



January 2022

PIPELINE SAFETY

Operators of Natural Gas and Hazardous Liquid Gathering Lines Face Data Collection Challenges

Accessible Version

Why GAO Did This Study

PHMSA, within the Department of Transportation, has historically not regulated most gathering lines. However, factors such as increased extraction of natural gas and oil have increased the potential safety risks of these pipelines. To understand these risks better, PHMSA has taken steps in recent years to collect data, such as pipeline size and material type, from all gathering line operators.

The Consolidated Appropriations Act, 2021, includes a provision for GAO to review data collection by gathering line operators. This report addresses (1) stakeholder views on challenges operators may face in collecting gathering line data; and (2) steps PHMSA is taking to make operators aware of recently amended data reporting requirements.

GAO reviewed statutes and PHMSA final rules, annual reporting forms, and other relevant documents; analyzed data from annual reports filed in 2021 by historically unregulated hazardous liquid gathering line operators; and interviewed PHMSA officials and representatives from a range of industry stakeholders including five gathering line operators and 11 state and regional industry associations and 12 state regulatory agencies in the states with the greatest mileage of natural gas and hazardous liquid gathering lines.

View [GAO-22-104817](#). For more information, contact Elizabeth Repko at (202) 512-2834 or repkoe@gao.gov.

Operators of Natural Gas and Hazardous Liquid Gathering Lines Face Data Collection Challenges

What GAO Found

Industry stakeholders described several challenges that operators of gathering lines—pipelines that carry gas or hazardous liquid from wells to other pipelines or facilities—may face in meeting new reporting requirements issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA). Specifically, PHMSA required all hazardous liquid gathering line operators to submit annual reports with characteristic data, such as pipeline size and material of construction, starting in 2021, and natural gas gathering line operators to do the same starting in 2023 (see table).

Required Annual Reporting Data for Gathering Lines

Type of Gathering Line	Required characteristic data
Hazardous liquid	Combined information detailing mileage by onshore/offshore location, material, diameter range, and operating stress level.
Natural gas	Miles of gathering line by diameter, decade installed, and material/corrosion prevention status; and number of leaks and repairs.

Source: GAO Analysis of Pipeline and Hazardous Materials Safety Administration Annual Reporting Forms. | [GAO-22-104817](#)

Industry stakeholders told GAO that the limited availability of gathering line data and the resources needed to collect additional data may make reporting challenging. Older gathering lines may have less data available due to incomplete records and changes in ownership over time. Collecting data would require significant time, labor, and money. Stakeholders also noted that smaller operators—such as those with few employees—are less likely to have the expertise and resources needed to maintain or collect data. How these challenges will ultimately affect the amount of data operators report to PHMSA is unclear. GAO’s analysis of data submitted in 2021 by hazardous liquid gathering line operators found that operators generally reported all required data, but the larger number of natural gas gathering line operators and miles of pipeline could result in PHMSA receiving less complete data from those operators. PHMSA officials say they plan to evaluate data submitted over time to determine gaps.

PHMSA has taken, and is planning, actions to make operators aware of recently amended gathering line reporting requirements. For hazardous liquid operators, PHMSA held a public meeting and presented information during two meetings of a national pipeline organization. PHMSA then received 85 annual reports in 2021 from those operators, which was in line with the agency’s expectations. For natural gas, PHMSA estimates 500 operators will need to file reports for the first time in 2023—more than five times the 85 hazardous liquid operators that filed in 2021. Before PHMSA finalized the reporting requirements for natural gas gathering lines, GAO found that some industry representatives were unaware of proposed requirements. GAO brought these issues to PHMSA’s attention and officials noted PHMSA is planning additional outreach for the natural gas rule, including to state industry associations. Such efforts should help PHMSA increase operators’ awareness of and compliance with reporting requirements.

