

Access to Pipeline Statistics and Data

The Pipeline and Hazardous Materials Safety Administration (PHMSA) maintains a great deal of information and data that is accessible to the public at no cost. Their website is not always easy to navigate, and some of the information is archived or difficult to find – we have another briefing paper that talks in detail about the PHMSA website. The focus of this briefing paper is on where to find the kind of data that is often requested by the media or interested public.

Pipeline Mileage

Each pipeline operator of a federally regulated pipeline is required to submit an annual report to PHMSA.¹ Gas operators must submit these by March 15 each year, and hazardous liquid operators by June 15 each year. It then takes an additional period of time (approximately 6 weeks) for the information to become available to the public through the PHMSA website. Annual reports contain information about: the pipeline operator; the products transported; the pipelines themselves (location, mileage, material, size, age); details about pipeline inspections and assessments; and for gas pipelines only, information on failures, leaks, and repairs.

The PHMSA annual report data is available through downloads or links on this webpage: <http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelinemileagefacilities>.

Summary Mileage Data – The most basic summary mileage information by pipeline type is available through the “**Annual Report Summary**” link, which leads to a PHMSA page through which you can choose the type of pipeline system you are most interested. The systems include: hazardous liquid, gas distribution, gas transmission and gathering, and liquefied natural gas (LNG). The resulting data depicts annual total mileage in the U.S. by year for the chosen system type and any sub-types, and the total number of respondent pipeline operators (“number of records”). For more information about each of these system types, [see Briefing Papers 2 and 3](#), The Basics of Natural Gas Pipelines and Hazardous Liquid Pipelines, respectively.

¹ To see the specifics of this requirement, including some exceptions, please see: 49 CFR §191.11 and §191.17 for gas operator annual reporting requirements, and 49 CFR §195.49 for hazardous liquid operator annual reporting requirements.

Gathering pipeline mileage is not an accurate reflection of the miles of gathering lines in existence in the country – please see the sidebar for more information.²

Note that once on the mileage page, you can easily shift back and forth to different system types by clicking on the tabs with system type labels. Hazardous liquid pipeline miles are reported beginning in 2004; gas distribution, transmission, and gathering pipeline miles are reported beginning in 1984; and liquified natural gas pipeline miles are reported beginning in 2010.

For a closer look at pipeline miles since 2010, more detail, and the ability to filter the data by state, use the **“2010+ Pipeline Miles and Facilities”** link. This leads to the Oracle database, which depicts information about the facilities in addition to the pipeline mileage, allows filtering by state as well as the system type, and includes embedded links (click on a year in blue text) that allow the user to drill down to see a list of pipeline miles by operator and commodity transported, as reported in a given year. This data can also be exported in a variety of data file types.

A note about mileage of “gathering pipelines”

PHMSA reports mileage of gathering pipelines that are federally regulated, which is a very small portion of all gathering lines (see footnote 2). Rural gas gathering lines are not regulated, and therefore are not reflected in the mileage reported by PHMSA; many rural hazardous liquid lines are also not regulated. While PHMSA data depicts miles of gathering pipelines decreasing, they have actually been dramatically increasing over time, with an estimated 10,000 miles installed in a single year just in the state of Pennsylvania. Unfortunately, without state or federal rules requiring it, we cannot know about the quantity or quality of these unregulated pipelines.

Pipeline Construction Material Mileage – People are interested in understanding what pipelines are made of, especially when there has been an incident, or when there is close examination of certain high-risk types of pipelines. The **“2010+ Pipeline Miles and Facilities”** link discussed in the previous paragraph will show mileage by material for *gas distribution* pipelines only. The initial report summarizes those materials in 5 categories (steel, plastic, other materials, iron, and copper), and the user can see a more detailed breakdown of pipeline mileage in further subcategories of material type by clicking on the blue text.

More detail about pipeline material type is available by clicking the **“Pipeline Replacement Updates”** link. Specifically, the tabs referring to **“[Cast and Wrought Iron Inventory](#)”** and **“[Bare Steel Inventory](#)”** offer blue links in the text that lead to **“Inventory Reports”**; these inventory reports lead again to an Oracle database that provides information on pipelines of these materials – both miles by state and miles by operator since 2005. This data provides detailed information on *gas distribution* pipe material and replacement in summary form, by state, and by operator. There is also some information on *transmission pipeline* mileage that is bare steel.

