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# Pipeline Safety Regulations



**PIOGATech**  
**Pipeline Compliance**  
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# Overview

- Basic Principles
  - Federal Authority
  - State Authority
- Gas Pipelines
  - Underground Natural Gas Storage
  - Gathering, Transmission, and Distribution
- Hazardous Liquid Pipelines
  - Breakout Tanks
  - Gathering and Other Pipelines

# Basic Principles



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# Basic Principles: Federal Authority

- Federal Authority. The Pipeline and Hazardous Materials Safety Administration (PHMSA) within DOT administers a national regulatory and enforcement program pursuant to the federal pipeline safety laws, [49 U.S.C. § 60101 et seq.](#)
- Safety Standards. PHMSA's primary obligation is to establish minimum federal safety standards for natural gas and hazardous liquid pipelines, [49 U.S.C. § 60102](#), and LNG facilities, [49 U.S.C. § 60103](#).



# Basic Principles: Federal Authority

- Prohibitions. PHMSA cannot:
  - Determine the location or routing of pipelines facilities, [49 U.S.C. § 60104\(e\)](#).
  - Regulate hazardous liquid pipelines used for onshore production, refining, or manufacturing (or associated storage or in-plant piping systems), [49 U.S.C. § 60101\(a\)\(22\)\(B\)](#).
  - Apply new design, construction, initial inspection, and initial testing requirements to existing pipeline facilities, [49 U.S.C. § 60104\(b\)](#).
  - Apply new siting, design, installation, construction, initial inspection, and initial testing requirements to existing LNG facilities, [49 U.S.C. § 60103\(c\)](#).



# Basic Principles: Federal Authority

- Enforcement. PHMSA has the authority to:
  - Impose civil penalties of \$200K per day, per violation, not to exceed \$2M for any related series of violations, 49 U.S.C. § 60122.
  - Issue corrective action orders if a pipeline facility is or would be hazardous to life, property, or the environment, 49 U.S.C. § 60112.
  - Issue emergency orders to owners or operators of pipeline facilities if “an unsafe condition or practice, or a combination of unsafe conditions and practices, constitutes or is causing an imminent hazard[.]” 49 U.S.C. § 60117(o)(1).
  - Refer potential criminal violations to U.S. Department of Justice for prosecution, 49 U.S.C. § 60123.
- Special Permits. PHMSA can waive a requirement if not inconsistent with pipeline safety, 49 U.S.C. § 60118.

# Basic Principles: State Authority

- State Certifications. States can submit an annual certification to regulate intrastate pipeline facilities, but must adopt the minimum federal safety standards and meet other program requirements, [49 U.S.C. § 60105](#).
- State Pipeline Safety Standards. A state authority with a certification can apply additional or more stringent safety standards to intrastate pipelines facilities, so long as those standards are compatible with the minimum federal requirements, [49 U.S.C. 60104\(c\)](#).



# Basic Principles: State Authority

- State Agreements. States can enter into agreements with PHMSA to participate in the oversight of pipeline facilities, primarily by performing inspections for compliance with the federal safety standards, 49 U.S.C. § 60106(a)-(b).
- Enforcement in States with Agreements. PHMSA is responsible for enforcing the pipeline safety standards in States with agreements, 49 U.S.C. § 60106(c).
- Special Permits in States with Certifications or Agreements. With appropriate notification and in the absence of an objection from PHMSA, States with certifications or agreements can waive compliance with pipeline safety standards, 49 U.S.C. § 60118.