Contents

GAO Highlights	2
Why GAO Did This Study	2
What GAO Found	2
Letter	1
Background	5
Stakeholders Identified Data Availability and Operator Resource Challenges That Could Affect the Amount of Data Operators Are Able to Report	9
PHMSA Took Steps to Make Hazardous Liquid Operators Aware of Reporting Requirements and Plans Additional Steps for Natural Gas Operators	12
Agency Comments	14
Appendix I: Information on Operator Challenges in Obtaining Mapping Data for Gathering Lines	16
Appendix II: GAO Contact and Staff Acknowledgments	18
GAO Contact	18
Staff Acknowledgments	18
Table	
Table 1: Required Annual Reporting Data for Gathering Lines	8
Figure	
Figure 1: Gathering Lines System	5

Abbreviations

GIS	geographic information system
NPMS	National Pipeline Mapping System
PHMSA	Pipeline and Hazardous Materials Safety Administration

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January 13, 2022

The Honorable Maria Cantwell
Chair
The Honorable Roger F. Wicker
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Frank Pallone, Jr.
Chairman
The Honorable Cathy McMorris Rodgers
Republican Leader
Committee on Energy and Commerce
House of Representatives

The Honorable Peter A. DeFazio
Chairman
The Honorable Sam Graves
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

Gathering lines transport natural gas or hazardous liquids, such as crude oil, from production areas to larger pipelines or processing facilities, generally within a single state. The Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA), which oversees the safety of pipeline transportation, has historically not regulated most of these pipelines, because they pose lower risks as they tend to be located in less populated areas and operate at low pressures. According to PHMSA, in recent years its regulations have covered about 10 percent of onshore natural gas gathering line mileage and about 4 percent of onshore hazardous liquid gathering line mileage.

For gathering lines that PHMSA regulates, operators must, among other things, follow specifications for pipeline construction and operations and file annual reports containing descriptive data on those lines, such as diameter, age, construction material, and operating pressure (known as "characteristic data"). PHMSA also requires certain hazardous liquid gathering line operators to report pipeline mapping data for the National Pipeline Mapping System (NPMS). However, operators of natural gas and most hazardous liquid gathering lines are not subject to this requirement.

Over time, increased extraction of gas and oil from shale deposits has resulted in larger, higher-pressure gathering lines, and development has brought populated areas closer to some rural gathering lines, increasing potential safety risks. To better understand the risks of unregulated gathering lines, inform potential future regulatory actions, and respond to recommendations from our prior work, PHMSA has taken steps to amend its pipeline safety regulations to collect data from operators of unregulated gathering lines.¹ Specifically, among other things, the agency required all operators of hazardous liquid gathering lines to submit annual reports containing data on pipeline characteristics starting in 2021.² PHMSA requires the same of all operators of natural gas gathering lines starting in 2023.³

The Consolidated Appropriations Act, 2021 included a provision for GAO to review gathering pipeline operators' collection of pipeline characteristic and mapping data.⁴ This report addresses:

- stakeholder views on the challenges operators may face in collecting gathering line characteristic data, and
- steps PHMSA is taking to make operators aware of recently amended data reporting requirements. This report also includes stakeholder views on challenges operators may face in collecting and reporting mapping data (see app. I).

¹GAO *Pipeline Safety: Collecting Data and Sharing Information on Federally Unregulated Gathering Pipelines Could Help Enhance Safety* [GAO-12-388](#) (Washington, D.C., Mar. 22, 2012); GAO *Oil and Gas Transportation: Department of Transportation is Taking Actions to Address Rail Safety, but Additional Actions Are Needed to Improve Pipeline Safety* [GAO-14-667](#) (Washington, D.C.: Aug. 21, 2014).

²Pipeline Safety: Safety of Hazardous Liquid Pipelines, 84 Fed. Reg. 52,260 (Oct. 1, 2019). We will refer to this rule as the 2019 rule. PHMSA's hazardous liquid pipeline safety regulations are located in 49 C.F.R. part 195.

³Pipeline Safety: Safety of Gas Gathering Pipelines: Extension of Reporting Requirements, Regulation of Large, High-Pressure Lines, and Other Related Amendments 86 Fed. Reg. 63,266 (Nov. 15, 2021). We will refer to this rule as the 2021 rule. PHMSA issued a proposed rule for this requirement in 2016. Pipeline Safety: Safety of Gas Transmission and Gathering Pipelines, 81 Fed. Reg. 20,722 (proposed Apr. 8, 2016). We will refer to this notice of proposed rulemaking as the 2016 proposed rule. PHMSA's natural gas pipeline safety regulations are located in 49 C.F.R. parts 191-192.

