SEPTEMBER 2012

US DEPARTMENT OF TRANSPORTATION

PIPELINE SAFETY UPDATE

Letter from the Secretary

There are 2.6 million miles of hazardous liquid and gas pipeline that crisscross our Nation, and although we usually don't see them, they play an important role in the daily lives of all Americans. They provide energy for hot water for morning showers, heat in the winter and air conditioning in the summer, as well as gasoline to power our cars. Approximately 70 percent of liquid fuels (oil, gasoline, jet fuel, etc.) and nearly all natural gas are delivered to our communities, businesses and industries by pipelines.

Pipelines are the safest way to deliver these resources, and major failures are rare. However, over the past two years there have been a few devastating accidents involving natural gas explosions and hazardous liquid spills. From the loss of life in California and Pennsylvania, to the thousands of gallons of crude oil dumped into the waters of Michigan, Montana, and Utah, many people have rightfully questioned the safety of the pipelines that run through their communities.

As the Secretary of Transportation, I am responsible for overseeing the safety of our Nation's pipelines. I visited some of these communities, and I saw the devastation first hand. That is why I issued a Call to Action, urging pipeline operators to replace, repair or rehabilitate aging infrastructure.

I also promised that the Department of Transportation would take a hard look at our nation's pipeline infrastructure and report to the public what we found. The Pipeline Safety Update is a compilation of those findings and an update on the progress we've made under the Call to Action. The Update overview is available in hard copy and online; the data and graphics are available for viewing or download at www.PHMSA.dot.gov. As this document and the data demonstrate, we have made progress, but we still have work to do.

The Pipeline Safety Update also contains an overview about how the nation's pipeline system is regulated and how safety requirements are enforced. It covers the oversight roles of Federal and State governments and the safety and environmental records of pipeline operators. The Update also chronicles the actions taken by the Pipeline and Hazardous Materials Safety Administration, the federal agency within the U.S. Department of Transportation (USDOT), that implements the Call to Action and the Pipeline Safety Act of 2011.

I encourage you to continue to visit the Pipeline Safety Update section on PHMSA's Pipeline Safety Awareness website to get the latest information about pipelines, including enforcement actions, safety proposals, public awareness initiatives and data updates.

Pipeline safety depends on a combination of factors, including strong safety regulations and enforcement, dependable infrastructure, and information and data sharing. Educating the public about how to stay safe around pipelines is also crucial—the number one cause of serious pipeline accidents is excavation damage.

I hope you will find the Update informative and useful. Pipeline safety is a top priority for DOT, and we will continue to keep the public updated as we move forward to protect people and the environment by making sure that pipelines operate safely and reliably.

Secretary Ray LaHood
U.S. Department of Transportation

Executive Summary

We all have a stake in the safe operation of our pipelines. Pipeline safety is important because most of the energy we consume today still comes from oil and natural gas. The vast majority of these products are transported through pipelines – from the wells where they are produced, across hundreds or thousands of miles, to our homes and businesses. The companies that operate the pipelines are responsible for ensuring their safety. But others have a major role to play in ensuring pipeline safety, including the Federal and State government agencies that oversee them, and the end users who are most affected because of their proximity.

In the wake of several recent serious pipeline incidents, the Department of Transportation's Pipeline and Hazardous Materials Safety Administration has been working hard to address safety concerns. To date, PHMSA has determined that the age of the pipelines, the enforcement authority, and the data quality and transparency are some of the elements that are vital to having safe and reliable pipelines.

Pipeline infrastructure—like our roads, bridges, ports, and rail infrastructure—is aging and needs more attention. Secretary Ray LaHood issued a Call to Action, urging pipeline operators to step up and repair, rehabilitate, or replace their aging infrastructure. The Pipeline Safety Update includes infrastructure updates from states, as well as initiatives from pipeline operators.

In recognition of the need to strengthen pipeline safety regulations, President Obama signed the Pipeline Safety, Regulatory Certainty and Job Creation Act of 2011 into law earlier this year. The Act authorizes PHMSA to increase the maximum civil penalty for pipeline safety violations from $100,000 to $200,000 per violation per day. In addition, the agency will be able to collect a maximum of $2,000,000 for a related series of violations, up from $1,000,000. PHMSA is already moving forward to implement this new statutory authority. PHMSA plans to use its new authority to build on its already strong enforcement history – in 2011, PHMSA closed its highest number of enforcement cases in a single year since the passage of the Pipeline Safety Improvement Act of 2002.

PHMSA has also made sharing information about pipeline performance a priority. For example, on PHMSA.dot.gov, visitors have access to their state's pipeline profile, which includes information about pipeline operators, enforcement actions, and incident and mileage data. The agency will also continue holding public workshops about key safety issues, such as leak detection and shut-off valves.

In addition to pipeline safety initiatives, the Update also provides context and background information about pipelines. Sections 1 and 2 describe the role of pipelines in our lives, and the numerous stakeholders that have a role in ensuring pipeline safety. Section 3 summarizes the environmental and safety record of pipelines. Section 4 provides a status report summarizing pipeline safety, including the implementation of the Pipeline Safety Act and the status of the Secretary's Call to Action and additional initiatives to further improve pipeline safety. Section 5 provides safety guidance about how to stay safe around pipelines. Also included is an image library, a glossary, a list of acronyms, and a collection of additional resources, including data sets.

The Pipeline Safety Update sections below will continue to be updated with new data, information from states, and instructions for how to comment on pipeline safety proposals. The webpages are structured so that users may download the entire document or choose among individual chapters.

1. ***The Role of Energy Pipelines in our Society***

   We all have a stake in improving pipeline safety because much of the energy we use every day is delivered to our homes and businesses through an expansive network of pipelines.

2. ***The Role of Key Stakeholders***

   Stakeholders play critical roles in ensuring the safety of hazardous liquid and natural gas pipelines. Find out who they are and what roles each group plays in keeping pipelines safe.

3. ***The Pipeline Safety and Environmental Record***

   While there is room for continued improvement, pipeline safety has improved over the past twenty years. Unfortunately, over the last three years, pipeline-related fatalities have risen from 9 in 2008, to 13 in 2009, to 22 in 2010. Pipeline spill volumes fluctuated from 2004-2009, from a minimum in 2009 and to a significant upward spike in 2010.

4. ***The Path Forward: The Call to Action and Other Pipeline Safety Initiatives***

   Improving pipeline safety requires that the pipeline industry focus energy and resources on understanding and managing a set of known risks. Regulators have a role in understanding those risks, developing regulations to manage those risks, monitoring performance, and ensuring compliance with regulations.

The Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 is one of the most important pieces of legislation to affect pipeline safety in recent years. Signed by President Obama on January 3, 2012, the Act incorporates many lessons learned from the accident in San Bruno, California, including requiring automatic or remote-controlled shutoff valves on new or entirely-replaced transmission pipeline facilities. It also increases civil penalties for pipeline operators who fail to observe safety rules.

To build upon the Safety Act of 2011, the presidential budget request for PHMSA in 2013 included $177 million for pipeline safety. The budget request would fund 120 new pipeline safety inspectors and provide more than $20 million for State pipeline safety grant programs, $13 million for pipeline safety research and development, and $8 million for a national Pipeline Information Exchange. The Exchange would enable PHMSA to develop a comprehensive database of integrated pipeline safety information from PHMSA, States, industry and other Federal sources. Another $2 million would go towards establishing a national campaign to educate the public about pipeline awareness during excavation.

In addition to Federal and State safety laws and initiatives, there are many other initiatives through which operators, regulators and other key stakeholders can continuously improve regulations, oversight, management practices, safety technology, and vigilance. These initiatives are important ingredients in driving accidents and injuries to zero.

5. The Pipeline Safety Guide

Pipeline safety is a shared responsibility. Community and pipeline safety is improved through active stakeholder participation, which includes members of the general public. Programs for public awareness and participation are an important component of ensuring pipeline safety today and tomorrow.

The Pipeline Safety Guide provides important information on how to locate nearby pipelines, recognize and respond to leaks, and avoid hitting underground pipelines during excavation projects. It also features a checklist of pipeline safety information for the general public.

The Role of Energy Pipelines in Our Society

What are pipelines? Where are they? And why do we need them in the first place? Those are good, basic questions.

The energy transportation network of the United States consists of over 2.6 million miles of pipelines. That's enough to circle the earth about 100 times. These pipelines are operated by approximately 3,000 companies, large and small.

Based on data generated from annual reports to PHMSA from pipeline operators (1), the network includes approximately:

- 175,000 miles of onshore and offshore Hazardous Liquid pipeline;
- 321,000 miles of onshore and offshore Gas Transmission and Gathering pipelines;
- 2,066,000 miles of Natural Gas Distribution mains and service pipelines;
- 114 active LNG Plants connected to our natural gas transmission and distribution systems; and
- Propane Distribution System pipelines.

Although pipelines exist in all fifty states, most of us are unaware that this vast network even exists. This is due to the strong safety record of pipelines and the fact that most of them are located underground. Installing pipelines underground protects them from damage and helps protect our communities as well.

Where Are They?

Most hazardous liquid and gas pipelines are buried underground. To ensure your safety and avoid damaging underground lines, you must call your state one-call center before digging. Call Before you Dig!

Most hazardous liquid and natural gas transmission pipelines are located underground in rights-of-way (ROW). A ROW consists of consecutive property easements acquired by, or granted to, the pipeline company. The ROW provides sufficient space to perform pipeline maintenance and inspections, as well as a clear zone where encroachments can be monitored and prevented. ROW Briefing.

To find out if a transmission pipeline is located near you, you can visit the National Pipeline Mapping System (npms) and search by your county or zip code.

Pipeline operators are required to post brightly-colored markers along their ROW to indicate the presence of – but not necessarily the exact location of – their underground pipelines.

Markers come in a variety of shapes and sizes. They contain information about the nearby pipeline as well as emergency contact information for the company that operates it. Pipeline Markers Briefing

Natural gas distribution systems consist of distribution main lines and service lines. Distribution main lines are generally installed in underground utility easements alongside streets and highways. Distribution service lines run from the distribution main line into homes or businesses. Distribution main and service lines are not generally indicated by above-ground markers. To ensure safety and avoid damaging underground lines, anyone planning to dig or excavate is required by law to contact their state One-Call center 48 to 72 hours before digging. Call Before You Dig!

Why Do We Need Them?

Pipelines play a vital role in our daily lives. Cooking and cleaning, the daily commute, air travel and the heating of homes and businesses are all made possible by the readily available fuels delivered through pipelines. Click here to see a list of products transported through pipelines. More...

These routine activities really add up, in terms of energy use. Natural gas provides for fully 24% of our country's total energy consumption, and petroleum provides for another 39%.

Because such huge volumes of hazardous liquid and natural gas must be transported, the only feasible way to do so is through pipelines. Pipelines do not crowd our highways and waterways as trucks and barges would, nor do they contribute to traffic congestion or highway accidents.

Pipelines, in short, are practical and safe.

Here is more information about pipelines that you may find interesting:

- Natural Gas Pipeline Systems: From the wellhead to the consumer
- Petroleum Pipeline Systems: From the wellhead to the consumer
- Basics of gas and oil exploration
- Technologies of gas and oil exploration
- Early days of the oil industry
- Pipeline construction

Sources: PHMSA Calendar Year 2009 Annual Reports for Gas Transmission and Gathering, Gas Distribution and Hazardous Liquid; PHMSA Calendar Year 2009 npms submissions for LNG Plants.

The Pipeline Safety Record and Environmental Record

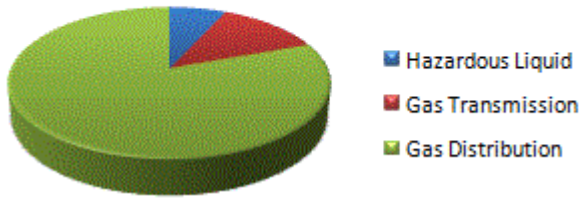
Pipeline System Components

Pipelines stretch more than 2.6 million miles across the US. The majority of these pipelines are for gas distribution (80 percent). Another 300,516 miles of pipeline are used for gas transmission, which is 13 percent of the total. The remaining miles are used for hazardous liquids, 173,396 miles, or seven percent. Pipeline system components also require operators. For the entire system this amounts to about 2,500, half of which operate the gas distribution lines. Another 38 percent handle gas transmission, while 12 percent manage hazardous liquids.

National Pipeline System Components

Pipeline	Mileage	% Total	Operators	% Total
Hazardous Liquid	173,396	7	306	12
Gas Transmission	317,516	13	939	38
Gas Distribution	2,035,253	80	1,245	50
(main)	*1,200,803*	*48*		
(service)	*834,450*	*32*		
Total	2,526,165	100	2,490	100

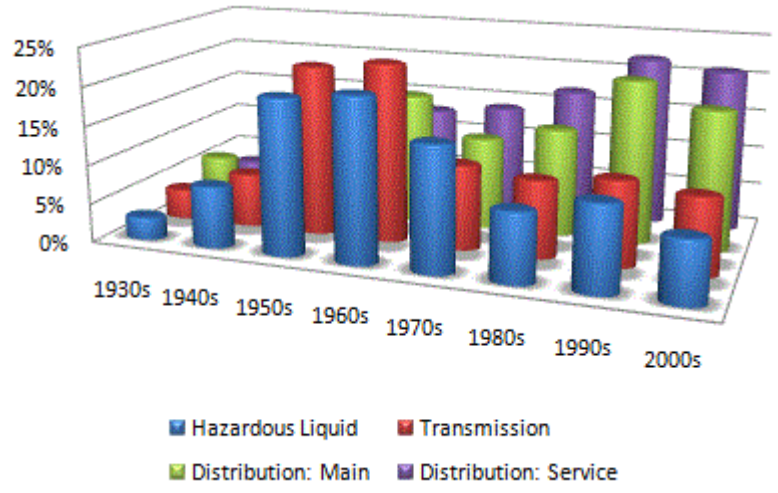
US Pipeline Mileage: 2,526,165



Aging Infrastructure

Each year a small percentage of pipelines are classified as aging. Since the 1960s the percentage has gone up each year, totaling 21 percent in the last decade.