# Gas Pipelines

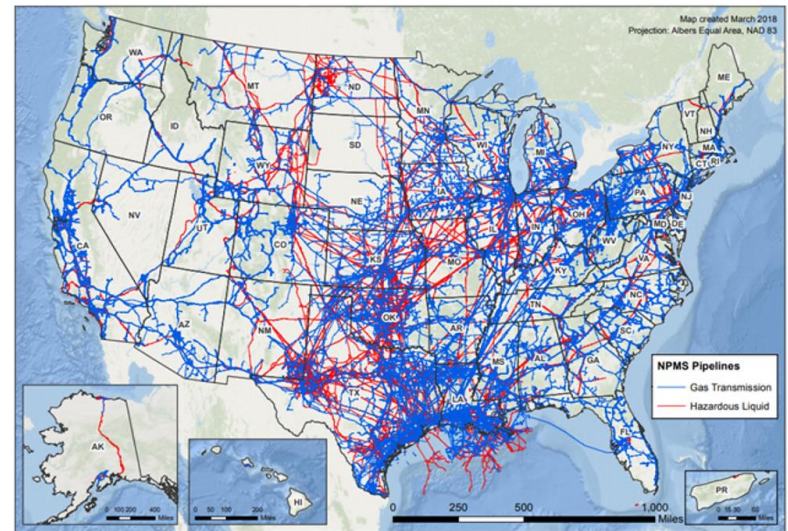


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# Gas Pipelines: Overview

- PHMSA 2022 CY Data
  - 2.7M miles of regulated gas pipelines in US
    - 1.3M miles of gas distribution mains
    - 965K miles of gas distribution service lines
    - 299K miles of gas transmission lines
    - 112K miles of regulated gas gathering lines
  - 401 regulated underground natural gas storage facilities in US
    - 456 reservoirs
    - 16,557 wells
  - 244K miles of unregulated gas gathering lines



# Gas Pipelines: Applicability

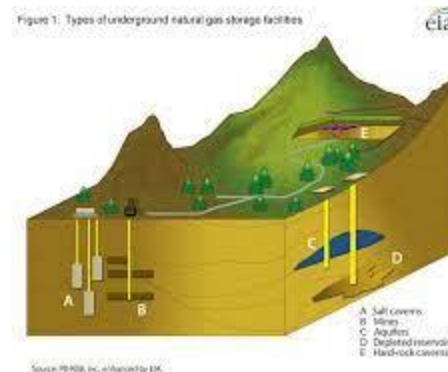
- Federal gas pipeline safety regulations are codified in 49 C.F.R. Part 192.
- Generally apply to *pipeline facilities* and the *transportation of gas*, 49 C.F.R. § 192.1.
  - *Pipeline facility* means new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation, 49 C.F.R. § 192.3.
  - *Transportation of gas* means gathering, transmission, or distribution of gas by pipeline or the storage of gas, in or affecting interstate or foreign commerce, 49 C.F.R. § 192.3.
  - *Gas* means natural gas, flammable gas, or gas which is toxic or corrosive, 49 C.F.R. § 192.3.

# Gas Pipelines: Applicability

- Part 192 does not apply to all pipeline facilities used in the transportation of gas, including certain offshore lines, onshore gathering lines, and petroleum gas systems, 49 C.F.R. § 192.1(b).
- Standards for design, installation, construction, initial testing, and initial inspection do not apply retroactively to existing pipeline facilities, 49 U.S.C. § 60104(b); 49 C.F.R. § 192.13.
- Conversion of service rule applies to previously-unregulated pipelines placed into Part 192 service, 49 C.F.R. § 192.14.

# Gas Pipelines: Underground Gas Storage Facilities (UNGSF)

- UNGSF is defined in 49 C.F.R. § 192.3.
- Only requirements that apply to UNGSF are prescribed in 49 C.F.R. § 192.12.
  - Follow API 1170 for solution-mined salt cavern reservoirs and API 1171 for depleted hydrocarbon or aquifer reservoirs.
  - Prepare and follow manual with written procedures.
  - Additional integrity management program requirements



# Gas Pipelines: Gathering

- Gas gathering requirements are codified at 49 C.F.R. § 192.8 to 192.9.
- Safety standards vary based on location (offshore, onshore) and risk (population density, stress level/operating pressure, diameter).
- Higher risk lines are subject to more stringent requirements.
- Lower risk lines are subject to less stringent requirements.
- Reporting requirements apply to all lines.