⁴Pub. L. No. 116-260, div. R, tit. I, § 112, 134 Stat. 1182, 2228 (2020).

To address these objectives we reviewed relevant statutes and PHMSA regulations, including the 2019 rule amending its hazardous liquid pipeline safety regulations, the 2021 rule amending its natural gas pipeline safety regulations, and the 2016 proposed rule. We also reviewed relevant PHMSA reporting forms, including the annual report form submitted by historically unregulated hazardous liquid gathering line operators for the first time in 2021 and the draft annual report form to be submitted by historically unregulated natural gas gathering line operators starting in 2023.⁵

To obtain stakeholder views on the challenges operators may face in collecting data, we interviewed:

- Five operators of hazardous liquid or natural gas (or both) gathering lines, out of a total of 23 we contacted that we identified based on information obtained from state pipeline safety agencies and PHMSA. We describe four of those five as larger operators because they operate thousands of gathering pipeline miles in multiple states. We describe one as a smaller operator as it manages relatively limited gathering line mileage.
- Eleven state or regional industry associations in selected states with the highest mileage of natural gas and hazardous liquid gathering lines. Specifically, we selected the 10 states with the highest estimated total mileage of natural gas gathering lines based on a 2017 report prepared for the American Petroleum Institute⁶ and the 10 states with the highest mileage of hazardous liquid gathering lines based on 2019 data filed with PHMSA by operators of regulated hazardous liquid gathering lines.⁷ As 7 states were in the top 10 for mileage of both natural gas and hazardous liquid gathering lines, we selected a total of 13 states. We identified state and regional industry associations in the selected states through internet searches and information obtained from state agencies we interviewed. In some

⁵We will refer to hazardous liquid and natural gas gathering lines that were not subject to PHMSA's regulations prior to the issuance of its 2019 rule and 2021 rule, respectively, as "historically unregulated."

⁶American Petroleum Institute, *Benefits and Opportunities of Natural Gas Use, Transportation, and Production* (June 2017).

⁷These data included only historically regulated hazardous liquid gathering lines. We used the 2019 annual report data because when we analyzed these data to identify states to include in our review, 2020 annual report data were not yet available.

states, we interviewed more than one industry association, and in other cases, associations declined to meet with us.

- Twelve state agencies that oversee pipeline safety in the selected states.⁸ (One of the 13 state's agency did not respond to requests for interviews.)
- Six organizations with work relevant to pipelines, including three national industry associations that represent gathering line operators; two pipeline safety organizations; and one environmental organization.

In these interviews, we asked respondents about challenges gathering line operators face in collecting mapping and pipeline characteristic data, about awareness of PHMSA's proposed and final rules, and about PHMSA's role in collecting pipeline data. Because we conducted these interviews before PHMSA issued its final rule for natural gas gathering lines in November 2021, our questions covered the 2016 proposed rule. We analyzed interview responses to determine common responses and themes.⁹

To review steps PHMSA is taking to make operators aware of recently amended reporting requirements, we interviewed PHMSA officials regarding these requirements and steps the agency has taken or plans to take to inform pipeline operators about such rules. We reviewed relevant PHMSA documents, such as presentation slides used to educate gathering line operators about updated reporting requirements. We also analyzed PHMSA's 2020 hazardous liquid pipeline annual report data (submitted in 2021), containing data on pipeline characteristics reported for the first time by historically unregulated hazardous liquid gathering line operators. To review the reliability of these data, we interviewed PHMSA officials, reviewed relevant documentation, and reviewed data for any obvious anomalies. We determined that these data are sufficiently reliable

⁸The 12 states were: Alabama, California, Colorado, Kansas, Louisiana, New Mexico, Ohio, Oklahoma, Pennsylvania, Texas, West Virginia, and Wyoming.

⁹During semi-structured interviews with these entities, not all entities discussed certain topics. In our analysis of interview responses, we analyzed the number of entities that made a given statement; however, in many cases entities that did not make that given statement did not comment on that matter and did not disagree. For the purpose of characterizing the results of our interviews, we define "multiple" as between 2 and 5 state agencies or between 2 and 4 industry associations, "about half" as 6 state agencies or 5 industry associations, and "most" as at least 7 of 12 state agencies or at least 6 of 11 industry associations.