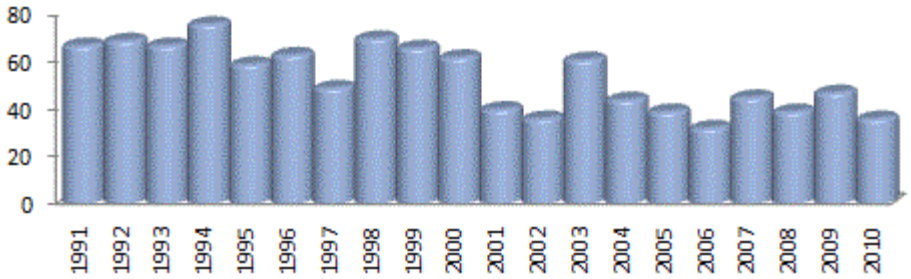
Decade	Hazardous Liquid	Transmission	Distribution	
			Main	Service
UNK/Pre 20s	2%	---		
1920s	2%	2%	---	---
1930s	3%	4%	6%	3%
1940s	8%	7%	2%	2%
1950s	20%	22%	10%	8%
1960s	21%	23%	17%	13%
1970s	16%	11%	12%	14%
1980s	9%	10%	14%	17%
1990s	11%	11%	21%	22%
2000s	8%	10%	18%	21%



Pipeline Incidents with Death or Major Injury

Since 1986 the pipeline incidents causing death or major injuries have declined. The long term trend is an average decline of 10 percent every three years. Pipeline incidents can be caused by a number of factors including corrosion, equipment failure, as well as damage from excavations, incorrect operation, and natural forces. Current available data covers the period from 1991 through 2010.

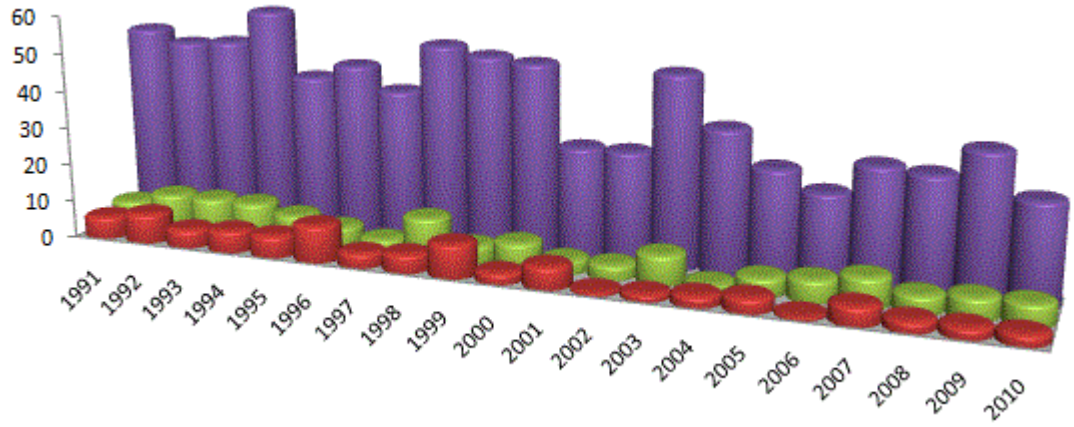
Year	All Types
1991	67
1992	69
1993	67
1994	76
1995	59
1996	63
1997	49
1998	70
1999	66
2000	62
2001	40
2002	36
2003	61
2004	44
2005	39
2006	32
2007	45
2008	39
2009	47
2010	36



Pipeline Incidents with Death or Major Injury by Sector

The number of Serious Accidents/Incidents fell 30% in the past five years, despite large increases in the number of both fatalities and injuries. Even though the high consequence accidents/ incidents in 2010 were small in number, they were somewhat catastrophic as compared to the average consequence of a serious accident over past years.

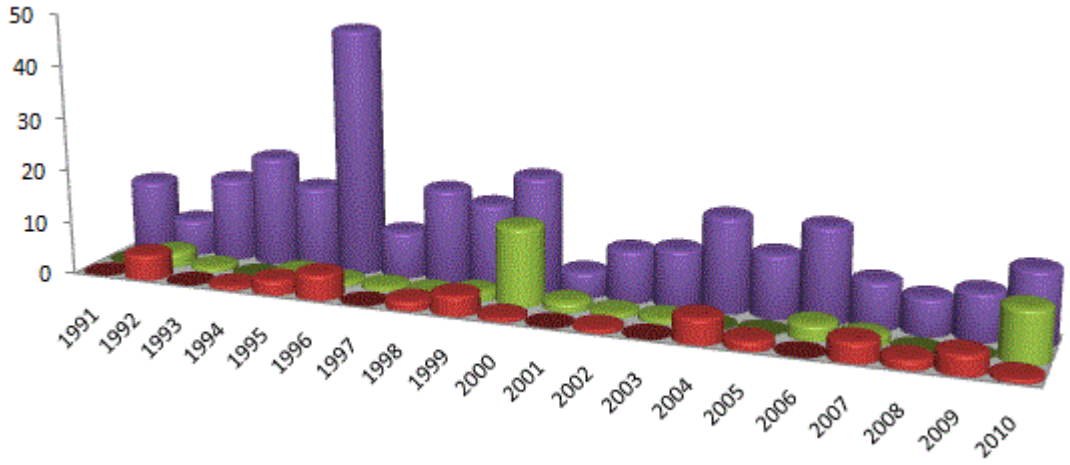
Year	Hazardous Liquid	Gas Transmission	Gas Distribution
1991	6	7	53
1992	8	10	50
1993	5	10	51
1994	6	10	60
1995	6	8	43
1996	10	6	47
1997	4	4	41
1998	5	11	54
1999	9	5	52
2000	3	7	51
2001	6	4	30
2002	1	4	30
2003	2	8	51
2004	3	2	38
2005	4	5	29
2006	1	6	24
2007	5	8	32
2008	3	5	31
2009	3	6	38
2010	3	6	27



Pipeline Fatalities by Sector

Except for spike in fatalities in 1996, overall, the number of deaths due to pipeline incidents have remained low.

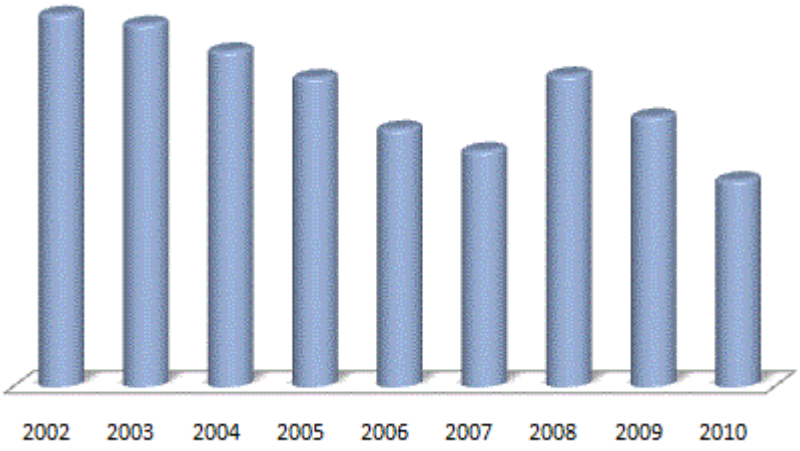
Year	Haz. Liquid	Gas Transmission	Gas Distribution
1991	0	0	14
1992	5	3	7
1993	0	1	16
1994	1	0	21
1995	3	2	16
1996	5	1	47
1997	0	1	9
1998	2	1	18
1999	4	2	16
2000	1	15	22
2001	0	2	5
2002	1	1	10
2003	0	1	11
2004	5	0	18
2005	2	0	12
2006	0	3	18
2007	4	2	9
2008	2	0	7
2009	4	0	9
2010	1	10	14



Liquid Pipeline Spills with Environment Consequences

Since 2002 and the number of incidents have decreased overall from 153 down to 85 in 2010.

Year	Spills
2002	153
2003	149
2004	138
2005	127
2006	106
2007	97
2008	128
2009	111
2010	85



The Role of Key Stakeholders

Pipeline Safety Connects Us All

Pipeline safety is a responsibility shared by all stakeholders. Community and pipeline safety is improved through active stakeholder participation, especially with regard to public awareness, damage prevention, risk-informed land use planning, and emergency management efforts.

Pipeline Operators
- Safely operating & maintaining
- Expanding system to meet needs
- Recognizing & managing risks

Safety Regulators
- Establish safety standards
- Inspect & enforce compliance
- Recognize & address risks (communication, change standards, conduct R&D)
- Advocate statutory changes

Local and State Government
- Establish land use restrictions
- Promote effective rate regulation
- Provide emergency management services

Federal Government Agencies
- Evaluate incident causes
- Communicate implications of incidents
- Permit pipelines on federal lands
- Evaluate security
- Evaluate proposed regulations

Assuring Pipeline Safety: Stakeholder Roles

Rate Regulators
- Evaluate rate proposals
- Evaluate & approve innovative cost recovery processes to address serious risks
- Balance safety, reliability and cost

Operators & Trade Associations
- Recognize safety issues
- Organize members to determine how best to resolve safety issues
- Communicate safety perspective
- Assemble & evaluate safety performance data

The Public
- Call 811 before digging
- Call 911 in case of gas leak or emergency
- Evacuate building if necessary
- Advocate in safety rate cases
- Understanding and mitigating the risks

Representatives of the Public Interest
- Provide forum for responsible debate
- Communicate with stakeholders
- Advocate statutory changes
- Assemble & communicate best practices
- Service the public

The Path Forward: Call to Action and Other Pipeline Safety Initiatives

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is committed to reducing transportation risks to the public and environment. PHMSA has been providing strong safety and environmental oversight of the pipeline network that delivers energy fuels to the American public. This oversight has focused on high-risk infrastructure issues, including a specific concern regarding the need to accelerate the repair, rehabilitation or replacement of certain high-risk pipeline infrastructure.

Under the leadership of Secretary LaHood, PHMSA has developed a comprehensive action plan to accelerate the rehabilitation, repair, and replacement of high-risk pipeline infrastructure.
It has engaged pipeline safety stakeholders in the process to address parts of the pipeline infrastructure that need attention, and ensure that Americans remain confident in the safety of their families, homes, and communities. The strategy includes:

- **Call to Action** - U.S. DOT/PHMSA announced a "Call to Action," actively engaging its state partners, technical experts, pipeline operators, safety advocates, and the public to focus on identifying pipeline risks and repairing, rehabilitating, and replacing the highest risk infrastructure to ensure they are fit for service.

- **Aggressive Efforts** - U.S. DOT/PHMSA hosted a Pipeline Safety Forum on April 18, 2011 to engage all stakeholders about the actions that U.S. DOT/PHMSA, States, and industry can take to raise the bar on pipeline safety; and the challenges to implementing these actions. During the week of July 18, 2011, PHMSA hosted a series of technical meetings on challenges associated with seam failure, pipeline risk assessments, and record keeping. PHMSA also hosted a meeting of Public Safety and Emergency Response Officials on December 9, 2011 to discuss pipeline emergency preparedness and emergency response.

- **Transparency** - U.S. DOT/PHMSA is executing this plan in a transparent manner with continuing opportunities for public engagement, including the creation of a dedicated website for this initiative.

STRONG LEGISLATION - PHMSA drafted an Administration legislative initiative for program reauthorization entitled, "Strengthening Pipeline Safety and Enforcement Act of 2010 (Act)." The proposal led to the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011, which was signed into law by President Obama on January 3, 2012, and provides a number of strong pipeline safety measures, including:

- increases the maximum administrative civil penalties from $100,000 per day/$1 million for a series of violations to $200,000 per day/$2 million for a series of violations;

- grants authority, for the first time, to enforce oil spill response plans required of pipeline operators under the Oil Pollution Act of 1990;
- requires technical studies and analysis of leak detection systems, diluted bitumen, and excavation damage on pipeline safety;
- requires new regulations for the use of automatic or remotely controlled shut-off valves on new or replaced transmission pipelines;
- requires new regulations for tests to confirm material strength of previously untested gas transmission pipelines in high consequence areas (HCAs);
- requires regulations to confirm appropriate records to confirm maximum allowable operating pressures on gas transmission pipelines in highly populated or high consequence areas;
- requires a review of whether integrity management regulations should be expanded outside of high consequence areas;
- requires a review and report to Congress on existing Federal and State regulations for all types of gathering pipelines;
- requires a survey of the nation's progress in replacing cast iron gas pipelines;
- requires actions to increase state and local emergency responder awareness of the National Pipeline Mapping System;
- limits incorporation by reference into regulation of any document that is not made publicly available free of charge on the internet website; and
- provides for consultation with and technical assistance for Indian tribes regarding the regulation of pipelines subject to tribe jurisdiction.

