Pipeline Safety: Amendments to Parts 192 and 195 to Require Valve Installation and Minimum Rupture Detection Standards

Draft Environmental Assessment

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Prepared for:
Office of Pipeline Safety
Pipeline and Hazardous Materials Safety Administration

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<td>Automatic Shutoff Valve</td>
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<td>CFR</td>
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1.0 SCOPE OF ANALYSIS

This draft Environmental Assessment (EA) analyzes the potential environmental consequences associated with adopting the Pipeline & Hazardous Materials Safety Administration’s (PHMSA) proposed rule titled “Amendments to Parts 192 and 195 to Require Valve Installation and Minimum Rupture Detection Standards” (the proposed rule). The rule proposes new provisions to the Federal Pipeline Safety Regulations 49 Code of Federal Regulations (CFR) parts 192 and 195. The new provisions include:

- Definition of Rupture
- Maximum Valve Spacing Distance Requirements
- Valve Actuation and Operation
- Emergency Flow Restriction Device (EFRD) Protection of High Consequence Areas (HCA)
- Accident Analysis
- Operator Response Timing to Rupture Detection
- Inspection, Maintenance, and Drills to Ensure Timely Operator Response
- Implementation Timeframes

These changes are described in detail in Section 3 of this EA.

2.0 PURPOSE OF AND NEED FOR ACTION

2.1 INTRODUCTION

This draft EA is prepared in accordance with the National Environmental Policy Act of 1969 (NEPA)\(^1\), as amended, and the Council on Environmental Quality regulations for implementing NEPA (40 CFR 1500-1508). This statute and the implementing regulations require that PHMSA assess the environmental impacts of any Proposed Federal Action; identify adverse environmental effects that cannot be avoided should the Proposed Action be implemented; and evaluate alternatives to the Proposed Action, including a No Action Alternative, and their environmental effects. This EA evaluates the potential effects of the Proposed Action and the No Action Alternative on the environment.

If it is determined that no significant impacts would occur as a result of the Proposed Action, then the determination would result in a Finding of No Significant Impact

\(^1\) 42 U.S.C 4321 et seq.
(FONSI). PHMSA would then publish a Final EA and the FONSI, completing the NEPA process.

2.2 BACKGROUND

Under the Federal Pipeline Safety Laws, 49 U.S.C. 60101 et seq., the Secretary of Transportation must prescribe minimum safety standards for pipeline transportation and for pipeline facilities. The Secretary has delegated this authority to the PHMSA Administrator (49 CFR 1.53(a)), and the Federal Pipeline Safety Regulations can be found at 49 CFR 190-199. PHMSA has identified deficiencies in the regulations through inspections and accident investigations. The proposed changes would address a section in the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 (the Act) that requires by regulation the use of safety valves.

For hazardous liquid pipelines, an advanced notice of proposed rulemaking (ANPRM) requesting input on this subject was issued on October 18, 2010\(^2\), and for gas transmission pipelines, an ANPRM similarly requesting input on this subject was issued on August 25, 2011\(^3\). In addition, PHMSA conducted an independent study through Oak Ridge National Laboratory to determine the technical, operational, and economic feasibility of mandatory automatic-shutoff valve (ASV) and remote-controlled valve (RCV) installation on newly constructed and replaced hazardous liquid and gas transmission pipelines\(^4\).

PHMSA received 107 comment letters in response to the ANPRMs for hazardous liquid and gas pipelines. Comments were received from citizens, safety advocate organizations, government, consultants, pipeline operators, and trade associations.

The proposed changes listed in Section 1 and described in more detail in Section 3, are the subject of this EA.

2.3 PURPOSE AND NEED

PHMSA’s overall mandate to regulate pipeline safety is set by Federal law under 49 USC 60102 et seq., with the mission of protecting people and the environment from the risks

\(^2\) http://www.regulations.gov under Docket ID PHMSA-2010-0229.
\(^3\) http://www.regulations.gov under Docket ID PHMSA-2011-0023.
of hazardous materials transportation. This proposed rule would enhance pipeline safety and reduce the frequency and societal consequences of pipeline incidents, environmental degradation, personal injury, and loss of life. Specifically, PHMSA is proposing to revise the Pipeline Safety Regulations applicable to newly constructed and entirely replaced onshore natural gas transmission and hazardous liquid pipelines of certain diameter by requiring operators of these lines to have RCVs, ASVs, or equivalent technology. Additionally, PHMSA is revising the regulations to improve rupture detection and mitigation and shorten pipeline segment isolation times. As discussed in the NPRM, ruptures like those that occurred in Marshall, MI, and San Bruno, CA, cause severe impacts to human health and the environment.

