating back as far as the 1940s. Under the rule, there are four significant major requirements for gas pipelines.

1. Intensify the risk assessment and maximum allowable operating pressure (MAOP) requirements and material specifications of transmission pipelines in designated consequence areas.
2. Expand integrity management program regulations to gathering lines and other previously nonregulated lines.
3. Increase reporting and safety, supported with procedures for traceability verification, supported by non-destructive and destructive testing.

Each owner/operator is responsible for ensuring completeness and accuracy of the assets subject to regulatory oversight.

Even after the final rule was issued, PHMSA continues to expand the regulatory requirements. An interim final rule announced December 23, 2021, designated the Great Lakes, coastal beaches, and marine coastal waters as "Unusually Sensitive Areas," extending more stringent pipeline Integrity Management Program requirements to hazardous liquid pipelines near such areas.

## Part 2

The second phase put forth new repair requirements for HCAs and non-HCAs and mandates operators must inspect pipelines within 72 hours of an extreme weather event. The pipelines must undergo integrity assessments every 10 years.

Leak detection systems will have to be installed or expanded and pipelines modified to allow inline inspection tools.

## Part 3

This section focuses on gas gathering lines and provides PHMSA with the authority to issue emergency orders to address imminent hazards.



## Who Has to Follow Mega Rule Compliance?

The rule expands PHMSA oversight to essentially any pipeline used to transport gas. Under the grandfather clause in the prior regulations, selected pipe segments installed prior to 1970 were allowed to operate without being tested. The new rules eliminate that clause.

The grandfather clause allowed operators to confirm MAOP by relying on the highest pressure recorded within five years prior to July 1, 1970.

Also, the new rule includes a newly defined area, the moderate consequence area (MCA). The MCA is an onshore area containing five or more buildings intended for human occupancy, an occupied site, or a right-of-way for a designated interstate, freeway, expressway, or other principal four-lane arterial roadway.

Now, the grandfather clause can only be used to establish the MAOP of pipelines that operate under 30% specified minimum yield strength (SMYS) or pipelines that operate in a Class 1 or Class 2 area. Therefore, any previously grandfathered pipelines that operate above 30% SMYS within Class 3 and 4 areas or within HCAs and MCAs must have their MAOP reestablished.

Some previously unregulated rural gas gathering lines must comply with the damage prevention regulations may also have to conform to construction and operational requirements as Type C onshore gas gathering lines. This change may require some privately owned pipelines to come under federal scrutiny for the first time.

To determine the category of a pipeline, such as Type C, operators may have to conduct a potential impact radius calculation to determine the possible impact circle where a pipeline rupture could cause severe consequences. Operators will base their plans on the result of this calculation.

## 03

### Is Your PHMSA Plan Documented?

Operators must assess their readiness to comply and prepare to update the existing integrity management programs and operating practices.

Your Mega Rule response plan should include:

- Systems to identify HCAs and MCAs and processes to align pipeline right-of-way adjacent structures and other pipeline attributes.
- Identify segments meeting applicability requirements and develop a process to perform MAOP reconfirmation. The plan should also include data management practices for MAOP information.
- Determination of pipeline segments requiring material verification and develop procedures for that and analysis of predicted failure pressure during the assessments.
- Ensure data reporting and management systems are established and confirm reliability to demonstrate compliance with the regulations.

The records confirming MAOP and material properties must be traceable, verifiable and complete. If an operator does not have sufficient documentation for a specific pipe segment or component, the operator may need to reconfirm the MAOP of the asset, depending on its location.

Your identification plan should include preliminary on-site and back-office inspections to verify that the initial integrity plan could be supported based on field and office verification.

A well-documented plan could be eligible for state or federal grants to help defray the cost of compliance.

## 04

### How Does Orphan Well and Mega Rule Compliance Overlap?

The Biden administration has announced a plan to fund \$1.15 billion to states to clean up orphaned gas and oil wells that leak methane gas. The first tranche of allotments is part of the \$4.7 billion for orphan oil well clean-up, part of the bipartisan infrastructure package passed in 2021.

The package included \$1 billion for modernizing natural gas pipelines. The funds are part of the administration's support of the Global Methane Pledge, which seeks to reduce methane emissions by 30% by 2030.

Pipeline operators may be eligible for funding for orphan well mitigation that could also benefit Mega Rule compliance.

## **05** >> **What are the Benefits of PHMSA Compliance?**

Operators must undertake a significant data collection and management initiative to fulfill compliance requirements to identify pipe segments. This process could be particularly burdensome for companies that have had grown through mergers and acquisitions, may not have comprehensive electronic records, or have information housed in silos across multiple units.