AGGRESSIVE REGULATORY INITIATIVES – Through rulemakings and actions taken since 2008, PHMSA has closed a record fifteen National Transportation Safety Board NTSB safety recommendations, addressing leak detection systems, excess flow valves, human fatigue, and internal operations of pipeline companies' control rooms, and the distribution integrity management program (DIMP).

PHMSA conducted a thorough review of its inspection and enforcement related regulations and operations, as well as its data collection and transparency, and has taken the following actions:

Late 2012/Early 2013	Will issue NPRMs strengthening hazardous liquid and gas transmission pipeline oversight.
Fall 2012	NPRM to update Hazardous Liquid regulations.

August 2012	NPRM published to incorporate into regulation the Act increase in PHMSA's civil penalties authority.
July 31, 2012	Advisory Bulletin issued to alert all pipeline operators of the circumstances of the June 19, 2009 Canadian National Railway company freight train derailment in Cherry Valley, Illinois and remind them of the importance of assuring that pipeline facilities have not been damaged either during a railroad accident or other event occurring in the right-of-way. Further, the advisory bulletin reminds pipeline owners and operators of the importance of providing pertinent information to rail operators and emergency response officials during an incident.
July 18-19, 2012	Hosted Research and Development Public Forum to identify gaps in needed pipeline technology and map a path forward to assure no unnecessary duplications and appropriately-leveraged resources.
July 5, 2012	Information Collection Activity published to survey and request for comments to gauge the effectiveness of PHMSA 811 "Call Before You Dig" public awareness campaign materials.
June 27, 2012	Public workshop was held to review the first year implementation of Distribution Integrity Management Program regulations and share lessons learned between Federal/State regulators and industry.
June 2012	Advisory Bulletin issued to owners and operators of gas distribution pipeline facilities to provide clarification when completing the Mechanical Fitting Failure Report Form, PHMSA F 7100.1-2.
May 2012	Advisory Bulletin issued to remind operators of gas and hazardous liquid pipeline facilities to verify their records relating to operating specifications for maximum allowable operating pressure (MAOP) required by 49 CFR 192.517 and maximum operating pressure (MOP) required by 49 CFR 195.310. This advisory bulletin follows-up on issues identified in the San Bruno incident investigation.

April 2012	Information Collection Notice to revise gas transmission annual report to collect information relating to operator record verification of maximum allowable operating pressures and piggability of pipelines
April 2012	NPRM published proposing to establish criteria and procedures for determining the adequacy of state pipeline excavation damage prevention law enforcement programs; establish an administrative process for making adequacy determinations; establish the federal requirements PHMSA will enforce in states with inadequate excavation damage prevention law enforcement programs; and establish the adjudication process for administrative enforcement proceedings against excavators where federal authority is exercised. The development of these criteria and the subsequent determination of the adequacy of state excavation damage prevention law enforcement programs is intended to encourage states to develop effective excavation damage prevention law enforcement programs to protect the public from the risk of pipeline ruptures caused by excavation damage, and allow for federal administrative enforcement action in states with inadequate enforcement programs.
March 2012	Advisory Bulletin issued to alert operators using Driscopipe® 8000 High Density Polyethylene Pipe (Drisco8000) of the potential for material degradation.
March 2012	Advisory Bulletin issued to owners and operators of pipeline facilities notifying them of PHMSA's plan for implementing the national registry of pipeline and liquefied natural gas operators.
March 2012	Advisory Bulletin issued to owners and operators of natural gas cast iron distribution pipelines and state pipeline safety representatives urging owners and operators to conduct a comprehensive review of their cast iron distribution pipelines and replacement programs and accelerate pipeline repair, rehabilitation, and replacement of high-risk pipelines.
February 2012	Advisory Bulletin issued to remind operators of pipelines and Liquid Natural Gas (LNG) facilities of the need to conduct post-accident drug and alcohol testing of all potentially involved personnel regardless of the circumstances of the accident.

January 2012	Advisory Bulletin issued to advise owners and operators of pipeline facilities of the implementation of the national registry of pipeline and liquefied natural gas operators.
December 2011	DOT conducted an Emergency Responder Forum to initiate the development of an action plan for improving emergency responders' awareness of and capability to respond to pipeline emergencies.
December 2011 February 2012 May 2012	PHMSA hosted a series of State Pipeline Legal Forums to provide information to its state enforcement partners on how PHMSA can assist them with enforcement matters pertaining to pipeline operators.
November 2011	ANPRM published seeking public comment on issues relating to the expanded use of excess flow valves (EFVs) in gas distribution systems serving other than single family residences.
November 2011	NPRM published proposing to make miscellaneous changes to the pipeline safety regulations. The proposed changes would correct errors, address inconsistencies, and respond to rulemaking petitions.
September 2011	Advisory Bulletin issued to remind owners and operators of gas and hazardous liquid pipelines of the potential for damage to pipeline facilities caused by hurricanes.
August 2011	ANPRM published seeking public comment on whether gas transmission integrity management (IM) requirements should be strengthened, including adding more prescriptive language in some areas, and whether other issues related to system integrity should be addressed by strengthening or expanding non-IM requirements. The comment period closed January 20, 2012 and PHMSA is preparing a NPRM.
July 2011	Advisory Bulletin issued to all owners and operators of gas and hazardous liquid pipelines to communicate the potential for damage to pipeline facilities caused

	by severe flooding.
July 2011	Conducted a Risk Assessment and Records Retention Workshop relating to the San Bruno incident.
June 2011	Final Rule published which expedited the program implementation deadlines in the Control Room Management/Human Factors regulations in order to realize the safety benefits sooner than established in the original rule.
May 2011	Advisory Bulletin issued advising owners and operators of gas transmission and gathering systems and Liquefied Natural Gas (LNG) facilities that they have until August 15, 2011, to submit their Calendar Year 2010 Annual Reports. This document also provided guidance for Calendar Year 2010 National Pipeline Mapping System (NPMS) submissions.
February 2011	Final Rule published revising the pipeline safety regulations to clarify the types of pipeline fittings involved in the compression coupling failure information collection; changes the term "compression coupling" to "mechanical fitting," aligns a threat category with the annual report; and clarifies the Excess Flow Valve (EFV) metric to be reported by operators of gas systems. This rule also announced the Office of Management and Budget (OMB) approval of the revised Distribution Annual Report and a new Mechanical Fitting Failure Report. Finally, this rulemaking clarified the key dates for the collection and submission of the new Mechanical Fitting Failure Report.
February 2011	Advisory Bulletin issued advising owners and operators of petroleum gas and natural gas facilities of the need to take the appropriate steps to prevent damage to pipeline facilities from accumulated snow or ice.
January 2011	Advisory Bulletin issued to remind pipeline operators to perform detailed risk analyses that integrate accurate pipeline data and information when calculating Maximum Allowable Operating Pressure (MAOP), and to utilize those risk analyses to identify integrity threats and preventive measures, as a result of the San Bruno incident.
January 2011	Final Rule published to improve data collection from operators of pipelines and

liquefied natural gas facilities.

December 2010 Final Rule published to regulate the remaining population of unregulated rural hazardous liquid low stress pipelines, which was required by the PIPES Act of 2006.

November 2010 Final Rule published to require electronic filing of all reports and standardize reporting by operators.

November 2010 Advisory Bulletin issued to remind pipeline operators of the requirement to share their emergency response plans with emergency response officials.

September 2010 Advanced Notice of Proposed Rulemaking (ANPRM) published to consider eliminating regulatory exemptions in oversight of hazardous liquid pipelines. In addition, PHMSA sought comments on whether other areas along a pipeline should be identified for extra protection; whether to establish minimum leak detection requirements for all pipelines; whether to require emergency flow restricting devices in certain areas; whether revised valve spacing requirements are needed; whether repair timeframes should be specified for pipelines outside high consequence areas (HCAs); and whether to establish and/or adopt standards and procedures for improving the methods of preventing, detecting, and remediating stress corrosion cracking. The comment period closed February 18, 2010. PHMSA is preparing a Notice of Proposed Rulemaking (NPRM).

August 2010 Advisory Bulletin issued to pipeline operators that addresses the use of personal electronic devices by individuals while performing pipeline safety functions.

June 2010 Advisory Bulletin issued to operators of hazardous liquid pipeline facilities requiring them to prepare and submit an updated oil spill response plan in light of Deepwater Horizon incident's demands and concerns.

March 2010 Advisory Bulletin issued to notify owners and operators of recently constructed large diameter natural gas pipeline and hazardous liquid pipeline systems of the potential for girth weld failures due to welding quality issues.

January 2010 Advisory Bulletin issued to require hazardous liquid pipeline operators to implement prompt and effective leak detection systems.

December 2009 Final Rule published to address human factors and other aspects of control room management (CRM) for pipelines where controllers use computerized or automated supervisory control and data acquisition (SCADA) systems to encourage the safe operations of pipeline systems. This rule originally was to be fully implemented in 2013, but was expedited in May 2011.

December 2009 Final Rule published to require operators of gas distribution pipelines to develop and implement integrity management programs similar to those required for gas transmission and hazardous liquid pipelines. This rule took effect in August 2011.

EFFECTIVE ENFORCEMENT – PHMSA has significantly increased its inspection and enforcement personnel with a 38% increase in staffing since 2008. As a result, PHMSA has been able to reduce its enforcement case backlog by closing 872 cases, issuing 323 Final Orders, and collecting over $29.5 million in civil penalties. Recognizing that expediting our enforcement process is important to ensure operators promptly correct non-compliances and to facilitate timely analysis of enforcement data, PHMSA undertook a number of initiatives to speed up pipeline enforcement, including developing monthly case timing reports that compiled metrics of progress in processing cases for each enforcement step and establishing target times for key enforcement steps. As a result of these initiatives:

- The average number of days awaiting a decision on petition for reconsideration has also dropped off sharply by 73%, from 563 days in 2009 to 157 cases as of August 2012.
- The cases pending action in the region offices has reduced by 9%, from 167 cases in 2009 to 153 cases as of August 2012.
- The cases pending in PHMSA's docket has reduced by 68%, from 127 at the beginning of 2009 to only 41 cases as of August 2012.
- PHMSA reversed a years-long trend of increasing times between initiating an enforcement case to issuing a Final Order for cases alleging a pipeline safety violation and that included a proposed civil penalty and/or a proposed Compliance Order. The yearly average has dropped by 55%, from 737 days in 2009 to 330 days so far in 2012.
- PHMSA has also reduced by 33% the average number of days between initiating an enforcement case and closing the case, going from 837 days in 2009 to 564 days so far in 2012.

- Since 2008, PHMSA has increased the number of Final Orders issued, going from 41 orders in 2008 to 103 orders in 2011.

PHMSA has taken aggressive action to deal with a number of pipeline accidents to ensure that operators take prompt and effective actions to correct hazardous conditions and to ensure that operators are held accountable for compliance with safety laws. Recent actions include:

July – August 2012	On July 5, 2012, PHMSA issued a Notice of Probable Violation to Enbridge Energy, alleging 22 pipeline safety violations and seeking a record $3.7 million administrative civil penalty for a failure that occurred on the company's Lakehead Pipeline near Marshall, Michigan, in July 2010. The failure resulted in one of the country's largest inland crude oil spills and contaminated roughly 38 miles of the Kalamazoo River. Two years later, in July 2012, Enbridge suffered another serious oil spill on the Lakehead Pipeline in Wisconsin. PHMSA took swift action by issuing a Corrective Action Order to Enbridge and by securing an agreement by the company to develop a comprehensive plan to address various safety problems on the entire 1,900-mile Lakehead system.
July 2012	Reestablishing a process with federal agencies Department of Justice (DOJ) and Environmental Protection Agency (EPA) to discuss corresponding jurisdictions over pipeline safety.
June 2012	Issued Notices of Probable Violation (NOPV) to Kinder Morgan Energy Partners, Rockies Express Pipeline, LLC for deficiencies found on their REX pipeline and for failure to abide by the terms of a special permit granted by PHMSA. The Notices will lead to orders requiring Kinder Morgan to take corrective actions to improve their inspection of welds, nondestructive weld testing and removal of defects from their system. The Notice also proposes a total of over $1 million in civil penalties.
May 2012	PHMSA reached a settlement with Marathon Pipe Line, LLC, in a case arising out of a 2009 accident at the company's St. James Terminal near Garyville, Louisiana. During a repair project, a Marathon contractor ignited hazardous vapors in a crude oil sump, causing an explosion that resulted in one fatality and three injuries. In the consent agreement, Marathon agreed to pay a penalty of $842,650, take certain compliance actions, and spend at least $305,000 on a supplemental safety project aimed at reducing the risk of similar accidents in the

future.