These new provisions are needed based on inspections and accident investigations showing inadequate detection and response efforts regarding valve placement and control systems. In addition, the Act requires by regulation the use of safety valves. The Act requires the General Accountability Office (GAO) to investigate the swiftness of leak detection and pipeline shutdown capabilities, the location of the nearest response personnel, as well as the cost, risk, and benefit of installing safety valves. In the study, the GAO examined opportunities for transmission pipeline operators to improve their response time to incidents, further supporting the need for the proposed rulemaking change.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 OVERVIEW OF ALTERNATIVES

PHMSA is considering two alternatives in the proposed rule: the No Action Alternative and the Proposed Action, a set of new provisions to the Federal Pipeline Safety Regulations to incorporate proposed amendments, which was informed by the 107 public comments submitted in response to the ANPRM. This EA examines the environmental impacts of the No Action Alternative, which is required by NEPA, and the Proposed Action.

Under the No Action Alternative, PHMSA would not incorporate the proposed amendments and changes to revise the Federal Pipeline Safety Regulations. The Council on Environmental Quality regulations for implementing NEPA requires the analysis of a No Action Alternative. In a PHMSA rulemaking, the No Action Alternative is the status

The No Action Alternative serves as a baseline when analyzing environmental impacts of the Proposed Action and allows for the consideration of any impacts that would result from taking no action.

Under the Proposed Action, which is the proposed rule, Amendments to Parts 192 and 195 to Require Valve Installation and Minimum Rupture Detection Standards, PHMSA would make amendments, corrections, and editorial changes to the Federal Pipeline Safety Regulations to address requirements of the Act and recommendations from the NTSB and GAO.

3.2 NO ACTION ALTERNATIVE

Under this alternative, PHMSA would not amend, correct, or update the Federal Pipeline Safety Regulations. Pipeline operators would continue to be governed by the requirements of the existing Federal Pipeline Safety Regulations but would not be subject to the new requirements of the Act. This alternative would not result in impacts to the affected environment or result in any environmental consequences. The risk to the environment posed by uncontrolled releases would remain unchanged.

3.3 PROPOSED ACTION

PHMSA’s Proposed Action is a set of new provisions to the Federal Pipeline Safety Regulations, 49 CFR parts 192 and 195, which are summarized in the sections below. A more detailed description of these changes can be found in the Notice of Proposed Rulemaking (NPRM).

The proposed rule would establish a performance standard for operator response to ruptures on new and fully replaced (2 miles or more) onshore pipelines greater than 6 inches in diameter. Operators must be able to determine that a rupture has occurred within 10 minutes and close all valves to isolate the rupture location within 40 minutes. Additionally, the proposed rule defines a rupture and requires certain safety program elements related to response and mitigation.

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3.4 ALTERNATIVES INITIALLY CONSIDERED

Section 4 of the Act requires DOT to consider requiring the use of automatic or remote control shut-off valves, or equivalent technology, where economically, technically, and operationally feasible on newly constructed or entirely replaced hazardous liquid and natural gas transmission pipeline facilities. PHMSA evaluated which gas transmission and hazardous liquid pipelines (i.e. by size, as measured by diameter) would be subject to the rule.

In addition to the proposed rule, PHMSA considered a number of regulatory alternatives for rupture detection and mitigation, including:

- Applicability to existing pipelines
- Applicability to high consequence areas and Class 3 and 4 locations only
- Applicability to gas pipelines greater than 10” in diameter
- 45-minute performance standard (5-minute rupture identification; 40 minute rupture-mitigation valve (RMV) closure).

PHMSA decided not to restrict the scope of the proposed rulemaking to existing pipelines or solely in high consequence areas and Class 3 and Class 4 locations because those directions would not be consistent with the statutory mandate. PHMSA also lengthened the proposed time for rupture identification in the rulemaking from 5 minutes to 10 minutes based on its judgment regarding the technical and operational feasibility of such a short time frame. As for considering other diameter limitations, PHMSA determined that setting the limit at 6 inches would be the most reasonable and consistent with the mandate’s direction. While it is technically possible for smaller-diameter pipelines to have automatic or remote-control shut-off valves, the potential impact radii and release volumes would be smaller under those scenarios, and PHMSA would not expect there to be benefits commensurate with the costs of installing those valves.

