

PHMSA Publishes Final Rule with New Valve Installation and Rupture Detection Requirements for Gas, Hazardous Liquid, and Carbon Dioxide Pipelines

On April 8, 2022, the Pipeline and Hazardous Materials Safety Administration (PHMSA) published a [final rule](#) in the *Federal Register* introducing new valve installation and rupture detection requirements for certain onshore gas, hazardous liquid, and carbon dioxide pipelines (the Final Rule). PHMSA issued the Final Rule in response to National Transportation Safety Board recommendations and congressional mandates from the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 (2011 PIPES Act), as well as related studies prepared by the Government Accountability Office and Oak Ridge National Laboratories. Below is a summary of the key changes that the Final Rule makes to PHMSA's regulations.

Rupture Mitigation Valves

The Final Rule prescribes new rupture mitigation valve (RMV) installation requirements for certain onshore gas and hazardous liquid transmission and gathering pipelines. An RMV is defined as an automatic shut-off valve (ASV) or remote-control valve (RCV) “that a pipeline operator uses to minimize the volume of gas released from the pipeline and to mitigate the consequences of a rupture.”

Operators are required to install RMVs on certain pipeline segments with diameters of six inches or greater that are constructed or “entirely replaced” after April 10, 2023. “Entirely replaced” is defined for these purposes as replacing two or more miles, in the aggregate, of any contiguous five miles of pipeline during a 24-month period. However, the RMV installation requirements only apply to entirely replaced pipelines if the addition, replacement, or removal of a valve is part of the replacement project. The RMV installation requirements also do not apply to any gas pipeline segments in Class 1 or Class 2 locations that have a potential impact radius (PIR) of 150 feet or less.

An alternative equivalent technology can be used to satisfy the RMV installation requirements if it provides an equivalent level of safety, and if the operator obtains authorization from PHMSA by using the 90-day notification and no-objection process. Operators can also use the no-objection process to request an extension of a compliance deadline for installing an RMV. An operator requesting use of manual valves as an alternative equivalent technology must include in the notification submitted to PHMSA a demonstration that installation of an RMV would be economically, technically, or operationally infeasible.

Valve Spacing

The Final Rule prescribes new valve spacing requirements for gas and hazardous liquid and carbon dioxide pipelines. An exception from the existing valve spacing requirements is provided for replacements of gas transmission and regulated gas gathering lines if the distance between each point on the replaced pipeline and the nearest valve does not exceed certain class-location-based

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mileage thresholds. Newly constructed or “entirely replaced” hazardous liquid and carbon dioxide pipelines installed after April 10, 2023, are also subject to new valve spacing requirements of 15 miles for segments located in or that could affect high consequence areas (HCAs) and 20 miles for non-HCA segments.

A more stringent, 7.5-mile valve spacing requirement applies to highly volatile liquid (HVL) pipelines in a high population area or other populated area that are constructed or entirely replaced after April 10, 2023. Operators can use PHMSA’s 90-day notification and no-objection process to increase the maximum valve spacing requirement for covered HVL pipelines by 1.25 times, or up to 9.375 miles, subject to a lifetime recordkeeping requirement.

Class Location Changes

The Final Rule includes new valve spacing requirements for class-location-related gas pipeline replacements that are necessary to comply with PHMSA’s maximum allowable operating pressure (MAOP) requirements. For class location changes that occur after October 5, 2022, and which result in the replacement of two or more miles of pipe, in the aggregate, within any five contiguous miles during a 24-month period, operators are required to comply with the valve spacing and RMV installation requirements. For replacements of less than two miles within five contiguous miles during the 24-month period, however, operators have the option of complying with the valve spacing requirements or installing RMVs or equivalent technologies to protect the replaced segment. The latter requirements do not apply to pipeline replacements that are less than 1,000-feet within any single continuous mile during any 24-month period.

Valve Shutoff Requirements for Rupture Mitigation

The Final Rule prescribes new valve shut-off requirements for certain new or “entirely replaced” onshore pipeline segments with diameters of six inches or greater that are installed after April 10, 2023. The valve shut-off requirements apply to covered gas transmission and gathering line segments in high-consequence areas (HCA) or Class 3 or Class 4 locations, except for segments in Class 1 or Class 2 locations that have a PIR of 150 feet or less, and to covered hazardous liquid or carbon dioxide pipeline segments that are located in or which could affect an HCA. Operators of covered segments are required to make RMVs or alternative equivalent technologies operational within 14 days of placing of a new or replaced pipeline into service. Additional requirements for maximum spacing between RMVs or alternative equivalent technologies also apply, as well as provisions for using manual valves or alternative equivalent technologies to meet the shut-off requirements.