December 2011 February 2012 May 2012	PHMSA hosted a series State Pipeline Legal Forums to provide information to its state enforcement partners on how PHMSA can assist them with enforcement matters pertaining to pipeline operators.
May 2011	Issued a Corrective Action Order to BP Exploration (Alaska), Inc., (BPXA) for a spill on the North Slope of Alaska on March 15, 2006. BPXA experienced another spill on the North Slope in August 2006. As a result of the spills and violations of the Corrective Action Order, PHMSA and the EPA referred the matter to the Department of Justice for judicial enforcement. In March 2009, the U.S. filed suit against BPXA alleging violations of the Clean Water Act, the Clean Air Act, and the federal Pipeline Safety Laws and seeking civil penalties and injunctive relief. In July 2011, the U.S. District Court for the District of Alaska approved a consent decree among the parties in which BPXA agreed to pay a combined $25 million civil penalty for violations of the various statutes. The government allocated $4.5 million of the penalty for violations of the Pipeline Safety Laws. This is in addition to the approximately $200 million that BPXA had already spent replacing the lines that leaked on the North Slope. The penalty is the largest per-barrel penalty PHMSA has ever issued for an oil spill.
July 2011	Issued a Corrective Action Order to ExxonMobil after a failure on its pipeline crossing the Yellowstone River in Montana. The order required ExxonMobil to replace the pipeline under the river and review the other Silvertip Pipeline river crossings. PHMSA's accident investigation is still ongoing.
February 2011	Issued a Notice of Proposed Safety Order to Alaska after a leak on the Trans-Alaska Pipeline System on January 8, 2011. The Notice led to a Consent Order requiring them to take corrective measures, including replacing certain piping, evaluating the need for increased tank capacity at pump stations, revising its "Cold Restart Plan," and proving the plan's feasibility. The operator continues to work towards full compliance with this order.
December 2010	Issued a Corrective Action Order to address two separate incidents that occurred on the Chevron pipeline in Salt Lake City. The Order required Chevron to repair all of the facilities affected by its June 2010 hydrostatic pressure test performed after the first incident. The operator continues to work towards full compliance

with this order.

November 2010 Issued a Notice of Proposed Safety Order to ONEOK NGL Pipeline, L.P. after a pipeline failure that had occurred on November 1, 2010 in Oklahoma. The Notice led to a Safety Order requiring ONEOK to review previous inline inspection data, identify areas where accelerated corrosion may be occurring, and remediate those areas. The operator is continuing to work towards full compliance with this order.

September 2010 Issued a Final Amended Corrective Action Order to Enbridge after the discovery of a leak on the Lakehead System. The Order required Enbridge to conduct a comprehensive review of the operating history of the line and prescribed further inspections, testing, and repairs within and beyond the immediate failure area, and specifically ordered the replacement of pipeline under the St. Clair River in Michigan. The operator is continuing to work towards full compliance with this order.

September 2010 Issued a Notice of Proposed Safety Order to Columbia Gas Transmission LLC (CGT) after a failure of a pipeline transporting natural gas that occurred on September 9, 2010 in Ohio. The notice led to a Safety Order requiring CGT to develop and implement a remedial plan on corrosion procedures and perform appropriate permanent repairs. The operator has since complied with all ordered actions and the case was closed on December 12, 2011.

FOCUSED SAFETY EFFORTS – PHMSA focused resources to address identified and emerging safety concerns. Examples include:

Secretary LaHood's Call to Action to Address High Risk Pipeline Infrastructure

Throughout 2011 and 2012

- August 2012 – Released national cast iron inventory system on PHMSA website. Information shows annual national and state mileage of cast iron pipeline (high risk infrastructure) since 2004.April 2011 – Pipeline Safety Awareness Forum – Formal announcement of the Secretary's Call to Action.
- July 2012 - Held pipeline modernization press conference in Columbus, OH to highlight the replacement of aging pipelines.
- June 2012 and July 2012 - Participated in the National Association of Regulatory Utility Commissioners (NARUC) Summer Committee meetings to urge state regulators to consider the safety implications of rate decisions

versus replacement programs for high risk pipeline infrastructure.

- April 2012 - Held a press conference in Pittsburgh, PA to announce NiSource, Inc.'s $4 billion pipeline modernization project spanning six states.
- March 2011 - Secretary LaHood met with FERC Chairman Jon Wellinghoff.
- March 29, 2011 and March 27, 2012 - Secretarial meetings with oil and gas pipeline industry executives.
- April 2011 and May 2012 - Sent letter to each State Governor requesting the status of their replacement programs for high risk infrastructure such as cast iron pipeline systems.
- March 2011 and May 2012 - Sent letters to the State Regulatory Commissioners and State Pipeline Safety Commissions.
- 2011/2012 - Participated in National Association of Pipeline Safety Representative regional and annual meetings.
- 2011 - Established pipeline safety awareness website focused on repair, rehabilitation, or replacement of high risk infrastructure.

Exxon Mobil Crude Oil Spill into Yellowstone River:

Throughout 2011 and 2012

- Following the July 1, 2011 Exxon Mobil crude oil release into the Yellowstone River, PHMSA inspectors conducted specialized inspections and data collection activities to determine the status of other petroleum pipelines that cross major waterways in or enter into Montana.
- PHMSA teamed with the MT Governor's task force on pipeline river crossings.
- After completion of the field investigation, PHMSA proceeded with the inspection of the remedial activities of all crossings that were at risk.

PG&E San Bruno, CA Incident & Enbridge Marshall, MI Accident Follow-up:

Throughout 2011 and 2012

- Following the San Bruno tragedy, PHMSA conducted Integrity Management Program inspections (or re-inspection) of all PHMSA regulated gas transmission lines in California.
- March 2012 - Pipeline Valve Type and Placement & Leak Detection Forum to follow-up on issues identify in San Bruno and Marshall, MI incidents.
- July 2011 - Risk Assessment and Records Retention Workshop focused on issues identified during investigation of the incidents by both PHMSA and NTSB.
- PHMSA is assisting the California Public Utilities Commission (CAPUC) with a various inspections of Pacific Gas & Electric pipeline facilities; and review of

its programs, including:

- Distribution Integrity Management Inspection - December 10-14, 2012
- Control Room Management - October 22-26, 2012
- Standard Inspection Kettleman District and Compressor Station - October 8-10, 2012
- Transmission Integrity Management - August 27-31, 2012 and September 10-14, 2012
- Operator Qualification - July 30 - August 3, 2012
- Operation, Maintenance, and Emergency Response Plans - February 13-17, 2012
- Public Awareness Effectiveness - November 1-3, 2011

- PHMSA has provided extensive training to current and new CAPUC inspector personnel. Federal and State personnel are trained together at PHMSA's Training and Qualification center in Oklahoma City, OK.

Emergency Responder Outreach Program

Throughout 2011 and 2012

- Working with the National Association of State Fire Marshalls and the U.S. Fire Administration/National Fire Academy to identify ways to get pipeline related information and training resources out to emergency responders.
- 2012 – Hosted Georgia emergency response working group which will serve as a state-wide pilot program in the effort to improve communication and training between emergency responders and pipeline operator. May serve as a model for use by other states.
- 2012 - Established a Pipeline Emergency Response Working Group comprised of a cross-section of stakeholders to institutionalize emergency responder training into existing processes and systems. The group is co-chaired by an emergency responder and industry leads. The group is also developing a resource guide for use by emergency responders and pipeline operators.
- Published two feature articles in emergency responder publications as part of pipeline education and outreach (Fire Rescue and Fire Chief magazines).
- Engaged the National Academy of Science/Transportation Research Board study to look identify how to improve communications and information sharing between emergency responders and pipeline operators
- December 2011 – DOT hosted an Emergency Responder Forum to initiate the development of an action plan for improving emergency responders' ability to prepare for and respond to pipeline emergencies.

Oil Spill Program

Throughout 2012

- Refocused agency attention on facility response plans (FRP's), identifying and addressing gaps.
- Allocated two additional full-time staff for review of FRP plans.
- Established interagency working group, including Coast Guard and EPA, to review and coordinate on oil spill response programs. The focus of the group included communications, coordination on the effectiveness of operator plans.
- Developed a mechanism to quickly transmit FRPs and other critical information to the Federal On Scene Coordinator rapidly and securely in response to a pipeline incident.
- Participated in a multi-agency review of Preparedness for Response Exercise Program (PREP) guidelines.
- Revised all FRP evaluation criteria to better reflect DOT/PHMSA regulatory requirements.
- Developed an IT system to automate and standardize the evaluation criteria for FRP review.
- Instituted multiple stage reviews of operators' FRP's to improve conformity with the practices of other agencies.
- Improved the use of FRP criteria for evaluation of oil spill exercises to ensure the inclusion of the elements of the incident command system.
- Trained regional and legal staff on FRP review criteria and the technology tool used to manage the FRP approval process.

Distribution Integrity Management Program

Throughout 2011 and 2012

- June 27, 2012 - Public workshop to review the first year implementation of Distribution Integrity Management Program regulations and share lessons learned between Federal/State regulators and industry.
- PHMSA trained State inspectors, helped develop state inspection forms, FAQs, and inspection guidance for implementing DIMP, and performed pilot inspections to validate and enhance inspection forms and guidance.

Enbridge Wisconsin Crude Oil Incident Follow-up

July/August 2012	• A meeting is planned between Enbridge senior leadership and PHMSA on September 5, to review and discuss specific actions required under the Lakehead Plan. • August 2012 - Required Enbridge Energy to submit a comprehensive safety plan for entire Lakehead system as a condition of restart for Line 14 in WI. • July 2012 - Prohibited Enbridge Energy from restarting pipeline in WI until safety plan submitted.

ROBUST STATE PARTNERSHIP – PHMSA increased its funding to state pipeline safety partners, and is covering 72 percent of state pipeline safety program costs, totaling approximately $42.5 million for 2011. Since 2002, PHMSA has spent over $8 million to train local first responders to safely respond to pipeline emergencies and develop a comprehensive web-based training library. In addition to training all State and Federal pipeline inspectors on protocols, PHMSA works with the National Association of State Pipeline Safety Representatives to develop and provide national, regional, and State training. When incidents occur, PHMSA works closely with responding state and federal officials to determine the impact to the public and to provide as much investigative, legal, and technical assistance as necessary. Recent examples include:

Alaska	PHMSA assisted in the aftermath of a release on the North Slope involving a pipeline regulated by the Alaska Department of Environmental Conservation.
California	PHMSA provided legal guidance, on-scene investigation support, and continuing technical support related to the San Bruno incident. PHMSA joined with California Public Utility Commission (CPUC) to inspect the failed operator's risk assessment plan and public awareness program it is currently working to schedule additional inspections of PG&E in conjunction with the CPUC.
Mississippi	To address significant safety issues on a municipal pipeline regulated by Mississippi, PHMSA informally consulted with the state pipeline safety office and the operator to draft the terms of a consent agreement to resolve certain safety issues, including replacing steel mains, valves, meters, regulators, and odor bottle installations.

North Carolina	PHMSA provided assistance to the North Carolina pipeline safety program for review of welding of a new pipeline under construction.
Pennsylvania	Assisted State pipeline safety inspectors with a DIMP inspection following a tragic pipeline incident in Allentown. PHMSA also provided technical assistance to the Commonwealth of Pennsylvania following cast iron pipeline failures which resulted in fatalities in Allentown and Philadelphia
Puerto Rico	PHMSA responded to an oil pipeline discharge outside San Juan, and helped clarify jurisdictional issues between the Coast Guard, PHMSA, and Puerto Rico. PHMSA also assisted in preparing violation notices and collecting evidence.

ADDITIONAL ACCOMPLISHMENTS

- 2012 - PHMSA supported several damage prevention initiatives, including an "811 Call Before You Dig" public awareness campaign—which features the agency's first ever public service announcement—and awarding 34 state damage prevention grants for about $3 million. Expanded 811 and other outreach efforts in FY12 both on the Web, through social media and via public service awareness activities such as legal forums, workshops and training.

- March 2012 - Awarded contract to the National Academy of Sciences to conduct a study on the effect of diluted bitumen crude oil in pipelines.

- July 18-19, 2012 – Held a Research and Development Public Forum to identify gaps in needed pipeline safety technology and map a path forward to identify and remove unnecessary duplications and appropriately leveraged resources.

- August 2012 - Held pipeline safety press conference and demonstration with first responders and Washington Gas to promote the use of 811 and safe digging.

- PHMSA published fifty recommendations to help local governments, zoning officials, real estate developers, and community planners better plan projects in areas near transmission pipelines. These recommendations were detailed in the report prepared by the Pipeline and Informed Planning Alliance titled *Partnering to Further Enhance Pipeline Safety in Communities through Risk-Informed Land Use Planning*.

- October 2012 – Will conduct a Data and Performance Measures Public Workshop to identify gaps between available and needed data, the use of the data to evaluate safety performance and identify emergency safety trends. A significant portion of the workshop will focus on meaningful performance metrics and voluntary reporting.

- As part of President Obama's Executive Order 13604 to *Improve Performance of Federal Permitting and Review of Infrastructure Projects*, DOT announced its support for a 1,000 mile gas pipeline modernization project by NiSource, Inc.

- The President's Fiscal Year 2013 budget request to Congress includes a 60 percent increase in funding above Fiscal Year 2012 for pipeline safety in America. These dollars will help improve safety and increase accountability by hiring more inspectors, increasing coordination with states, and educating the public.

Pipeline Safety Guide

Each stakeholder group, including members of the general public, plays a critical role in ensuring pipeline safety. Learn the about specific steps that you can take to keep your community safe.

Recognizing and Responding to Pipeline Leaks

Remember that pipelines carry both flammable gases and hazardous liquids. Gas leaks in most city and residential areas are recognizable by the characteristic smell of rotten eggs. Both gas and hazardous liquid leaks often kill nearby vegetation. If you notice either of these symptoms, call 911 or your local gas utility, and avoid any action that could ignite the gas or oil while you await response. **For more information, see the guidance below.**

Dig Safely

Excavation damage is the leading cause of incidents that result in death and/ or serious injury. Regardless of where you are, there may be pipelines and other utilities buried underground. It is important to follow safe digging practices, whether you are a homeowner planting a tree or digging a fence post hole, or a professional excavator. Safe digging always starts with a prior call to your local one call center to mark underground utilities. Knowing what's below enables diggers to avoid underground utilities, and can prevent injury, death, environmental damage and loss of critical services.