3.4.1 Definition of Rupture

“Rupture” is not defined in the existing regulations. However, certain conditions indicate that a rupture has occurred and necessitate initiation of segment isolation to minimize safety risks and environmental harm. Therefore, PHMSA proposes to define “rupture” as a significant breach of the pipeline that results in a large-volume, uncontrolled release of commodity that can be determined according to specific criteria, or that has been
observed and reported to the operator. Operators would be required to treat any of the following events as a rupture within 10 minutes unless determined to be otherwise:

(1) A release of gas observed or reported to the operator by its field personnel, nearby pipeline or utility personnel, the public, local responders, or public authorities, and that may be representative of an unintentional and uncontrolled release event defined in paragraphs (2) or (3) of this definition;

(2) An unanticipated or unplanned pressure loss of 10 percent or greater, occurring within a time interval of 15 minutes or less, unless the operator has documented in advance of the pressure loss the need for a higher pressure-change threshold due to pipeline flow dynamics that cause fluctuations in gas demand that are typically higher than a pressure loss of 10 percent in a time interval of 15 minutes or less; or

(3) An unexplained flow rate change, pressure change, instrumentation indication, or equipment function that may be representative of an event defined in paragraph (2) of this definition.

Note: Rupture identification occurs when a rupture, as defined in this section, is first observed by or reported to pipeline operating personnel or a controller.

Operators must identify an event as a rupture or other event within 10 minutes of initial indication and immediately notify emergency call centers.

3.4.2 Maximum Valve Spacing Distance Requirements

Gas Transmission:

Current gas pipeline regulations establish valve location and spacing requirements based on class location regulations at § 192.179. The NPRM proposes to add § 192.634 that would establish rupture-mitigation valve spacing requirements for newly constructed or completed replaced gas transmission pipelines. These spacing requirements would be based on class locations as follows:

(Class 4) 8 miles if one or more areas in the shutoff segment is in a Class 4 location;

(Class 3) 15 miles if one or more areas in the shutoff segment is in a Class 3 location; and
(Class 1 and Class 2) 20 miles if all areas in the shutoff segment are located in Class 1 or 2 locations.  

Hazardous Liquid:  

Current regulations for onshore hazardous liquid pipelines establish valve location requirements for certain pipeline facilities and locations. However, a maximum distance for valve spacing for new pipelines is not specified. Section 195.260 of the proposed rule would establish valve spacing distances for new and replaced hazardous liquid pipelines. Maximum valve spacing for newly constructed and replaced onshore pipelines would be established at 15 miles in HCA segments, 20 miles outside HCAs, and 7½ miles for pipelines transporting highly volatile liquids in HCAs.

3.4.3 Valve Actuation and Operation  
The proposed rule would require ASV, RCV, and manual valve actuation or alternative equivalent technology for: 1) all new and entirely replaced hazardous liquid pipelines greater than or equal to 6 inches in diameter; and 2) all new and replaced gas transmission pipelines greater than or equal to 6 inches in diameter. Valves designated as rupture mitigation valves must be able to be shut-off within the time defined by the performance standard. This may include valve automation or certifying that the valve may be closed within the time limit by dispatching operator employees to the valve site.

The new requirements for rupture mitigation valves are contained in §§ 192.179 and 192.634 for onshore gas transmission pipelines and §§ 195.258 and 195.418 for onshore hazardous liquid pipelines.

3.4.4 Emergency Flow Restriction Device (EFRD) Protection of High Consequence Areas (HCAs) and Risk Analysis  
Currently, in the hazardous liquid regulations, EFRDs are defined as RCVs or check valves. The proposed rule would require operators to meet the design, operation, testing,

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8 A gas pipeline’s class location broadly indicates the level of potential consequences for a pipeline release. Class locations are determined as specified at § 192.5(a) by using a “sliding mile” that extends 220 yards on both sides of the centerline of a pipeline. The number of buildings within this sliding mile at any point during the mile’s movement determines the class location for the entire mile of pipeline contained within the sliding mile. Class 1 locations contain 10 or fewer buildings intended for human occupancy. Class 2 locations contain 11 to 45 buildings, Class 3 locations contain 46 or more buildings, and Class 4 locations have a prevalence of 4-or-more-story buildings.
maintenance, and rupture mitigation requirements of §§ 195.258, 195.260, 195.402, 195.418, and 195.420 where they install EFRDs to protect HCAs on all new and entirely replaced onshore pipelines greater than or equal to 6 inches or replaced pipe of 2 or more contiguous miles.