# Gas Pipelines: Gathering

- Onshore gas gathering
  - Definition
    - API RP 80 (1<sup>st</sup> ed.) + Part 192 limitations
  - Type A Regulated
    - High stress/pressure + Class 2, 3, 4
  - Type B Regulated
    - Low stress/pressure + Class 2, 3, 4
  - Type C Regulated
    - High stress/pressure + 8 inches or greater + Class 1
  - Type R Reporting Only
    - Not Type A, B, or C



# Gas Pipelines: Transmission

- *Transmission line* is a pipeline, other than a gathering line, that:
  - Transports gas from a gathering pipeline or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center;
  - Has an MAOP of 20 percent or more of SMYS;
  - Transports gas within a storage field; or
  - Is voluntarily designated by the operator as a transmission pipeline, 49 C.F.R. § 192.3.
- Case-by-case determination as to whether a pipeline is a transmission line.

# Gas Pipelines: Transmission MAOP Reconfirmation

- *Maximum Allowable Operating Pressure (MAOP)* is the maximum pressure a pipeline may be operated at under Part 192.
- Two basic methods for establishing MAOP under 49 C.F.R. 192.619:
  - *Four Pressures*: (1) design pressure, (2) post-construction test pressure, (3) highest actual operating pressure experienced during a 5-year historical window, unless the pipeline is tested after construction or updated, or (4) maximum safe operating pressure, whichever is the lowest.
  - *Grandfather Clause*: Highest actual operating pressure experienced during a 5-year historical window.

# Gas Pipelines: Transmission MAOP Reconfirmation

- MAOP reconfirmation is required under 49 C.F.R. 192.624 if:
  - Records necessary to establish MAOP under 192.619(a)(2) (pressure testing) are not traceable, verifiable, and complete (TVC), and the pipeline is in a HCA, class 3 or 4 location.
    - *Traceable* means clearly linked to original information about a pipeline segment or facility.
    - *Verifiable* means information is confirmed by other complementary, but separate, documentation.
    - *Complete* means finalized as evidenced by a signature, date or other appropriate marking.
  - MAOP established under the grandfather clause, the MAOP is at or above 30% of specified minimum yield strength (SMYS), and the pipeline is in an HCA, Class 3 or 4 location, or moderate consequence area (MCA).

# Gas Pipelines: Transmission MAOP Reconfirmation

- Six methods for reconfirming MAOP:
  - Pressure Test (with Materials Verification)
  - Pressure Reduction
  - Engineering Critical Assessment (ECA)
  - Replace pipe
  - Pressure reduction for certain small PIR pipelines
  - Alternative technology
- MAOP reconfirmation deadlines:
  - July 3, 2028, for at least 50 percent of the covered mileage.
  - July 2, 2035, for 100% of the covered mileage, or four years from the date that a segment becomes subject to requirement, whichever is later.

# Gas Pipelines: Transmission Integrity Management Program

- Integrity management (IM) program requirements for gas transmission lines are codified at Subpart O.
- Applies to covered segments located in high consequence areas (HCA).
- Operators must develop and implement a written program that meets certain elements.
  - Identifying HCAs
  - Baseline integrity assessments & reassessments
  - Threat identification and risk assessment
  - Remediating conditions found during integrity assessments
  - Implementing preventative and mitigative measures

# Gas Pipelines: Distribution Lines

- *Distribution line* means a pipeline other than a gathering or transmission line, 49 C.F.R. § 192.3.
- *Main* means a distribution line that serves as a common source of supply for more than one service line, 49 C.F.R. § 192.3.
- *Service line* means a distribution line that transports gas from a common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold, 49 C.F.R. § 192.3.