One-call Centers One-call centers provide a simple means for locating underground utilities in an area where you plan to excavate by enabling you to place just one call, **before digging.** You should plan to make this call at least three days before undertaking any excavation to allow time for marking to occur.

Dial 811 By simply dialing 811, you can reach the one-call center. There is no cost to you for this service. If, for some reason, you can't connect to the one-call center by dialing 811, dial 1-888-258-0808 or visit Call811.com and select the Local Info tab for information to call the one-call center directly.

Are Pipelines Located Near You?

To find out if an oil or gas transmission pipeline is located near you, visit the website for the National Pipeline Mapping System (NPMS). Click on the "NPMS Public Map Viewer" button, and search by your county or zip code. Get step-by-step user instructions by watching our video, "How to Locate Pipelines with the Public Viewer App. " **Never use NPMS information in place of calling a one-call center before digging**.

Additional Public Awareness Information

PHMSA provides additional information on its Stakeholder Communications website. There you can find information on the following, and more:

- Pipeline operator public awareness program requirements
- State pipeline incident and mileage data and who regulates pipelines in your State
- Contact a PHMSA Community Assistance and Technical Services agent near you

PIPELINE SAFETY CHECKLIST

Guidance for Recognizing and Responding to Pipeline Leaks In Your Home or Workplace:
If you notice the distinctive sulfur or "rotten egg" smell of odorized natural gas, follow these **DO's** and **DONT's**.

DO!

- ✓ Make sure gas appliances are turned all the way OFF;
- ✓ Leave the building and go outdoors area;
- ✓ Call 911 from a neighbor's house or other location well away from the gas leak;
- ✓ Explain the situation and listen to all instructions;
- ✓ Warn others—*if it is safe to do so*—against entering the leak area and/or creating ignition sparks.

DO NOT!

- ✗ Start an engine of any kind of machinery or power device;
- ✗ Strike matches or create a flame of any kind;
- ✗ Use a telephone or cell phone (these can ignite airborne gases);
- ✗ Use a "striking" tool that may generate a spark;
- ✗ Turn on or off any light switches, garage door openers or other electrical switches (these also can ignite airborne gases).

Near a Pipeline Right-of-Way:
Along a right-of-way, you may see dead or discolored vegetation, pooled liquid, or a cloud of vapor or mist. You may smell an unusual odor, or the scent of petroleum or odorized natural gas. And you may hear an unusual hissing or roaring sound. If you suspect a pipeline leak has occurred:

DO!

- ✓ Make sure gas appliances are turned all the way OFF;
- ✓ Leave the area;
- ✓ Telephone 911 from a neighbor's house or other location well away from the gas leak;
- ✓ Explain the situation;
- ✓ Warn others—*if it is safe to do so*—against entering the leak area and/or creating ignition sparks.

DO NOT!

- ✗ Touch, breathe or make contact with leaking liquids;
- ✗ Start an engine or any kind of machinery or power device;
- ✗ Strike matches or create a flame of any kind;
- ✗ Use a telephone or cell phone (these can ignite airborne gases);
- ✗ Turn on or off any electrical switches (these also can ignite airborne gases);
- ✗ Drive into a leak or vapor cloud area.

Image Library

Access data including photos, graphs and tables to better illustrate the Pipeline Safety Update.

Figure 1 Hazardous Liquid and Gas Transmission Pipelines

Figure 2 Natural Gas Pipeline Systems: From the Wellhead to the Consumer

Figure 3 Petroleum Pipeline Systems: From the Wellhead to the End User

Figure 4 Key Stakeholders in Assuring Pipeline Safety

Figure 5 Examples of Key Stakeholder Roles

Figure 6 Pipeline Safety Context Measures (1988-2010)

Figure 7 Serius Pipeline Incidents (Causing Death or Major Injury)

Figure 8 Trends in the Number of Significant Pipeline Systems Incidents 1991 to 2010

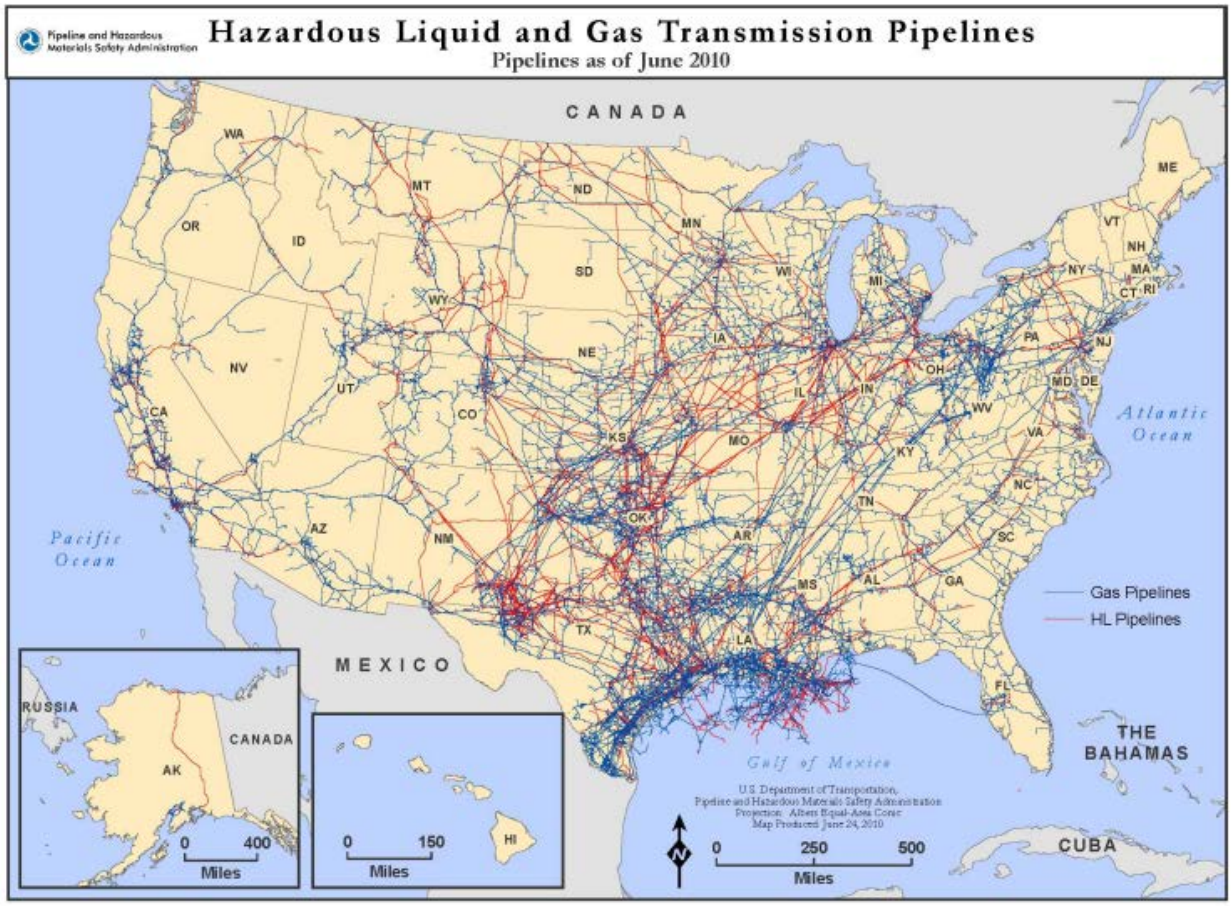
Figure 9 Significant Incidents for Gas Transmission Pipelines

Figure 10 Pipeline System Significant and Serious Incidents per year – 2005-2010

Figure 11 Pipeline Age Profile for Transmission and Distribution Pipelines

Figure 12 Challenges and Ongoing Initiatives

Figure 1 Hazardous Liquid and Gas Transmission Pipelines



There are nearly 299,000 miles of onshore natural gas transmission pipelines and over 171,000[1] miles of hazardous liquid pipelines moving energy products throughout the U.S. every day.

[1] PHMSA's Office of Pipeline Safety (PHMSA) pipeline mileage data from Annual Reports; mileage cited is from 2009 annual reports submitted as of May 2010. http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.ebdc7a8a7e39f2e55cf2031050248a0c/?vgnextoid=036b52edc3c3e110VgnVCM1000001ecb7898RCRD&vgnextchannel=3430fb649a2dc110VgnVCM1000009ed07898RCRD&vgnextfmt=print

Figure 2 Natural Gas Pipeline Systems: From the Wellhead to the Consumer

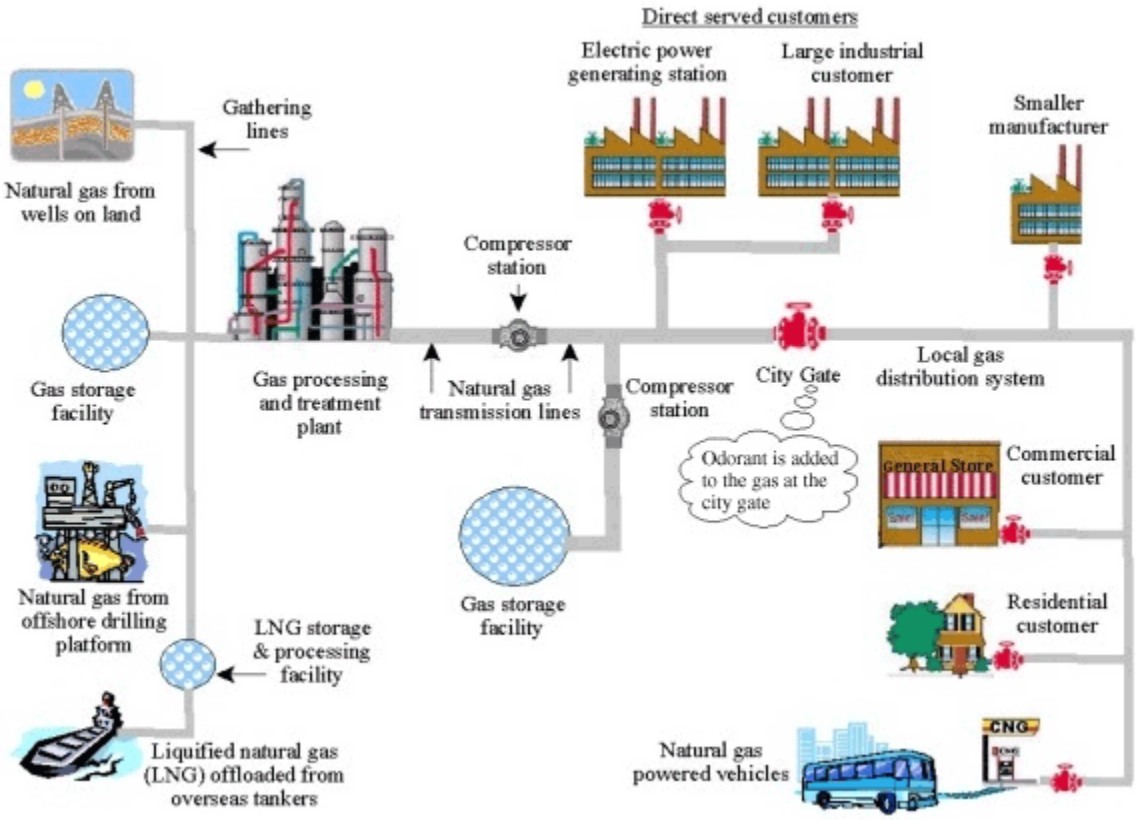


Figure 2 illustrates how natural gas is delivered from wells and storage facilities through a network of gas conditioning and pipeline facilities to the end user. Beginning at the left, gathering lines transport natural gas from wells to processing facilities. Processing facilities prepare gas for end use. Cross-country steel pipelines, usually large diameter (between 8 and 48 inches) pipes operating at higher pressures, transport the processed natural gas to industrial customers, power plants, and local gas distribution utilities. Gas distribution utilities move the gas locally to individual residences and other consumers.