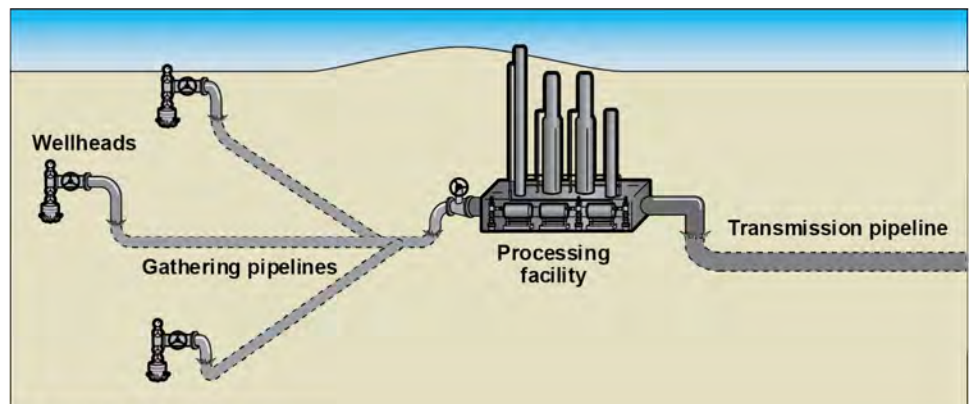
for reporting the number of hazardous liquid operators and their gathering line mileage.

We conducted this performance audit from February 2021 to January 2022 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The pipeline system in the U.S. includes a number of different facilities and types of pipelines, including gathering lines. Gathering lines carry natural gas or hazardous liquids, such as crude oil, from a production well to a processing facility or to a larger transmission pipeline.¹⁰ (See fig. 1.) Transmission pipelines may carry the product to manufacturing or storage facilities or, for natural gas, to distribution pipelines, which transport the product to homes and businesses. Gathering and distribution pipelines tend to operate within a single state (intrastate), while transmission pipelines tend to transport the product across state boundaries (interstate).

Figure 1: Gathering Lines System



Source: GAO. | GAO-22-104817

¹⁰We use the term transmission pipeline to refer to both gas and hazardous liquid pipelines carrying product over long distances.

Compared to other modes of transportation, pipelines are one of the safest ways to transport natural gas and hazardous liquids, although accidents—such as ruptures resulting from excavation damage—can injure or kill people and damage property or the surrounding environment. PHMSA administers a national safety program designed to protect the public, property, and the environment from risks posed by the transportation of natural gas and hazardous liquids by pipelines. PHMSA has the authority to set and enforce the federal minimum safety standards for interstate and intrastate pipelines and pipeline facilities, and to inspect them.¹¹ However, states may assume inspection, regulatory, and enforcement authority over intrastate pipelines, including gathering lines, by certifying to PHMSA that they have adopted and are enforcing applicable federal safety standards. States also may impose additional or more stringent safety standards, including data reporting requirements, so long as they are compatible with federal standards.¹² These regulated pipelines are subject to a number of requirements, including:

- **Annual reporting.** Pipeline operators must file annual reports, which include data on pipeline characteristics such as location, age, material, and diameter. PHMSA makes data from annual reports available to the public on its website.
- **Accident reporting.** Operators must submit reports on accidents, which include events that result in an injury requiring in-patient hospitalization, fatality, or release of product in an amount meeting or exceeding the regulatory threshold. Operators must file such reports as soon as practicable but no later than 30 days after an accident, and PHMSA uses information from these reports to analyze safety risks.
- **Reporting mapping data.** Transmission pipeline and certain hazardous liquid gathering line operators—but no natural gas gathering line operators—are required to report geospatial data into NPMS, a geographic information system (GIS) database. PHMSA uses NPMS data for emergency response, pipeline inspections, compliance activities, and analysis.

¹¹PHMSA's general authority is under the Pipeline Safety Laws codified at 49 U.S.C. § 60101 et seq.

¹²For example, Texas requires all gathering line operators within the state to obtain and annually renew a state pipeline permit. 16 Tex. Admin. Code § 3.70. As part of the permitting process, operators must submit general mapping data, such as mileage and the county in which the gathering line is located.