49 CFR 192.935(c) for gas transmission pipelines and 49 CFR 195.452(i)(4) for hazardous liquid pipelines specify that the use of ASVs or RCVs be based on a risk analysis. Through routine integrity management inspections, PHMSA has noted weaknesses in the risk analyses that are used to support decisions regarding the installation and use of ASVs or RCVs. This rule change would provide more specific instruction of how such risk analyses must be implemented with respect to how ASVs, RCVs, and EFRDs can be utilized as preventative and mitigative measures for any release event, including ruptures.

3.4.5 Accident Analysis

Current pipeline safety regulations (§§ 192.617 and 195.402(c)) require that the operator perform an analysis of pipeline accidents to determine their cause. Through review of accident and incident reports and associated causal analysis reports, PHMSA has noted weaknesses in the performance and documentation of the analysis. PHMSA is proposing more prescriptive criteria for the contributing factors that are to be assessed in a post-accident analysis of any rupture or any other release event involving the activation of rupture mitigation valves.

3.4.6 Operator Response Timing to Rupture Detection

This change would require operators to establish meaningful metrics that address their ability to respond to and isolate ruptures on RMV shutdown segments within 40 minutes of rupture identification. Operators will be also be required to ensure that control room operators immediately and directly notify 911 emergency call center(s) for the communities and jurisdictions in which those pipelines are located when a possible rupture of any pipeline is indicated. The following must also be considered:

A. For manual valve shutoff, operators must be able to demonstrate a response time from on-call response personnel. The response personnel must have the proper tools to manually close the valve(s) and must establish driving time from his/her duty station to the valve location(s). The maximum driving time limits must be established under rush hour conditions and account for typical severe weather in the area on an annual basis.
B. All critical valve installations must be equipped to fully close the valve in normal, abnormal, and emergency operating conditions.

3.4.7 Inspection, Maintenance, and Drills to Ensure Timely Operator Response

This rulemaking change would require operators to establish standards for testing, maintenance, and drills for the operation of all valves. This would verify the reliability of the valve response, closure, and operational condition. The primary leak detection parameters incorporated into this rule change would include:

(A) Meaningful performance metrics related to the detection of ruptures using pressure/flow rate/volume changes, and

(B) Time limit to initiate valve shutoff, based on the detection of ruptures.

3.4.8 Implementation Timeframes

All of the proposed provisions would take effect 12 months after the effective date of the rule.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 AFFECTED ENVIRONMENT

The gas distribution, gas transmission and gathering, and hazardous liquid pipeline infrastructure in the United States is a network of over 2.6 million miles of pipelines\(^9\). The proposed rule would apply to new and replaced onshore gas transmission pipelines greater than or equal to 6 inches in diameter and all new and replaced onshore hazardous liquid pipelines greater than or equal to 6 inches in diameter.

This proposed rule will affect, in part, those areas where pipeline ruptures would have the greatest potential impact on human health and the environment. For gas transmission pipelines, HCAs and Class 3 and Class 4 locations\(^{10}\) generally refer to areas with a high

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\(^{10}\) For more information on class locations see 49 CFR §192.5. For more information on gas HCAs see § 192.903
concentration of human dwellings or areas where people regularly congregate. Part 195.450 defines high consequence areas for liquid pipelines. In addition to “high population” and “other population” areas, areas identified as “commercially navigable waterways” and “unusually sensitive areas” (USAs) are HCAs. Unusually Sensitive Areas include vulnerable drinking water sources and areas which may impact certain endangered or otherwise vulnerable species or their habitats.

4.2 ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

This section identifies the environmental effects of each alternative. The environmental effects of the proposed rule stem from reducing the consequences of ruptures that occur on gas and hazardous liquid pipelines and any impact associated with the manufacture, installation or maintenance of the valves that would be required as a result of the proposed rule. Specifically, reducing the duration of gas transmission pipeline ruptures potentially has benefits to human health through lower fire risk, while reducing hazardous liquid pipeline rupture response times also reduces the amount of oil or other hazardous liquids that are spilled in populated areas, water sources, and sensitive habitats. These effects include impacts to human health and the physical environment. The physical environment includes:

- Air quality and climate
- Soils, topography and geology
- Water resources (floodplains, wetlands, and water bodies)
- Historical and archeological resources
- Wildlife
- Farmland.