Figure 3 Petroleum Pipeline Systems: From the Wellhead to the End User

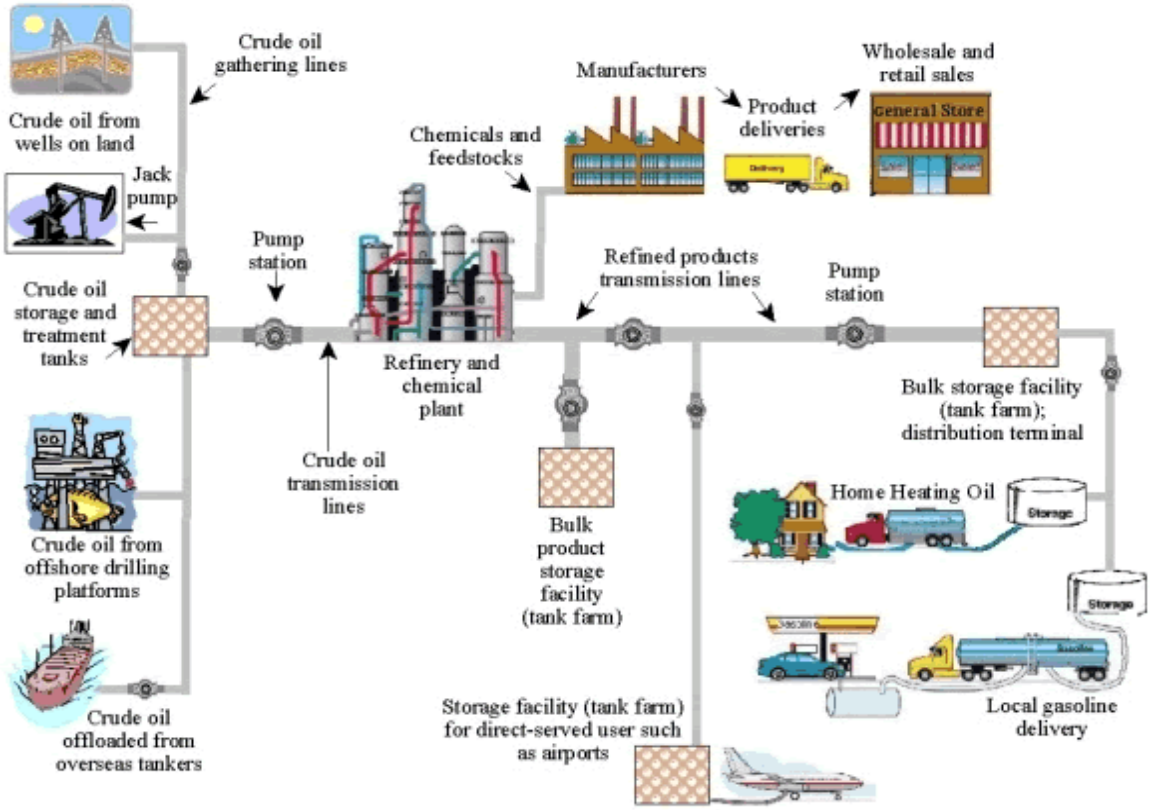
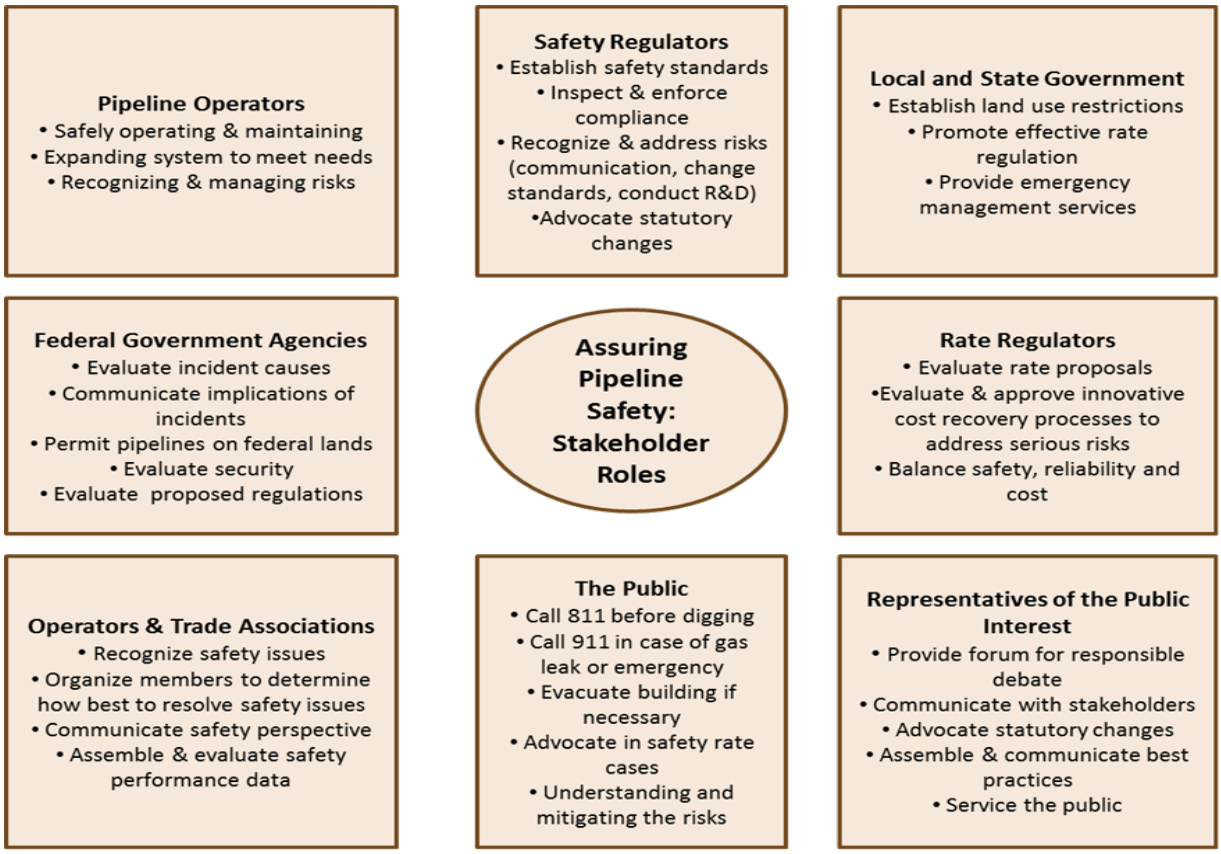


Figure 3 shows how gathering lines transport crude oil from wells to processing facilities. Liquid gathering lines supply crude oil to pump stations that feed pipeline systems that often stretch over multiple States. The Nation's oil pipelines transport crude oil from oilfields to refineries where the oil is converted into products such as gasoline, home heating oil, jet fuel, diesel, lubricants, and the raw materials for fertilizer, chemicals, and pharmaceuticals. Pipelines then transport refined products to bulk storage terminals from which tank trucks deliver the products relatively short distances to gasoline stations, heating oil suppliers, and other end users.

Figure 4 Key Stakeholders in Assuring Pipeline Safety

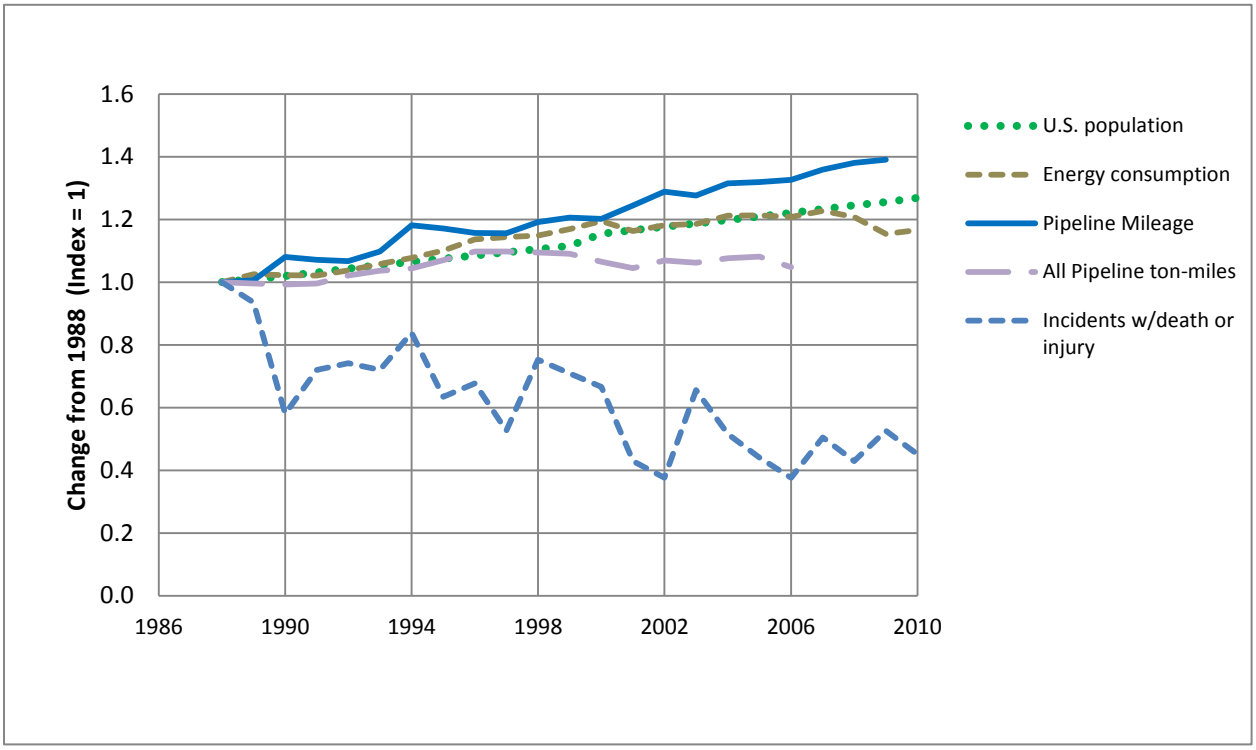
Stakeholders play critical roles in ensuring the safety of hazardous liquid and natural gas pipelines. Figure 4 displays key stakeholder groups.

Figure 5 Examples of Key Stakeholder Roles



Each stakeholder group plays an important role in enuring pipeline safety.

Figure 6 Pipeline Safety Context Measures (1988-2010)



NOTE: DATA SOURCES: CENSUS BUREAU, ENERGY INFORMATION ADMINISTRATION, PHMSA ANNUAL REPORT DATA, BTS TON-MILE ESTIMATES, PHMSA INCIDENT DATA - AS OF MAY 2, 2011

Figure 7 Serious Pipeline Incidents (causing death or major injury)

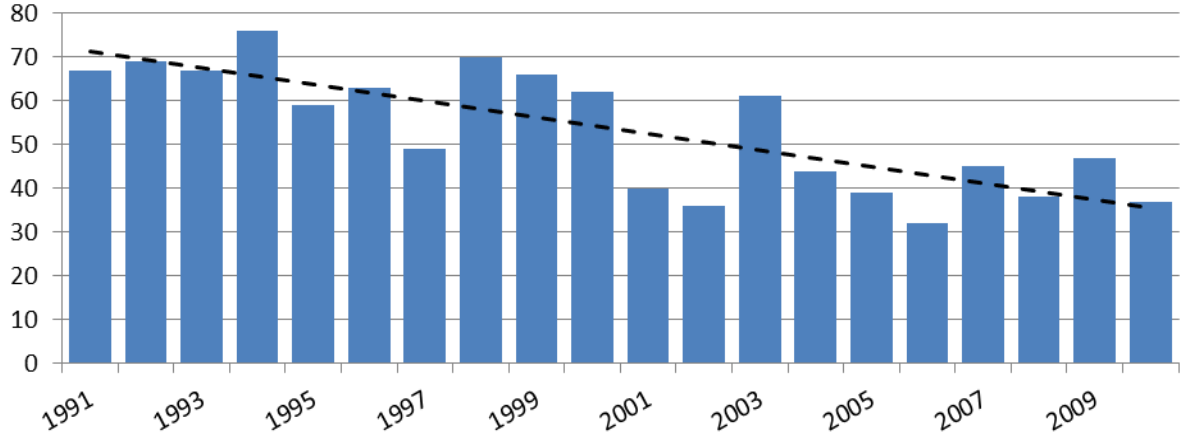
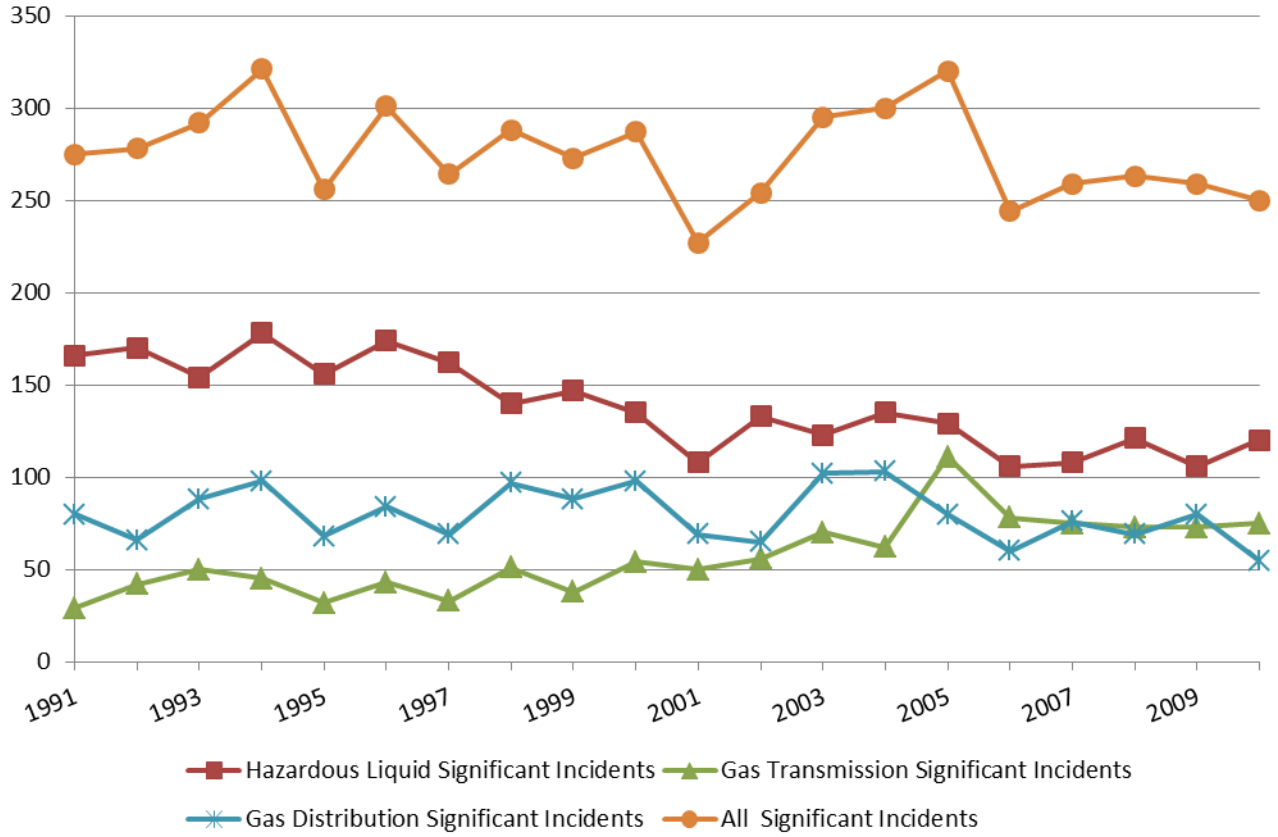