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- **Pipeline standards.** Operators must comply with pipeline standards, such as specifications for pipeline design, construction, testing, inspection, operation, and maintenance.
 - **Inspections.** Operators must grant PHMSA or state agencies, as applicable, access to pipelines and facilities for inspections to verify operators' compliance with safety standards.

Consistent with its risk-based approach to pipeline safety regulation, PHMSA historically has not regulated all gathering lines, but only those in populated or environmentally sensitive areas.¹³ However, PHMSA is statutorily authorized to collect any information from gathering line operators that is pertinent to determining whether and to what extent to regulate gathering lines.¹⁴ In 2019, PHMSA reported that the agency had regulated about 4,000 miles of an estimated 30,000-40,000 miles of onshore hazardous liquid gathering lines and 18,000 miles of an estimated 426,000 miles of onshore natural gas gathering lines.

PHMSA has taken steps to collect more data on unregulated natural gas and hazardous liquid gathering lines in order to better understand safety risks and inform potential future regulatory actions. In 2019, PHMSA issued a final rule requiring all historically unregulated hazardous liquid gathering line operators to file annual reports and, for accidents that meet the regulatory threshold, accident reports, starting in 2021. In November 2021, PHMSA issued a final rule extending annual and accident reporting requirements to all historically unregulated natural gas gathering lines.¹⁵ We will refer to hazardous liquid and natural gas gathering lines that are subject to PHMSA's annual and accident reporting requirements—but not other federal safety regulations—as “reporting-only” gathering lines. Table 1 shows the range of pipeline characteristic data that operators of gathering lines are required to provide to PHMSA in their annual reports.

¹³In addition, PHMSA is prohibited by statute from regulating certain gathering lines under 49 U.S.C. § 60101(b)(2)(B). State pipeline safety agencies may regulate gathering lines that PHMSA does not regulate, but they must be authorized to do so under the laws of their state.

¹⁴49 U.S.C. § 60117(c).

¹⁵PHMSA also extended some existing pipeline safety regulations, such as standards for construction and corrosion control, to some historically unregulated natural gas gathering lines in rural areas that meet certain criteria, including larger diameters and higher operating pressures. PHMSA, in the 2016 proposed rule, estimated that about 71,000 miles of historically unregulated natural gas gathering lines would fall in this category.

Table 1: Required Annual Reporting Data for Gathering Lines

Type of gathering line	Required characteristic data
Hazardous liquid	Combined information detailing mileage by onshore/offshore location, material, diameter range, and operating stress level.
Natural gas	Miles of gathering line by diameter, decade installed, material/corrosion prevention status, and the number of annual leak repairs.

Source: GAO Analysis of Pipeline and Hazardous Materials Safety Administration Annual Reporting Forms. | GAO-22-104817

While most gathering line operators do not have to submit geospatial data for those pipelines into NPMS, operators of regulated rural hazardous liquid gathering lines are required to do so.¹⁶ These are the only hazardous liquid gathering lines subject to the NPMS reporting requirement, and PHMSA has not proposed a rule to extend this requirement to other types of hazardous liquid gathering lines. No natural gas gathering line operators are required to submit geospatial data into NPMS. However, some public safety and environmental organizations have suggested that PHMSA should require natural gas gathering line operators to submit geospatial data to NPMS to help inform future regulatory actions.

¹⁶Regulated rural hazardous liquid gathering lines are not reporting-only gathering lines, because they are subject to federal safety requirements beyond annual and accident reporting. They are defined by regulation as any onshore hazardous liquid gathering line in a rural area that has a diameter within a specified 2-inch range, operates at or above a certain maximum pressure, and is located in or near an environmentally sensitive area. 49 C.F.R. § 195.11. In addition to regulated rural hazardous liquid gathering line operators, operators of transmission pipelines are also required to report data into NPMS. 49 U.S.C. § 60132(a).

Stakeholders Identified Data Availability and Operator Resource Challenges That Could Affect the Amount of Data Operators Are Able to Report

Stakeholders Identified Data Availability and Resource Challenges, Particularly for Smaller Operators

Stakeholders—including gathering line operators, industry associations, and state pipeline safety agencies—identified potential challenges in meeting PHMSA reporting requirements, including the amount of available gathering line characteristic data and the resources needed to collect additional data.¹⁷ Additionally, they told us these challenges would vary among operators, with smaller operators likely to face more difficulties than larger ones.