4.2.1 Human Health Consequences

Pipeline ruptures on both gas and hazardous liquid pipeline ruptures can have serious direct and indirect impacts on human health.

Gas transmission pipeline ruptures in developed areas have a serious fire and explosion risk due to the density of potential victims, ignition sources, and the abundance of fuel. These incidents pose a direct, extreme risk of death or serious injury due to blast forces, burns, and smoke inhalation. There may also be indirect health effects to first responders and nearby residents from heat, smoke, and fumes. As demonstrated in the RIA (PHMSA 2018) and ORNL (2012), the proposed rule would result in faster shutdown of pipeline ruptures, and therefore decrease or shorten exposure to fire related hazards.
Hazardous liquid pipeline ruptures in HCAs – populated areas or vulnerable water sources – can also have serious health effects to the impacted populations. The majority of hazardous liquids transported by pipeline consist of petroleum based hydrocarbons, including crude oil. Crude oil itself, not to mention refined petroleum products, have widely varying effects on human health. According to the National Institute of Health (2017), crude oil “consists primarily of hydrocarbons” but may also contain “hundreds of substances that include hydrogen sulfide, benzene, chromium, iron, mercury, nickel, nitrogen, oxygen sulfur, toluene, and xylene.” In addition to the toxicity of spilled products and fumes, most petroleum products are also flammable. According to the National Academies of Science, all crude oils contain various amounts of highly toxic, carcinogenic aromatic hydrocarbons such as benzene.

4.2.2 Environmental Consequences

Under the proposed rule, gas transmission pipeline ruptures could be shorter in duration and result in less product losses. The primary benefit is from reduced greenhouse gas emissions. Other possible direct environmental benefits include reducing the duration that wildlife is exposed to asphyxiation or fire risk and lower habitat destruction from faster response times; however, neither effect is likely to be significant since the rule is targeted towards highly populated areas.

Quick shutdown of gas pipeline ruptures reduces greenhouse gas emissions. Natural gas is mostly made of methane, a greenhouse gas with a climate change impact 84 times stronger than carbon dioxide over a 20-year period and 28 times stronger over a 100-year period (CARB, 2016).

Between 2010 and 2015, the average release volume for a rupture was 33,081 MCF (thousand cubic feet), or approximately $700,000 in climate change related damage. This may modestly overstate the impacts of a rupture because natural gas contains other pollutants such as carbon dioxide and other hydrocarbons and methane emissions may be lower if it is partially converted to carbon dioxide if the incident ignites.

Hazardous liquid pipeline ruptures can pose significant risks to the environment, particularly in the HCAs targeted by the proposed rule. The definition of HCA in § 195.450 includes USAs and commercially navigable waterways. Broadly, USAs are defined in § 195.6 as, “a drinking water or ecological resource area that is unusually sensitive to environmental damage from a hazardous liquid pipeline release.” Ecological resources are narrowly defined in § 195.6 (b) and (c) and include: designated “migratory

waterbird concentration areas;” habitats for critically imperiled species or community; and certain other habitats of imperiled, threatened, or vulnerable species.

Similar to the effects on health, these environmental consequences are difficult to predict but adverse, especially in inland waterways and wetlands. Petroleum products adhere to soil, plants, and animals and are toxic to varying degrees when ingested or inhaled by wildlife. A fish health assessment conducted by the U.S. Geological Survey in the aftermath of the Kalamazoo River Spill determined that fish populations as far as 27 miles downstream of the rupture site suffered adverse health effects.13 Most hazardous liquid pipelines transport petroleum products, however anhydrous ammonia is also highly toxic when exposed to people and wildlife.

The proposed rule would reduce the consequences of pipeline ruptures in these sensitive areas. Faster response due to rupture detection would allow responders to intervene more rapidly and reduce the spread of contamination and adverse health effects to fish and wildlife which could include mortality. Faster line shutoff also reduces the quantity of oil spilled into the environment. This obviously also reduces the amount of pollutants that then need to be removed from the environment. Furthermore, reducing the amount of flammable pollutants discharged decreases the potential for thermal radiation and fire damage to the surrounding environment.