# Gas Pipelines: Distribution Integrity Management Program

- Gas distribution integrity management program (DIMP) requirements are codified at Subpart P.
- Generally less prescriptive than transmission IM.
  - Significant differences in distribution system preclude using same approach as gas transmission IM.
  - Assumption is that all distribution lines are in HCAs.
- Written DIMP Plan required under 49 C.F.R. § 192.1007
- Key elements are knowledge, threat identification, risk evaluation/ranking/reduction measures, performance measurement, periodic evaluations.

# Hazardous Liquid Pipelines

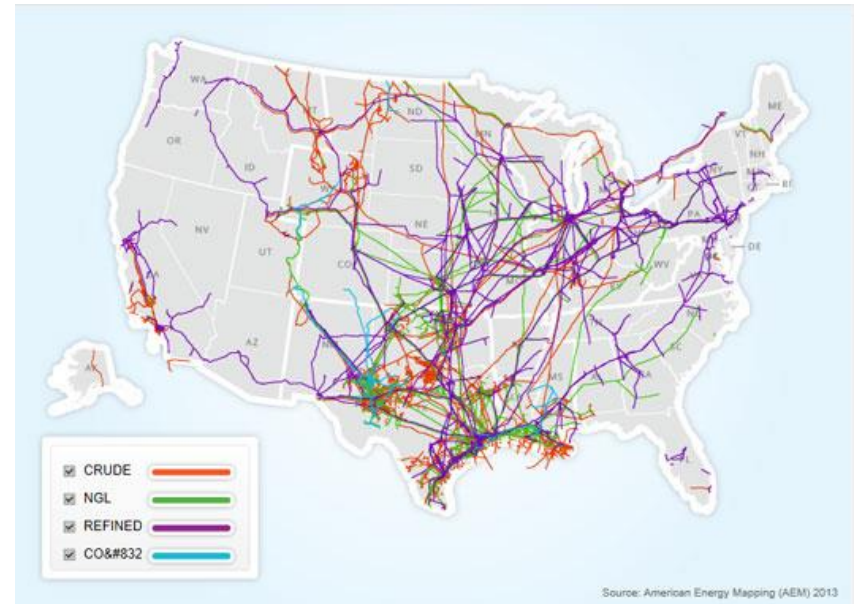


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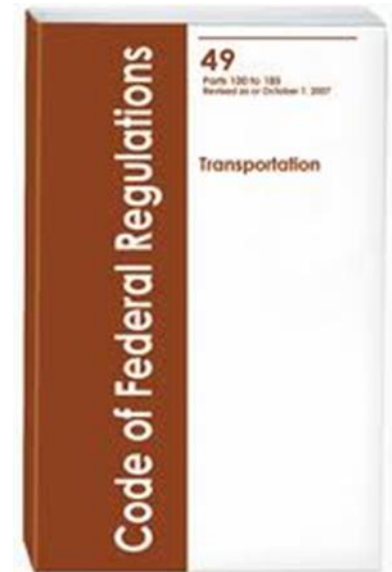
# Hazardous Liquid Pipelines: Overview

- PHMSA 2022 CY Data
  - 229K miles of regulated hazardous liquid pipelines
    - 64K miles of petroleum products
    - 75K miles of highly volatile liquid
    - 85K miles of crude oil
    - 5K miles of liquid carbon dioxide
    - 18 miles of biofuels
    - 8,500 regulated breakout tanks
    - 4K miles of regulated gathering lines
  - 37K miles of unregulated gathering lines



# Hazardous Liquid Pipelines: Applicability

- Part 195 generally prescribes safety standards and reporting requirements for hazardous liquid and carbon dioxide pipelines, 49 C.F.R. § 195.0.
  - *Hazardous liquid* means petroleum, petroleum products, anhydrous ammonia, and ethanol or other non-petroleum fuel, including biofuel, which is flammable, toxic, or would be harmful to the environment if released in significant quantities.
- Exceptions are provided for pipelines where required by statute or for reasons of policy, 49 C.F.R. § 195.1(b).