Notification of Potential Rupture and Response to Rupture Identification

The Final Rule requires operators that are notified, by their own personnel or otherwise, of a potential rupture to take certain actions. “Notification of a potential rupture” is defined as receipt of notification or observation of an unintentional or uncontrolled release of hazardous liquid or gas from a pipeline. This observation may be any of several events, such as an unanticipated pressure loss greater than 10 percent in 15 minutes (with some exceptions), an unanticipated flow or pressure change, or a fire or explosion in the vicinity of the pipeline. An operator’s procedures should establish how and when it receives notice or observes a potential rupture event. Upon notification, the Final Rule requires operators to identify the rupture and isolate the ruptured segment as soon as practicable but within 30 minutes.

Valve Maintenance

The Final Rule requires operators to conduct certain valve maintenance activities. Each RMV, or alternative equivalent technology, must be able to achieve the 30-minute response time. If the 30-minute response time is not achieved, the operator must revise its response efforts as soon as practicable but no later than 12-months after the test. Similarly, if an operator finds that any valve is inoperable, it must repair or replace the valve as soon as practicable but no later than 12 months and designate

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an alternative valve acting as an RMV within seven calendar days. The rule requires periodic testing, by partial operation, of RMVs on hazardous liquid pipelines at least twice each calendar year and on gas pipelines at least once annually. Some of these requirements may vary depending on whether the RMV is an ASV or RCV. Operators are also required to randomly select a valve serving as an alternative equivalent technology in lieu of an RMV for an annual 30-minute response time validation drill. Operators are not required to close the valve fully during the drill. A minimum 25 percent closure is sufficient to demonstrate compliance. Operators' written procedures must include the method used to randomly select which alternative equivalent technology is tested.

Integrity Management

For certain new or entirely replaced hazardous liquid and carbon dioxide pipelines 6-inches or greater in diameter and placed into service after April 10, 2023, emergency flow restricting devices (EFRD) used to mitigate potential ruptures must meet the RMV requirements in the final rule. The Final Rule requires gas transmission operators to conduct a risk assessment and, if that assessment shows that an RMV is an efficient means to protect an HCA, install the RMV. The final rule provides several factors to consider in making that determination including timing of leak detection and pipe shutdown capabilities, the type of gas being transported, operating pressure, the rate of potential release, pipeline profile, the potential for ignition, and location of nearest response personnel.

Emergency Response

The Final Rule prescribes new emergency response and post-accident procedures. Operators must establish and maintain adequate means of communication with appropriate public safety answering points, (i.e., 9-1-1 emergency call center), investigate failures to minimize the possibility of recurrence, and develop and implement lessons learned following an incident. All operators must amend their procedures to require immediate and direct access to 9-1-1 call centers or coordination with government officials.

If the failure involves the closure of an RMV, or alternative equivalent technology, the operator must conduct an analysis of the factors that may have impacted the release volume and implement measures to minimize the consequences of a future incident. Operators must also develop a post-failure and accident summary within 90 days, signed by a senior executive officer, and kept for the useful life of the pipeline.

Effective Date and Deadlines for Further Review

The effective date of the Final Rule is October 5, 2022. Any interested person may file a petition for reconsideration of the Final Rule with the Associate Administrator for Pipeline Safety within 30 days of publication in the *Federal Register*, or by no later than May 8, 2022. The deadline for submitting a petition for judicial review of the Final Rule is 89 days from the *Federal Register* publication date, or July 6, 2022.



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Led by three former Pipeline and Hazardous Materials Safety Administration (PHMSA) attorneys, our Pipeline and Hazardous Materials Safety practice group counsels pipeline and midstream companies, gas utilities, terminal operators, investors, trade associations, and other stakeholders, throughout the United States. James Curry, Keith Coyle and Brianne Kurdock together have more than 25 years of experience with a multitude of pipeline safety issues. They partner with client engineering and legal personnel to address day-to-day compliance questions and develop business and regulatory strategies.