Figure 8 Trends in the Number of Significant Pipeline Systems Incidents 1991 to 2010

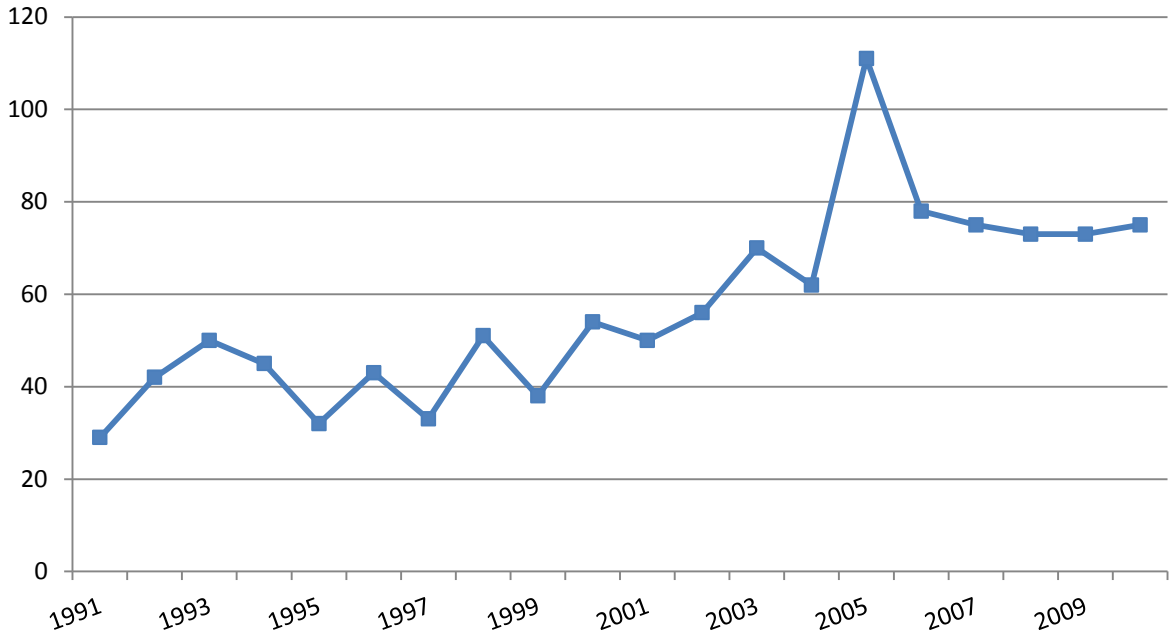


NOTES FOR FIGURE 8

a) Significant Hazardous Liquid and Gas Transmission offshore incidents are combined with their onshore counterparts in this figure.

b) Gas Distribution incidents where fire/explosion was the primary cause of failure, such as a house fire that subsequently resulted in - but was not caused by - a distribution line failure, are excluded from 2004 onward. This exclusion was not applied in years prior to 2004 due to difficulty in identifying these types of events with the older report formats. This data treatment does not significantly affect the overall trend in the number of gas distribution incidents over this period.

Figure 9 Significant Incidents for Gas Transmission Pipelines



For emphasis, Figure 9 repeats the trend in significant incidents for gas transmission pipelines shown earlier in Figure 8. This trend is disturbingly upward over the past 20 years.

Figure 10 Pipeline System Significant and Serious Incidents per year – 2005-2010

Pipeline Type	Average Miles (2005-2010)	Average Number of Significant Incidents per year (2005-2010)	Average Number of Significant Incidents per 1,000 Miles per Year	Average Number of Serious Incidents per year (2005-2010)	Average Number of Serious Incidents per 1,000 Miles per Year
Hazardous Liquid	170,000	115	0.67	3.2	0.019
Gas Transmission	302,000	81	0.27	6.0	0.020
Gas Distribution	2,009,000	70	0.036	30.2	0.035

Notes for Figure 10:

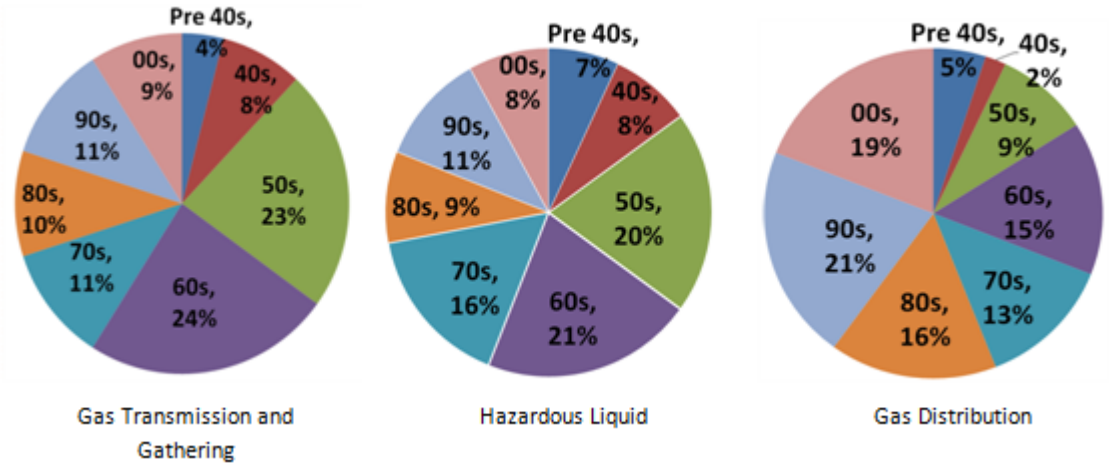
a) Gas Distribution mileage includes mains and estimate of service line mileage

b) There are different reporting criteria for significant incidents for gas pipeline incidents and hazardous liquid pipeline accidents

c) Mileage data for 2010 were assumed to be the same as for 2009.

Figure 10 presents both significant and serious incidents per thousand miles of pipe. When the mileage effects are taken out, the serious incident per thousand miles appear more similar for the liquid and gas transmissions segments. Distribution pipelines show somewhat greater risk for serious incidents per 1,000 miles of pipe due to the close proximity of these systems to people. Serious incidents involve fatalities and/ or serious injury; significant incidents involve a set of additional conditions but not necessarily death or serious injury. Read specifics here.

Figure 11 Pipeline Age Profile for Transmission and Distribution Pipelines



Improving pipeline safety requires that the pipeline industry focus energy and resources on understanding and managing a set of known risks. One of the issues receiving significant attention is the effect of aging on the integrity of a pipeline. To minimize pipeline safety risk, pipeline operators and regulators must understand and address factors that contribute to and exacerbate incidents. Many recognized key safety issues are already being addressed through established programs; however, continual programmatic improvements and accelerated pipe replacement may be required to improve pipeline safety meaningfully.

Figure 12 Challenges and Ongoing Initiatives

Figure 12 Challenges and Ongoing Initiatives

Controlling threats by managing pipeline integrity

What are the challenges & ongoing initiatives in managing pipeline integrity?

- ✓ Understanding an aging infrastructure
- ✓ Managing pipeline integrity
- ✓ Improving human reliability
- ✓ Eliminating excavation damage
- ✓ Managing grandfathered assets

Managing safety through compliance with regulations

- ✓ Recognizing and dealing with technological regulations
- ✓ Recognizing and managing the challenges of new construction
- ✓ Improving public awareness
- ✓ Minimizing incident consequences

Managing safety beyond compliance with the regulation

- ✓ Focus on overall performance improvement
- ✓ Learning from experience and identifying areas for improvement
- ✓ Developing and sharing best practices
- ✓ Improving and maintaining a positive safety culture

Managing the business while ensuring safety

- ✓ Focusing on adequacy of resources
- ✓ Applying limited resources effectively
- ✓ Retaining expertise while losing experienced people – aging industry and regulatory workforce
- ✓ Increasing pipeline safety research and development

Managing the regulatory process

- ✓ Choosing the best regulatory approach and regulations
- ✓ Maintaining adequate number of qualified inspectors
- ✓ Ensuring adequacy of enforcement
- ✓ Continual improvements
- ✓ Furthering Research & Development

Acronyms & Glossary

Pipeline Safety Update uses some pipeline industry-specific terms and acronyms. Find meanings for words used in the Update here.

Acronyms

AGA	American Gas Association
ANPRM	Advanced Notice for Proposed Rulemaking
ANSI	American National Standards Institute
AOPL	Association of Oil Pipe Lines
APGA	American Public Gas Association
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BLM	Bureau of Land Management in the U.S. Department of the Interior
BOERME	Bureau of Ocean Energy Management, Regulation, and Enforcement in the Department of the Interior
CATS	Community Assistance & Technical Services Teams within the Office of Pipeline Safety
CGA	Common Ground Alliance
CRM	Control Room Management
CSB	Chemical Safety Board
DHS	Department of Homeland Security

DIMP	Distribution Integrity Management Program
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
EIS	Environmental Impact Study
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESI	Environment and Safety Initiative
FERC	Federal Energy Regulatory Commission
GIS	Geographic Information System
HCA	High Consequence Area
IAFC	International Association of Fire Chiefs
IAFF	International Association of Fire Fighters
IMP	Integrity Management Program
INGAA	Interstate Natural Gas Association of America
LDC	Local Distribution Company
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MAOP	Maximum Allowable Operating Pressure
MOP	Maximum Operating Pressure

NACE	National Association of Corrosion Engineers
NAPSR	National Association of Pipeline Safety Representatives
NARUC	National Association of Regulatory Utility Commissioners
NASFM	National Association of State Fire Marshals
NEB	National Energy Board of Canada
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NPGA	National Propane Gas Association
NPMS	National Pipeline Mapping System
NPRM	Notice of Proposed Rulemaking
NRDC	Natural Resources Defense Council
NTDPC	North American Telecommunications Damage Prevention Council
NTSB	National Transportation Safety Board
NVFC	National Volunteer Fire Council
OIRA	Office of Information and Regulatory Affairs in the Office of Management and Budget
OMB	Office of Management and Budget
OPS	Office of Pipeline Safety
OQ	Operator Qualification (a regulation)
PET	Performance Excellence Team of AOPL
PHMSA	Pipeline and Hazardous Materials Safety Administration

PIPA Pipelines and Informed Planning Alliance

PIPES Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006

PIX Pipeline Information exchange

PPDC Plastic Pipe Database Committee

PRCI Pipeline Research Council International

PSC Public Service Commission

PST Pipeline Safety Trust

PUC Public Utility Commission

QMS Quality Management Systems

R&D Research and Development

RD&D Research Development and Demonstration

SCADA Supervisory Control and Data Acquisition

SGA Southern Gas Association

USCG U.S. Coast Guard

Glossary

811

All States have laws that require residents to call before doing any digging. "811" is the national, three-digit, toll-free number to call before beginning any excavation or digging project. Every digging job requires a call— even small projects like planting trees and shrubs. When you call 811, a locator will come out and mark underground lines to avoid excavation damage.

Accident

When talking about pipeline safety, an accident is defined as a failure that occurs in a liquid pipeline. When an accident occurs, the pipeline operator must make a report to the Office of Pipeline Safety. For natural gas pipelines, a failure is called an incident. (See Incident)

Advanced Notice for Proposed Rulemaking (ANPRM)

A generalized Statement of what an agency proposes in making a change to a regulation. See Notice of Proposed Rulemaking (NPRM).

Advisory bulletin

A notice issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) to educate owners and operators of pipeline facilities about certain requirements or issues affecting pipeline safety.

Barrel

Standard measure of a volume of oil. A barrel is equal to 42 U.S. gallons.

Biofuels

Types of fuel which are derived from biomass (plants, recently living organisms or from metabolic byproducts, e.g., cow manure.) The types of fuel extracted from biomass include ethanol, methanol, and biodiesel.

Call Before You Dig

Call before you dig, or CBYD, is the phrase coined to remind excavators to call the one-call center to have underground utilities located and marked before beginning to dig. Anyone planning to dig can dial 811 to request that underground facilities be located prior to digging. Most States have damage prevention laws that mandate that excavators call before digging.

Carbon Dioxide (CO2)

A naturally occurring gas that is transported by pipeline as a compressed fluid consisting of more than 90 percent carbon dioxide molecules. If released into the atmosphere from a pipeline leak, carbon dioxide can displace breathing air and, as such, is considered a hazardous material.

Carbon Sequestration

The long-term storage of carbon dioxide or other forms of carbon to either mitigate or defer global warming. It has been proposed as a way to slow the atmospheric and marine accumulation of greenhouse gases, which are released by burning fossil fuels.

Cast Iron

A ferrous material that is cast (heated to melting and poured into molds). Many older, low-pressure gas systems were constructed with cast iron pipe. Cast iron is brittle and susceptible to stress cracking so is not suitable for high-pressure applications. Generally large diameter cast iron pipes have performed well while small diameter pipes are more susceptible to fracture.