4.2.3 Proposed Action

This section identifies the environmental effects of each component of the proposed rulemaking, including potential impacts to human health and to the physical environment, as defined in Section 4.2. Many of the changes included in the proposed rule reflect existing prudent pipeline practices, and others propose entirely new practices. Where the proposed rule would require the maintenance or installation of valves, it may result in maintenance activities which could lead to more excavation compared with the No Action alternative. PHMSA expects any impacts from these excavations to be temporary and generally limited to the existing pipeline. Nonetheless, excavation for any purpose, including pipeline maintenance activities, can result in increased siltation of nearby waterways. Siltation can negatively impact fish, especially fish reproduction; benthic organisms; and aquatic vegetation. However, most impacts from siltation result from prolonged siltation. The use of heavy equipment in this process can cause increased air emissions and soil erosion, which can similarly lead to increased siltation. Overall, the proposed action will have localized, temporary, and relatively minor environmental

effects relative to the much more significant damages resulting from gas transmission pipeline incidents and releases. While such excavations would individually have minor localized environmental impacts, they would also decrease the likelihood of pipeline failures that could result in catastrophic damage to human health and the environment. For all of these reasons, PHMSA expects any excavations that do occur would have a negligible adverse effect on the physical environment and would provide an overall benefit to the physical environment in the form of damage prevention.

The purpose of the installation of additional valves under this rule is to allow for the isolation of the segment of pipe that has experienced a rupture, as a valve can stop the flow of product that is able to reach the location of the rupture. Decreasing the length of pipeline between valves can decrease the volume of product that is released into the environment. Therefore, the proposed rule would have a positive impact to the human environment, including air quality and climate, soils, topography, geology, water resources (floodplains, wetlands, and water bodies), historical and archeological resources, wildlife, and farmland.

To the extent that the proposed rule would affect pipelines located in areas with minority and low-income populations, the regulatory amendments would have the same effect regardless of the geographic location of the pipelines. Because these regulatory amendments would increase pipeline safety across systems, any impact to areas where environmental justice concerns exist will be positive. Therefore, consistent with Executive Order 12898 and DOT Order 5610.2(a), PHMSA does not anticipate that the proposed rule would result in disproportionately high and adverse human health or environmental effects on minority or low-income populations.

Definition of Rupture: The proposed change would define a rupture and describe how that definition coincides with overall response timing and initiation of segment isolation. This change would require performance metrics that incident response efforts would then be based on. In addition, this change would drive rupture mitigation measures that would

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14 An environmental justice (EJ) concern is used to indicate the actual or potential lack of fair treatment or meaningful involvement of minority populations, low-income populations, tribes, and indigenous peoples in the development, implementation and enforcement of environmental laws, regulations and policies. [https://www.epa.gov/sites/production/files/2015-06/documents/considering-ej-in-rulemaking-guide-final.pdf](https://www.epa.gov/sites/production/files/2015-06/documents/considering-ej-in-rulemaking-guide-final.pdf)
reduce the severity of impacts in the event of a rupture. Therefore, this change would result in a positive impact to human health and the environment.

**Maximum Valve Spacing Distance Requirements:** The proposed change would establish valve spacing requirements for new and replaced hazardous liquid pipelines and clarify valve location requirements for certain new and replaced gas transmission and hazardous liquid pipelines. In addition, operators would be required to analyze the placement of valves in accordance with the risk a rupture could pose to areas that could affect HCAs. Part 195 defines HCAs as commercially navigable waterways, high population areas or other populated areas, and unusually sensitive areas, which include drinking water intakes and protection areas, and various types of wildlife habitat. Part 192 defines HCAs based on the human population density within 100 or 220 yards of either side of the centerline of any contiguous 1-mile length of pipeline. The proposed rule is only applicable to new and replaced pipelines and should therefore not lead to substantial excavations and gas blowdowns, which have environmental implications. This rule is intended and expected to reduce the risk posed by pipeline rupture to human health and natural environment.

**Valve Actuation and Operation:** These changes would implement a rupture response performance standard for new and replaced hazardous liquid and gas transmission pipelines greater than or equal to 6 inches in diameter. These proposed provisions would require full rupture mitigation valve shut-off within 40 minutes of rupture identification. This requirement would limit duration of product flow to the rupture site to mitigate impacts. Therefore, these changes would result in a positive impact to human health and the environment.