Although the documentation effort will be extensive, operators should see this process as an opportunity to learn about their assets, even those not covered under the current PHMSA requirements. For example, a record of pipeline coating is not required currently. Still, if this information can be obtained through research, it should be recorded to avoid the need for repeat data collection.

Any asset records discovered should be filed for future maintenance planning and reduce the need to repeat the data collection in case PHMSA adds this data to future integrity management regulations. Assets that are in service but out of date can be brought into compliance to reduce risks and operating costs.

Operators can develop data management capability beyond basic spreadsheets to ensure traceable and verifiable records are available in the future. A centralized records database can store and update asset information on a long-term basis.

A centralized, verified database of assets can speed up emergency response to reduce or eliminate potential product loss and external damages.

## **06** >> **Do You Have a Plan for Compliance?**

Your compliance plan should include the methods by which you will verify unknown material properties. Previously, operators could make a conservative assumption. Under the new rulemaking, operators must determine the material properties and the intervals for the test. These requirements must become integrated into ongoing operations and maintenance activities.

Once the data collection efforts have identified pipeline segments requiring MAOP reestablishment, the operator will determine the testing methodology. Testing requirements are based on class locations and consequence areas, which will select those assets for material verification and MAOP.

A sampling program may be used to verify material properties for pipeline segments that do not have existing records.

Especially for pipelines not subject to inspection under the previous regulations, the rate of failure could be unexpectedly high. Operators must prepare for this eventuality in terms of budget and operational impact.

## **07** **Why Should I start PHMSA Mega Rule Compliance Now?**

Compliance will require significant data collection and management to inform decisions on potentially thousands of miles of pipeline segments. Significant archival and field research may be necessary for operators that do not have comprehensive existing records.

Although the rule went into effect July 1, 2020, PHMSA suspended enforcement actions in response to complaints from oil and gas pipeline operators. While this delay allowed operators to incorporate the new procedures, some measures must still follow the original timeline. The PHMSA can revoke the stay at any time, and any operator using the stay must keep records to justify the delay.

As all pipeline operators across the nation are on the same timetable, the availability of qualified experts will become constrained. As the deadlines loom, operators that wait too long to start the process could find themselves in jeopardy of non-compliance. Costs will rise, and the quality of work could be impeded due to the short time frame.

As the old adage says, "You can have it fast, cheap, or good. Pick any two."

## **08** **Why Should Your PHMSA Compliance Program Use a Turnkey Consultant?**

Large gas pipeline projects are often managed in-house or with a mix of consultants and engineering firms, and field operations. Given the complexity of the task and volumes of data likely to be generated, there's a greater chance of miscommunication among the parties.

A turnkey consulting firm, ideally an experienced gas utility project manager, like Dynamix Engineering & Services Group, will provide a comprehensive program to comply with all aspects of the final rule. As a turnkey consulting firm, Dynamix ESG acts as the general contractor, coordinating the work and administrative elements of subcontractors that specialize in various parts of the project. The contractor

can manage and execute activities on compliance projects while reducing the administrative and expense burden on the operator.

## Your PHMSA Compliance Plan

The U.S. natural gas industry has experienced significant growth in production demand, leading to unprecedented pressure on the country's pipeline system.

The Mega Rule will guide critical documentation and data collection improvements to improve pipeline safety. With verified data, operators can make informed choices to enhance safe operation and preserve the public's confidence in the industry. Ultimately the regulations support the operators' mutual desire to reduce operating costs and minimize risk.

Sincere compliance with the rule will enhance the efficiency and safety of the nation's pipeline infrastructure to meet the demands of today's economy. Partner with a turnkey consultant for cost-effective, streamlined compliance for your pipeline franchise.

Contact the project management experts at Dynamix for an initial consultation.

## Disclaimer

*This document was developed for informational purposes only, and Dynamix ESG does not accept any responsibility or liability for the accuracy, completeness, or legality of the information herein. This document does not constitute legal or professional advice.*

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# About Dynamix **Engineering & Services Group**

Dynamix ESG is a comprehensive engineering consultant and field services provider for the oil and gas industry. We support companies that have accepted the challenge of achieving peak operational efficiencies at the lowest cost, with the smallest environmental footprint and greatest ease of doing business. We are the trusted turnkey source for a wide range of superior solutions for your business: engineering, field services, environmental planning, and smart data management.

**Contact Us**

[dynamixesg.com](http://dynamixesg.com)

724-716-4111



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