Availability of Characteristic Data

Stakeholders said that factors such as pipeline age may affect the extent of available data on hazardous liquid and natural gas gathering lines. According to stakeholders, data on the characteristics of older gathering lines are less likely to exist than for newer pipelines. Most state and regional industry associations and state agencies told us that, generally, less data would be available for older gathering lines because of changes in ownership or a previous lack of PHMSA requirements to collect and maintain data records.¹⁸ For example, records of gathering lines may have been lost as different companies acquired those lines over time. Representatives from one industry association we interviewed said that changes in ownership for some gathering lines in that state resulted in a loss of data about pipeline material and pipeline location, among other characteristics. They added that the more frequently a company changed hands, the greater the likelihood of losing information. Further, officials with most state agencies we interviewed said that they did not require

¹⁷In our interviews, we asked industry stakeholders about pipeline characteristic data required in PHMSA's annual reports.

¹⁸We conducted semi-structured interviews with these entities; those that did not make such a statement did not comment on this matter specifically and did not necessarily disagree.

federally unregulated gathering line operators to provide pipeline characteristic data to the state annually.

Stakeholders also told us that operator size can affect the amount of data available. Generally, stakeholders said that smaller operators—such as those with few pipeline miles or employees—are less likely to have data on the characteristics of their gathering lines readily available given the expertise and resources needed to collect and maintain data. Some state industry associations and most state pipeline safety agencies said that smaller operators may have fewer resources than larger operators, and multiple state agencies added that these operators may be less familiar with PHMSA and its regulations. The small natural gas operator we spoke to told us that the company was not very familiar with the reporting requirements in PHMSA's 2016 proposed rule and faced some initial learning curves earlier when the company acquired its first PHMSA-regulated pipeline. According to state pipeline safety agencies, larger operators are more likely to have the administrative capacity to maintain records for their gathering lines, especially if they built them or have PHMSA-regulated pipelines in addition to historically unregulated gathering lines. Natural gas and hazardous liquid gathering line operators with thousands of miles of gathering lines in multiple states told us that they have collected certain characteristic data for the majority (76-100 percent) of their gathering line miles.

Resources Needed to Collect Additional Characteristic Data

While operators told us it would be possible to obtain some additional data on pipeline characteristics through searches of pipeline records or excavations of gathering lines, they said doing so may require significant time, labor, and money. All five operators we interviewed said that although they already collected data on some of their gathering line mileage, they would face challenges collecting data for all of it. In some cases, they said information may exist in paper records. However, operators told us they cannot easily search these records because they may not be digitized or catalogued, and therefore the effort may require significant resources. For other data, operators noted they could excavate a portion of a gathering line and conduct tests to determine the material used, operating stress level, or diameter.

Stakeholders said collecting additional data may be particularly difficult for smaller operators that may not have the needed staff or money to invest in these efforts. One industry association said that because smaller operators have fewer financial resources, the increased burden of these

data collection activities could make operating their gathering lines economically unviable. Representatives from that association noted this possibility is because many unregulated gathering lines in their state service wells that do not produce high volumes of gas or oil and operate with limited profitability. Staff with one smaller operator we spoke with said that the company would need a team of employees to collect this data, as some of its acquisitions of unregulated gathering lines did not include such data.

Operators also told us that they may be unable to collect data on pipeline age regardless of the amount of time and money put into data collection efforts. Three operators told us that collecting data on the decade of pipeline installation would be challenging, with two operators adding that their company may not be able to determine the decade of installation for a gathering line if the old records have been lost or are unavailable. Operators told us that unlike other characteristics such as material or diameter, they could not determine the decade of pipeline installation through excavations or testing.

The Effect of Challenges on Operators' Ability to Report Data Is Unclear, and PHMSA Plans to Monitor Data Reported over Time

While stakeholders reported potential challenges related to data collection, the effect of these challenges seems to have been minimal for hazardous liquid gathering line operators. For 2021, the first year that reporting-only hazardous liquid operators were required to submit characteristic data in annual reports, few operators reported any data gaps. PHMSA's hazardous liquid annual report form currently allows operators of reporting-only lines to report *unknown* for pipeline diameter. We found that operators did not use this option frequently in their annual reports. Specifically, our analysis of hazardous liquid gathering line annual report data submitted in 2021 shows that operators reported only a limited number (162 of over 27,000 miles, or less than 1 percent) of gathering line mileage with an "unknown" pipeline diameter. This finding suggests that most hazardous liquid operators had or were able to collect the required data.