**Emergency Flow Restriction Device Protection of High Consequence Areas and Risk Analysis:** This change would strengthen risk analysis used to determine the level of use for ASVs and RCVs in HCAs. In addition, this change would allow pipeline operators to utilize fit-for-purpose ASVs in certain situations. These changes would reduce impacts from pipeline failure in HCAs by installing valves that stop flow in the event of a rupture. Therefore, it is expected this change would result in a positive impact to human health and the environment.

**Accident Analysis:** PHMSA is proposing requirements for post-accident analysis (i.e., accident investigation) of any rupture or other event involving the activation of rupture-mitigation valves. These post-accident reviews would focus on ways to ensure that performance objectives are met in the future and that lessons learned can be applied by the operator system-wide. PHMSA has determined this will improve the safety performance of individual operators, while also improving the industry’s overall safety.
performance through information sharing forums. The provisions also require that operators identify preventative and mitigative measures that could limit the impact of a future failure or incident. Therefore, this component of the proposed rule would have a positive impact to human health and the physical environment.

**Inspection, Maintenance, and Drills to Ensure Timely Operator Response:** The proposed rule requires that operators periodically test rupture mitigation valves to ensure they can quickly respond to a release. The rule re-iterates existing requirements to test communications and control systems for remote control and automatic valves. Operators will have to demonstrate the effectiveness of manual rupture mitigation valves by conducting annual drills on a sample of manual valves. This would ensure the reliability of valve response, closure, and operational condition. Through the implementation of these changes, PHMSA expects this would improve the reliability of operators’ incident response plans. This should reduce the amount of time that natural gas or hazardous liquids are released into the environment, reducing potentially catastrophic environmental damage. Therefore, these changes would have a positive impact to human health and the physical environment.

**Implementation Timeframes:** This change allows a 12 month, phased implementation of the 40-minute total response time and installation or modification of necessary ASVs or RCVs proposed in this rule. This provision details implementation timeframes and is not expected to directly change the likelihood of pipeline failure nor would it result in any environmental impacts. Nonetheless, a more rapid implementation of this provision would provide more immediate protection against the impacts of a rupture.

**Summary of Environmental Consequences of the Proposed Action:** PHMSA expects that the proposed Action Alternative would have a positive impact to human health and the environment. Elements of the proposed rulemaking, such as valve spacing, valve actuation and operation, and protection of HCAs, directly reduce the duration and severity of impacts in the event of a rupture. Several components of the rule, such as definition of a rupture, accident analysis, and operator response timing, would implement valve rupture standards designed to reduce the severity and duration of release in the event of a rupture. In addition, changes requiring meaningful metrics for testing, maintenance, and drills would further improve response time to pipeline ruptures. Increased manufacture, installation, and maintenance of valves could result in some increased emissions and excavations. Impacts from the manufacture of valves could result in localized, temporary air emissions. Impacts due to increased excavations for valve installation and maintenance could temporarily increase air emissions from heavy equipment and temporary siltation to nearby water bodies. Nonetheless, PHMSA expects that the benefits from shortening the duration of loss of hazardous liquids or natural gas
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outweighs any minor temporary environmental impacts caused by the manufacture, installation, or maintenance of valves.

In summary, the proposed rule would have a positive impact to human health and the physical environment through a reduction in the duration of a rupture, which can result in catastrophic damage to human health and the environment.

4.2.4 No Action Alternative

There are not expected to be any environmental impacts to human health, the physical environment, or environmental justice from the no action alternative, in which no regulatory changes would occur. However, if the no action alternative were selected, the changes aimed at mitigating harm cause by pipeline failure would not be implemented or achieved, as operators would be able to build and replace pipes without the safety measures in the Action Alternative. Therefore, PHMSA believes that the no action alternative would be an inferior choice for environmental and human safety protection.

5.0 PROPOSED FINDING OF NO SIGNIFICANT IMPACT

PHMSA has preliminarily determined that the selected alternative would not have a significant negative impact on the environment. PHMSA determined the proposed rule would have a positive impact on human health and the environment. PHMSA welcomes comment on any of these analyses or conclusions.

6.0 LIST OF PREPARERS AND REVIEWERS

6.1 PREPARERS

This EA was prepared by the following DOT staff from PHMSA and Volpe National Transportation Systems Center (part of the Office of the Assistant Secretary for Research and Technology):

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6.2 REFERENCES