Annual Report Data Access

To access pipeline mileage with regard to the remaining information, you must use the **“[Annual Report Data Access](#)”** link to download the annual reports in which you are interested. They are grouped by pipeline type and time period. The zip file downloaded will include a description or copy of the appli-

² Regulated and exempted gas gathering lines are described in 49 CFR §192.8; regulated and exempted hazardous liquid gathering lines are described in 49 CFR §195.1 and §195.11. Only gas gathering line operators are required to submit separate information about the regulated gathering lines in their annual report filing.

cable annual report form, with each field labeled with a text label that corresponds to the accompanying datafiles. Look at the form first to find the appropriate text labels for the information you are most interested in finding. The remaining files are either Excel files or tab-delimited text files (that can be imported into Excel or another spreadsheet application – see instructions on the PHMSA website) from the years in the time period selected.

Mileage by age of pipeline – For information on the age of pipelines, use the downloaded file(s) of interest, and find the text label on the form that corresponds to your interest. For example, if you are searching for miles of onshore gas transmission pipeline installed prior to 1970 (or of unknown decade of installation) in existence in the year 2005, you would follow these steps: 1) download the “Gas Transmission & Gathering Annual Data – 2001 to 2009 (zip)”; 2) open the Annual Form text file; 3) scroll down until you find the description you’re looking for, in this case: “The following fields are the miles of transmission ONSHORE lines in the system at end of year, by decade of installation. Part B.3 on the form.”; 4) note the text labels for the data you want, in this case: B3TON_1, B3TON_2, B3TON_3, B3TON_4, and B3TON_5; 5) open the “annual_gas_transmission_gathering_2005” file in your spreadsheet application and find the column labels corresponding to the text labels noted in the previous step; 6) total those five columns of interest and add the mileage totals together to get your answer. These instructions are slightly different for recent years with data already in Excel format rather than text files – in this case you’ll need to also note the Part letter on the form under which your data of interest lies, and go to the spreadsheet tab that includes that Part letter (Part I in the example of looking for “Miles of Pipe by Decade Installed”).

If you have experience using PivotTables, it can be a useful way to glean the information quickly and see the automatic totals that Excel calculates. It can also streamline the process if you are looking for changes in these mileages from one year’s annual report to the next, and/or wanting to analyze the data across the different pipeline types or searching for data on only a particular operator.

Pipeline inspections, repairs, sizes, and HCA miles – Other information is also available through these downloadable annual report zip files, including mileage inspected using various methods and tools; mileage by class location (gas only), or mileage operated at various pressures and specified minimum yield strength (SMYS); numbers of leaks, failures, and repairs (gas only); and mileage by pipe diameter (nominal pipe size).

Pipeline Incident Information

Each pipeline operator of a federally regulated pipeline is required to submit an incident report to PHMSA within 30 days following an incident³ that results in:

- 1) Loss of life; or
- 2) Injury requiring hospitalization; or

³ Please note this is a summary and generalized description of the regulations. For details about what is required in incident reporting and what the estimated property damage includes, see: 49 CFR §191.3, §191.9 and §191.15 for gas operator incident reporting requirements; and see 49 CFR §195.50 and §195.54 for hazardous liquid operator accident reporting requirements.

- 3) Property damage exceeding \$50,000; or
- 4) For hazardous liquid pipelines, a release that resulted in an unintentional fire or explosion; or
- 5) For hazardous liquid pipelines a release of over 5 gallons outside company property or the right-of-way, or 210 gallons (5 barrels) anywhere; or
- 6) For gas pipelines an unintentional release of 3 million cubic feet or more; or
- 7) An occurrence that the operator feels is significant for any other reason.