However, data collection challenges may have more of an effect on the ability of historically unregulated natural gas gathering line operators to submit required characteristic data. First, PHMSA estimates that the total mileage of natural gas gathering lines, including regulated and historically

unregulated lines, is more than 10 times that of hazardous liquid gathering lines. In addition, PHMSA officials told us the agency's draft natural gas annual report form proposes to allow operators of reporting-only natural gas gathering lines to report unknown for additional pipeline characteristic fields including material of construction, size, decade of installation, and corrosion prevention status.¹⁹ As a result, these operators may report more data as unknown for natural gas gathering lines than hazardous liquid gathering lines when they begin submitting annual reports in 2023.

PHMSA officials said that, similar to hazardous liquid gathering line operators, they expect to receive limited *unknown* data from natural gas gathering line operators should they be required to file annual reports. However, they acknowledged that the extent of unknown data, and the subsequent effect on the planned analysis of potential safety risks of gathering lines, cannot be predicted before operators begin to submit reports. Officials said that PHMSA plans to evaluate the gathering line annual reports they receive from natural gas operators for data gaps and that they expect that operators will be able to submit more data over time. They added that the agency will answer questions from operators to help them comply with the data collection requirements.

PHMSA Took Steps to Make Hazardous Liquid Operators Aware of Reporting Requirements and Plans Additional Steps for Natural Gas Operators

PHMSA has taken steps and plans additional actions to increase awareness of recently amended reporting requirements for hazardous liquid and natural gas gathering lines. For hazardous liquid gathering line operators—first required to file annual and accident reports in 2021—PHMSA held a meeting in February 2020 to increase awareness of these requirements and provide details on how to file annual reports. During this meeting—held in person and webcast—PHMSA presented information on the new reporting requirements, including timeframes and data elements required. The agency publicized this meeting by publishing a notice in the

¹⁹The draft natural gas annual report form does not specifically allow *unknown* to be listed for some characteristic data. Instead, PHMSA officials said operators could select *other* and list *unknown*.

Federal Register and placed a recording of the meeting on its website. PHMSA also provided information on the reporting requirements during two virtual meetings held by the National Association of Pipeline Safety Representatives in the summer of 2020.

Our analysis of data filed in 2021 by operators of reporting-only hazardous liquid gathering lines indicates the number of reports filed, and the total mileage of gathering lines in these reports, were in line with PHMSA estimates. Specifically, PHMSA received annual reports from 85 operators of reporting-only hazardous liquid gathering lines, consistent with the number of reports it expected to receive.²⁰ In addition, our analysis shows that PHMSA collected data on about 28,000 miles of hazardous liquid gathering lines, a number that is also in line with its previous estimates of the amount of miles that would report. However, PHMSA officials noted that because the agency does not know the total number of operators of hazardous liquid gathering lines, they cannot be certain that all operators that were required to file annual reports did so.

As with hazardous liquid gathering line operators, PHMSA does not know the total number of natural gas gathering line operators. In the 2021 rule, PHMSA estimated that 500 natural gas gathering line operators would need to final annual reports for the first time. This estimate is significantly higher than the number of hazardous liquid gathering line operators that submitted annual reports for the first time in 2021 and may increase the likelihood that PHMSA will not receive annual reports from every reporting-only natural gas gathering line operator.

In addition, we found some potential gaps in industry awareness of these rules. For example:

- Three state and regional industry associations we interviewed were unaware of the details of the proposed reporting requirements for natural gas gathering lines, which were finalized in November 2021.
- One national industry association representing primarily smaller pipeline operators told us that smaller operators may not be aware of PHMSA's proposed rule to amend its natural gas pipeline safety regulations. This association suggested that if PHMSA finalized the 2016 proposed rule (as it has since done) the agency should work

²⁰PHMSA, in its 2019 rule, estimated that 20 hazardous liquid gathering line operators would need to file annual reports for the first time and that 56 operators would need to add data on historically unregulated gathering lines to their existing annual reports, for a total estimate of 76.

with state industry associations to increase awareness of the reporting requirements among small operators. Similarly, one of the operators we interviewed said that it relies on an industry association in its state for information regarding PHMSA regulations.