# Hazardous Liquid Pipelines: Applicability

- Part 195 does not apply to:
  - Transportation of hazardous liquid in a gaseous state, 49 C.F.R. § 195.1(b)(1).
  - Low-stress pipelines that:
    - Are regulated by the U.S. Coast Guard
    - Serve refining, manufacturing, or transportation facilities that are less than 1 mile long and do not cross an offshore area or commercially navigable waterway, 49 C.F.R. § 195.1(b)(3).
  - Certain onshore gathering lines, except for reporting purposes, 49 C.F.R. § 195.1(b)(4).

# Hazardous Liquid Pipelines: Applicability

- Part 195 does not apply to:
  - Certain offshore pipelines in state waters or on the Outer Continental Shelf, 49 C.F.R. § 195.1(b)(5)-(7).
  - Onshore production, refining, or manufacturing facilities (or associated storage or in-plant piping systems), 49 C.F.R. § 195.1(b)(8).
  - Certain facilities at materials transportation terminals, 49 C.F.R. § 195.1(b)(9).
  - Certain carbon dioxide pipelines used for EOR, 49 C.F.R. § 195.1(b)(10).

# Hazardous Liquid Pipelines: Applicability

- Part 195 applies to breakout tanks that:
  - Relieve surges in a hazardous liquid pipeline system or
  - Receive and store hazardous liquid transported by a pipeline for reinjection and continued transportation by pipeline.
  - Subject to specific breakout tank requirements and, to the extent applicable and where not otherwise in conflict, the requirements for pipeline systems and pipeline facilities.
- Dozens of standards are incorporated by reference into Part 195, 49 C.F.R. § 195.3.
- Conversion-of-service rules applies to previously-unregulated pipelines placed in Part 195 service, 49 C.F.R. § 195.5.

# Hazardous Liquid Pipelines: Gathering Lines

- A gathering line is a pipeline 8 5/8 inches or less in nominal outside diameter that transports *petroleum* from a *production facility*. 49 C.F.R. § 195.2.
  - Petroleum is “crude oil, condensate, natural gasoline, natural gas liquids, and liquefied petroleum gas.” 49 C.F.R. § 195.2.
  - Production facility is “piping or equipment used in the production, extraction, recovery, lifting, stabilization, separation or treating of petroleum or carbon dioxide, or associated storage or measurement.” § 49 C.F.R. 195.2.
- Part 195 generally applies to non-rural gathering lines and regulated rural gathering lines. 49 C.F.R. § 195.1, 195.11(a).

# Hazardous Liquid Pipelines: Gathering Lines

- *Rural area* means outside the limits of any incorporated or unincorporated city, town, village, or any other designated residential or commercial area.
- A regulated rural gathering line is a pipeline transporting petroleum in a rural area that:
  - Has a nominal outside diameter of between 6 5/8 and 8 5/8 inches;
  - Operates at a stress level greater than 20 percent of SMYS or, in certain cases, at a pressure of more than 125 psig; and
  - Is within 1/4-mile of an unusually sensitive area.

# Hazardous Liquid Pipelines: Integrity Management

- Applies to hazardous liquid and carbon dioxide pipelines that could affect a high consequence area (HCA), 49 C.F.R. § 195.450-52.
- HCAs include commercially navigable waterways, high population areas, other populated areas, and unusually sensitive areas
- Risk-based integrity management program, including baseline assessment and periodic reassessments

# Hazardous Liquid Pipelines: Oil Spill Response Plans

- Requirements for oil spill response planning are codified at 49 C.F.R. Part 194.
- Issued pursuant to the Oil Pollution Act of 1990 (OPA 90).
  - Applies to onshore pipelines that could reasonably be expected to cause significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States or adjoining shorelines.
- Operators must develop and submit response plans.

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