Pipeline Incident 20 Year Trends

Pipeline Incidents
PHMSA has collected pipeline incident reports since 1970. The reporting regulations and incident report formats have changed several times over the years. PHMSA merged the various report formats to create pipeline incident trend lines going back 20 years.
The trend links to the right will initially present reports including all data for the incident type. The reports can be filtered by State and by System Type:

Gas Distribution	Hazardous Liquid
Gas Gathering	Liquefied Natural Gas (LNG)
Gas Transmission	

PHMSA also provides data about the causes of the incidents. Each link appearing with a trend line report leads to a new screen showing the incident causes. From this screen, you can also select a link to view details about the location of the incidents.
When a single System Type is selected, additional filters can be applied to the trend lines. Filters include Onshore/Offshore and Commodity (for Hazardous Liquid only).
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SERIOUS INCIDENT 20 YEAR TREND – Serious Incidents include a fatality or injury requiring in-patient hospitalization. From 2004 forward, gas distribution incidents caused by a nearby fire or explosion that impact the pipeline system are excluded.

SIGNIFICANT INCIDENT 20 YEAR TREND – Significant Incidents are those including any of the following conditions, but gas distribution incidents caused by a nearby fire or explosion that impacted the pipeline system are excluded:

1. Fatality or injury requiring in-patient hospitalization
2. \$50,000 or more in total costs, measured in 1984 dollars
3. Highly volatile liquid releases of 5 barrels or more or other liquid releases of 50 barrels or more
4. Liquid releases resulting in an unintentional fire or explosion

ALL-REPORTED INCIDENT 20 YEAR TREND – Includes all reports submitted to PHMSA. Changes to PHMSA reporting regulations have caused large shifts in the trend line.

SIGNIFICANT INCIDENT CONSEQUENCES – Since 2005, incident reports classify each fatality, injury, and cost as either Public or Pipeline Industry.

INCIDENT DATA ACCESS
OPERATOR SUBMISSION – Incident report data submitted to PHMSA by pipeline operators since 1970.
FLAGGED FILES – Incident report data submitted to PHMSA by pipeline operators plus data needed to replicate the pipeline incident trends.

The incident reporting forms have changed over time, and therefore the data should be compared carefully. Operators are also required to submit supplemental reports when information changes or is newly available following the submittal of the original report. There is some question as to whether or not final accurate details are always submitted in supplemental reports; for instance, a release may initially be reported as 5,000 gallons and later be understood to be 5,000 barrels (210,000 gallons). It is the operator's responsibility to get the updated information to PHMSA, but the degree to which PHMSA investigates and reports the failure of operators to do so, or follows up to ensure that final accurate information is submitted is unknown.

The following PHMSA incident data is available through downloads or links on this page: <http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends>.

Pipeline incident 20-year trends – These are offered through an online Oracle database link for:

- all incidents (items 1-6 above), "[All-Reported Incident 20 Year Trend](#)";
- significant incidents (a subset involving items 1-4 above + releases of 50 barrels or more), "[Significant Incident 20 Year Trend](#)"; and
- serious incidents (a further subset involving items 1 and 2 only), "[Serious Incident 20 Year Trend](#)".

Once the chosen link is clicked, the user must again click to "Continue to the PDM reports" – PHMSA's Pipeline Data Mart that contains the Oracle reports.

Note that within these Oracle reports, there are certain numbers shown as links (typically in blue). For instance the 3, 5, 10, and 20-year average incident counts, and the total number of incidents for a given year are all shown as links. Clicking on these numbers will lead to another Oracle data screen (in a new window) that provides more detailed information on the causes of these incidents. And from the cause breakdown screen, numbers are again shown as links that lead to further details such as sub-cause, location, and operator details.

Operator submission and flagged incident data access – These offer the broadest and most complete record of pipeline incidents, and are accessed via download in the form of a zip file through either the [“Operator Submission”](#) or the [“Flagged Files”](#) links.

The difference between the two sets of files is this: the operator submission files contain the information as submitted by the operators; the flagged files contain the same data though normalized by PHMSA in order to be able to replicate pipeline incident trends as shown in the Pipeline Data Mart Oracle data. The flagged zip file contains folders with a variety of Excel and Acrobat files encompassing gas distribution, gas transmission & gathering, and hazardous liquid pipeline incident data from 1986 onward (available in periods 1986-2001; 2002-2009; 2010-present), and liquefied natural gas data from 2011 onward. The operator submission files go back as far as 1970 and are mostly in tab-delimited text format. Each data file has an accompanying document that explains the form field categories that are the column headings for the Excel or text files.