- One larger gathering line operator we interviewed told us that small rural gathering line operators may be unaware of the recently amended hazardous liquid gathering line reporting requirements, and therefore, PHMSA may need to conduct further public outreach to make small rural operators aware of these requirements.

We brought these issues to PHMSA's attention prior to the agency issuing the 2021 rule. In response to our observations, officials told us that PHMSA is planning to conduct additional outreach, including to state industry associations, and is developing frequently asked questions documents regarding the proposed reporting requirements for historically unregulated natural gas gathering lines. The officials added that PHMSA plans to document these outreach efforts in an outreach plan that outlines specific steps that it plans to use. According to the officials, this document should be finalized in December 2021 and will be available to support outreach efforts for PHMSA's 2021 rule. PHMSA also expects to update this plan over time to incorporate lessons learned from outreach efforts. Given that the universe of gathering line operators is unknown, this plan, and the additional outreach steps, should help increase industry awareness of the recently amended natural gas and hazardous liquid gathering line reporting requirements, as well as any other potential future reporting requirements, and help operators comply with such requirements.

Agency Comments

We provided a draft of this report to DOT for comment. DOT provided technical comments that we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Transportation and other interested parties. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov/>.

If you or your staff have any questions about this report, please contact me at (202) 512-2834 or repkoe@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last

page of this report. GAO staff who made key contributions to this report are listed in appendix II.

A handwritten signature in black ink, appearing to read "Elizabeth Repko", followed by a long horizontal line extending to the right.

Elizabeth Repko
Director, Physical Infrastructure Issues

Appendix I: Information on Operator Challenges in Obtaining Mapping Data for Gathering Lines

The Pipeline and Hazardous Materials Safety Administration (PHMSA) does not require or plan to require most gathering line operators to collect geospatial data for the National Pipeline Mapping System (NPMS). However, the agency has stated that this may change in the future. If the agency were to extend such requirements to other gathering lines in the future, stakeholders told us that availability of data and resources to collect additional data would make submitting mapping data challenging for gathering line operators. Only one of the five operators we interviewed reported having any mapping data available on its currently unregulated natural gas gathering lines, and that operator said it only had data for about half of its gathering lines overall.

While some operators have basic information on a gathering line's location due to their participation in state pipeline damage prevention programs, this information may not be stored in the format required for the NPMS. For instance, an official in one state told us that operators only need to indicate the general location of a pipeline for the program, rather than provide an exact location. In addition, the level of detail on location data required can vary by state. For example, an official in another state told us that operators of smaller diameter pipelines have less stringent requirements for reporting location information.

Stakeholders we spoke with said that smaller operators and those that operate older gathering lines are also less likely to have available mapping data, and would face challenges in mapping their gathering lines. According to an official from one state agency, operators may know the starting and ending points of gathering lines, but not at the level of detail needed for mapping. In addition, the official said the loss of location information over time can make tracking older gathering lines challenging. To collect mapping data, stakeholders said operators may need to physically walk along their gathering lines or hire contractors to do so. One official also said that older construction techniques, such as non-metal pipes, can present a challenge. For instance, that official noted

**Appendix I: Information on Operator
Challenges in Obtaining Mapping Data for
Gathering Lines**

that while they can track metal pipelines with metal detectors, plastic or polyethylene pipelines without tracer wires require excavations to track. Multiple state agencies and industry associations said that collecting mapping data, similar to characteristic data, would require significant expertise and financial resources that smaller operators may not have. The smaller operator we spoke with said that mapping the rest of the company's gathering lines, if it were to be required, would be a multi-year effort.

Appendix II: GAO Contact and Staff Acknowledgments

GAO Contact

Elizabeth Repko, (202) 512-2834 or repkoe@gao.gov.

Staff Acknowledgments

In addition to the contact named above, Sara Vermillion (Assistant Director); Matthew Rosenberg (Analyst in Charge); Melissa Bodeau; Sharon Dyer; Melissa Greenaway; Mary-Catherine P. Overcash; and Elizabeth Wood made key contributions to this report.

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