Pipeline failure investigation reports – PHMSA investigates some incidents based on the “severity of the consequences, cause of failure, and the history of a pipeline system.” Some of the reports they have completed are posted to their website and can be found here: <http://www.phmsa.dot.gov/pipeline/library/failure-reports>.

Other Statistical Data

A few other PHMSA websites contain useful data. A great deal of data can be accessed through PHMSA’s Stakeholder Communication website pages by starting here: <http://primis.phmsa.dot.gov/comm/Index.htm>. Some of this data is slowly being migrated to the Pipeline Data Mart, but as of this writing, there is still much available here that has not been moved elsewhere. In addition, the PHMSA Pipeline Technical Resources pages contain data related to specific subjects: <http://primis.phmsa.dot.gov/ptr.htm>.

Operator-specific data – Accessing data particular to an individual pipeline operator can be done either through the downloaded annual and incident reports (and sorting by or filtering for the operator of interest), or through PHMSA’s Stakeholder Communication website. Some operator-specific data can also be gleaned through the Pipeline Data Mart access discussed earlier (such as drilling down within incident trend by-cause reports), but it is limited.

Once on the Stakeholder Communications site, the user can look at the site pages along the left-hand side, and look under Regulatory Oversight for [“Operator Information”](#). You can either click “show all available operators” to browse the entire list, or type in a name, part of a name, or an Operator ID number. [To find a list of operators based on a geographic area, go to PHMSA’s National Pipeline Mapping System page, and [“Find who’s operating pipelines in your area”](#). This will yield a list of operator names and ID numbers by state, county, or zip code that can then be used back on the Operator Information Stakeholder Communications page.] Once you find the operator you’re looking for, you can then view mileage, incidents, inspection, and enforcement data. Pay attention to all the tabs that appear depending on what you’re looking at as you may be able to filter by pipeline type or other aspects, or access more detail.

State-specific data – “[State Pipeline Performance Metrics](#)” can be found through the PHMSA Data and Statistics pages. It will lead you to the Stakeholder Communications website; the direct link for that website offering information specific to each state is accessed here: <https://primis.phmsa.dot.gov/comm/states.htm>. Some of the state page links bring the user back to the mileage and incident sites already discussed (you can filter by state within many of the Oracle reports), but the Enforcement data is not yet available outside the Stakeholder Communications site.

Overall enforcement data – Overall enforcement data is available in two places: through Stakeholder Communications and through the main web page. The main link is: <http://phmsa.dot.gov/pipeline/enforcement>. In addition to looking at enforcement data on the Stakeholder Communications site for a particular state or operator, you can do so nationally through the “Enforcement” link here: <https://primis.phmsa.dot.gov/comm/reports/enforce/Enforcement.html>.

Integrity Management Program data – A subset of pipelines that operate in highly populated areas or environmentally sensitive areas (referred to as “High Consequence Areas” or HCAs) are required to follow PHMSA’s integrity management rules and maintain additional information about their integrity management program. PHMSA has a set of websites that offer integrity management data based on the type of pipeline: [hazardous liquid](#), [gas transmission](#), or [gas distribution](#), all accessed through the “[Pipeline Technical Resources](#)” pages. Each of these pages for the different types of pipeline also has a “Performance Measures” link along the left-hand side through which you can get into the Pipeline Data Mart Oracle data specific to integrity management.

A note about understanding pipeline operator relationships

PHMSA used to collect information about parent and subsidiary pipeline owner/operators in annual reports, but it was not available consistently. When trying to find information about an operator, often researchers are interested in combining statistics for all the subsidiary operators associated with a parent company, but this can be hard to determine. Rather than looking at ownership (which can change frequently), PHMSA now collects data about operators who share safety programs under one roof, and they are making this data available for those who want to understand these operator relationships. There are eight safety programs that may be shared, though they are not all relevant for all types of pipelines.¹ PHMSA refers to this data as “Safety Program Relationship” or SPR data. Operators validate this data and are required to notify PHMSA when there is a change in ownership or operatorship, new construction of a pipeline system, or any change in the SPR data.

¹ The eight safety programs that may be shared, depending on pipeline type, are: Integrity Management, Operations Maintenance Emergency, Control Room Management, Public Awareness, Damage Prevention, Operator Qualification, Oil Pollution Act Facility Response Plan, and Drug & Alcohol Testing.