CATS - Community Assistance and Technical Services

A PHMSA program initiative designed to improve public safety, environmental protection, and pipeline reliability by facilitating clear communications among all pipeline stakeholders, including the public, the operators, and government officials. An important aim of the CATS program is to reach out to all pipeline safety stakeholders. CATS managers are located within each PHMSA region.

Coating (also Protective Coating)

A coating that is applied to prevent external corrosion of a pipeline. A coating substance or material is applied to the exterior of the pipe to prevent direct contact of the pipe wall with the surrounding environment. Various types of protective coatings may be used, including coal tar, tape wraps, and fusion bonded epoxy compounds.

Code of Federal Regulations (CFR)

Federal regulations are officially codified in the Code of Federal Regulations (CFR). The CFR is divided into 50 titles that represent broad topical areas. Title 49 covers Transportation. Each title is divided into volumes, sections, parts, or chapters that may be further subdivided and grouped. The current pipeline safety regulations are codified under Title 49, Chapter 1, Subchapter D, Parts 186 through 199.

Commercially Navigable Waterway

A waterway where there is a substantial likelihood of commercial navigation. These waterways are identified in the National Waterways Network, a geographic database created by the National Waterways GIS Design Committee and available from the U. S. Department of Transportation, Bureau of Transportation Statistics.

Common Carrier

A term used to describe the fact that most pipeline operators offer transportation services to the general public under license or authority provided by a regulatory body.

Common Ground Study

A study conducted under facilitation by PHMSA in which over 160 stakeholders interested in protecting underground infrastructure, such as pipelines, worked to prepare a set of best practices to prevent damage to this infrastructure. The study was completed and presented to the Secretary of Transportation in June 1999. The Common Ground Study of One-call Systems and Damage Prevention Best Practices became the genesis of today's Common Ground Alliance.

Consequence

In the context of a pipeline accident or incident, consequences are the effects of incidents and accidents, and are usually measured in health and safety effects, environmental impacts, loss of property and/or business costs.

Control Room Management

On Dec. 3, 2009, PHMSA published its final regulations for control room management (CRM). These regulations were developed to address human factors and other aspects of control room management for pipelines where controllers use supervisory control and data acquisition (SCADA) systems. Under the final rule, affected pipeline operators must define the roles and responsibilities of controllers and provide controllers with the necessary information, training, and processes to fulfill these responsibilities. Operators must also implement methods to prevent controller fatigue. The final rule further requires operators to manage SCADA alarms, assure control room considerations are taken into account when changing pipeline equipment or configurations, and review reportable incidents or accidents to determine whether control room actions contributed to the event.

Corrosion

The deterioration of a material, usually a metal, which results from an electro-chemical reaction with its environment. Steel pipelines are subject to corrosion damage. Common rust is an example of corrosion of iron.

Cost/Benefit Ratio

The cost of performing an activity compared to the perceived value of the benefits of performing it. For example, the cost/benefit ratio of replacing a section of pipe could be determined by dividing the cost of the replacement by the value of the expected benefits.

Crude Oil

The raw liquid petroleum that is extracted from oil wells. Crude oil must be refined to produce usable products such as gasoline.

Damage Prevention

This term refers to the protection of underground facilities, especially pipelines, from damage resulting from excavation activities. Generally, each operator of a buried pipeline must carry out a written damage prevention program.

Damage Prevention Program Elements

The nine elements of effective damage prevention programs were cited by Congress in the Pipeline Inspection, Protection, Enforcement, and Safety (PIPES) Act of 2006. They address (abbreviated): (1) effective communications between stakeholders; (2) comprehensive stakeholder support; (3) operator internal performance measurement; (4) effective employee training; (5) public education; (6) dispute resolution; (7) enforcement; (8) technology; and (9) damage prevention program review.

Data Integration

As used in pipeline integrity management regulations, data integration is the process of bringing together all available risk and integrity-related pipeline data and information. Data integration is necessary and useful in evaluating the combined impact of diverse factors on pipeline risk.

Defect

An imperfection that can cause an inadequacy or failure. In pipelines, a defect is an imperfection of sufficient magnitude that it should be analyzed using a recognized and approved engineering procedure to determine if it is severe enough to require removal or repair.

Direct Assessment

A method of evaluating the integrity of a pipeline in which various indirect measurement tools are used to determine locations on the pipeline that may require direct examination to verify

pipeline integrity. These locations are then excavated and examined to assess the condition of the pipe and, if necessary, make necessary repairs and expand the number of locations to be examined.

Distribution Line

A pipeline used to supply natural gas to the consumer. A distribution line is a component of a pipeline network and is located downstream of a natural gas transmission line.

Easement

A privilege or right acquired by a person or company to make limited use of another person's or company's property. Oil and natural gas pipeline companies acquire easements from property owners for construction and operation of their pipelines. A series of consecutive, connected easements can establish a right-of-way for the pipeline.

Emergency Response Personnel

Persons engaged in the immediate response to accidents and emergencies. This may include firefighters, law enforcement, medical personnel, civil defense, community emergency response teams (CERT) and emergency management personnel. Emergency response personnel are sometimes referred to as “emergency responders” and “first responders.”

Encroachment

The use of a pipeline right-of-way, often but not always in violation of the terms by which the right-of-way was established (e.g., easement agreements).

Environmental Impact Statement (EIS)

Under United States environmental law, an Environmental Impact Statement is a document required by the National Environmental Policy Act (NEPA) for certain actions "significantly affecting the quality of the human environment." An EIS is a tool to support decision making. It describes the positive and negative environmental effects of a proposed action, and it usually also lists one or more alternative actions that may be chosen instead of the action described in the EIS.

Ethanol

A renewable biofuel also known as ethyl alcohol and grain alcohol. It is a clear, colorless liquid and is made from corn grain, sugar cane or from cellulosic feedstock. Ethanol is a high-octane fuel that works well in internal combustion engines.

Excavation Damage

Damage to pipelines and other underground utilities that can result from nearby excavation (digging) activities.

Excavation

Any operation involving the movement of earth, rock or other material below existing grade. Examples include auguring, backfilling, blasting, boring, digging, ditching, dredging, drilling, driving-in, grading, plowing-in, pulling-in, ripping, scraping, trenching, tunneling, the removal of aboveground structures by either explosive or mechanical means, and other earthmoving operations.

Facility Response Plan (FRP)

Under the Clean Water Act, facilities that store and use oil are required to have a plan for responding to a worst case oil discharge. As part of the Oil Pollution Prevention regulation, the FRP rule identifies who must prepare and submit an FRP, what must be included in an FRP, and the potential to cause "substantial harm" in the event of a discharge.

First Responder (see Emergency Response Personnel)
Fitness for Service

The determination that a piece of equipment (such as a pipeline, tank, valve, pump, or any individual component) is safe and fit for continued service until the end of some desired period of operation (for example, until the next inspection, or until the end of its useful life). Fitness for service is typically determined through an assessment involving engineering analysis the equipment.

Gas

In pipeline safety regulations, gas is considered to be natural gas, flammable gas, or gas which is toxic or corrosive.

Gasoline

A toxic translucent, yellow-tinted liquid mixture derived from the fractional distillation of petroleum oil and is primarily used as a fuel in internal combustion engines.

Gathering Line

For gas pipelines, a gathering line is a pipeline that transports gas from a production facility to a transmission line or a distribution main. For hazardous liquid pipelines, a gathering line is a pipeline that is no more than 8 5/8 inches in diameter and transports petroleum from a production facility.

Geographic Information System (GIS)

A combination of computer hardware, software, and data that is used to capture, maintain, analyze, and display information related to the geographic location of features and facilities. Geographic information systems are often used by pipeline operators to display information related to the location of their pipelines and the geographic features of the land surrounding their lines.

Graphitization

A form of corrosion that can deteriorate the wall of cast iron pipe.

Hazard

A condition or substance that has the potential to produce harmful effects.

Hazardous Liquid

A liquid that is dangerous to human health or safety or the environment if used incorrectly or if not properly stored or contained. Pipeline safety regulations identify petroleum, petroleum products, or anhydrous ammonia as hazardous liquids.

High Consequence Area (HCA)

A location that is specifically defined in pipeline safety regulations as an area where pipeline releases could have greater consequences to health and safety or the environment. Regulations require a pipeline operator to take additional steps to ensure the integrity of a pipeline for which a release could affect an HCA.

High Population Area

An urbanized area, as defined and delineated by the U.S. Census Bureau, which contains 50,000 or more people and has a population density of at least 1,000 people per square mile. High population areas are considered high consequence areas.

High Risk Pipeline Infrastructure

A pipeline system that may pose high risks and may no longer be fit for service because of inferior materials, poor construction practices, lack of maintenance, or inadequate risk assessments performed by operators. The lack of basic information or incomplete records about these systems is also a contributing factor.

Hydrostatic Test (Hydrostatic Pressure Testing)

Hydrostatic pressure testing (or hydro testing) is a method of testing pipeline integrity in which the line is filled with a liquid, usually water, and then the pressure inside the line is raised to a specified pressure that is maintained for a specified period of time. Any ruptures or leaks revealed during the test must be repaired and the test repeated until no problems are noted.

Incident (also see Accident)

As used in pipeline safety regulations, an incident is an event occurring on a natural gas pipeline for which the operator must make a report to the Office of Pipeline Safety. Events of similar magnitude affecting hazardous liquid pipelines are considered accidents. In this report, incident is used to characterize both hazardous liquid pipeline accidents and gas pipeline incidents.

Inline Inspection (ILI)

A method of inspecting a pipeline internally to identify defects, using an instrumented tool or "smart pig". Different ILI techniques and tools are designed to detect defects in the pipe wall and on the internal and external surfaces of the pipe. Defects can include areas of corrosion, dents, metal loss, and the presence of cracks.

Inline Inspection (ILI) Tool (see also Pig)

A device used to perform an inline inspection of a pipeline.

Integrity

A term used to describe the condition of a pipeline. Pipeline integrity assures that the pipeline can safely carry out its function under the conditions for which it was designed.

Integrity Assessment

An integrity assessment constitutes all of the actions that must be performed to determine the integrity of the pipe. Acceptable assessment methods for pipelines include the use of internal

inspection tools, hydrostatic pressure testing, or other technology that the operator demonstrates can provide an equivalent understanding of the pipe condition.

Integrity Management Program (IMP)

A documented set of policies, processes, and procedures that an operator implements to ensure the integrity of a pipeline. Federal pipeline safety regulations specify what an operator's integrity management program must include.

Interstate Pipeline

A pipeline used in transportation of hazardous liquids or natural gas across State or national boundaries.

Intrastate Pipeline

A pipeline that is entirely contained within the borders of a single State.

Leak

A small opening, crack, or hole in a pipeline that allows release of the product being transported.

Leak detection

Various methods, techniques, technology, practices, and regulations designed to identify and locate a leak.

Leak Survey

A systematic inspection for the purpose of finding leaks on a pipeline. The frequency and methods of performing leak surveys are regulated and may vary depending on several factors.

Liquefied Natural Gas (LNG)

Natural or synthetic gas which has been changed to a liquid and maintained as a liquid by cooling it to approximately −162 °C (−260 °F).

Liquefied Natural Gas (LNG) Facility

A facility that is used for liquefying natural gas or synthetic gas or transferring, storing, or vaporizing liquefied natural gas.

Liquefied Petroleum Gas (LPG)

A gas containing certain specific hydrocarbons that are gaseous under normal atmospheric conditions but that can be liquefied under moderate pressure at normal temperatures. Propane and butane are principal examples.

Local Distribution Company (LDC)

A regulated utility involved in the purchase, resale, and delivery of natural gas to consumers within a specific geographic area.

Main

A natural gas distribution line that serves as a common source of supply for more than one service line.

Master Meter Operator

A person or company that operates a natural gas pipeline system for distributing natural gas for resale within a distinct area, such as a mobile home community, housing project, or apartment complex. The master meter operator purchases natural gas from an outside source and then resells the gas through a gas distribution pipeline system to the ultimate consumers.

Maximum Allowable Operating Pressure (MAOP)

Maximum internal pressure at which a natural gas pipeline or pipeline segment may be operated.

Maximum Operating Pressure (MOP)

Maximum internal pressure at which a hazardous liquid pipeline may be operated.

Memorandum of Understanding (MOU)

A document describing an agreement between parties, often used in situations in which the involved parties do not wish to create a legally enforceable agreement. Many companies and government agencies use MOUs to define a relationship between departments, agencies, or closely held companies.

National Consensus Standards

A set of requirements affecting the design, construction, operation, maintenance or decommissioning of a facility. Such standards are developed under a clear set of requirements for inclusivity and transparency to increase the assurance that they represent the best practical solution to the problem being treated. National consensus standards are often incorporated by reference in regulations.

National Pipeline Mapping System (NPMS)

A geographic information system (GIS) created by the PHMSA in cooperation with other Federal and State government agencies and the pipeline industry. The NPMS consists of data pertaining to the interstate and intrastate hazardous liquid trunk lines and hazardous liquid low-stress lines as well as gas transmission pipelines, liquefied natural gas (LNG) plants, and hazardous liquid breakout tanks jurisdictional to PHMSA.

Natural Gas

A gas consisting primarily of methane. It is an important fuel source and a major feedstock for fertilizers. Before natural gas can be used as a fuel, it must undergo processing to remove almost all materials other than methane. Natural gas is often informally referred to as simply gas, especially when compared to other energy sources such as oil or coal.

Natural Gas Liquid (NGL)

Natural gas liquids are associated hydrocarbons found in raw natural gas, including ethane, propane, butane, iso-butane, and natural gasoline. Before natural gas can be transported it must be processed and purified. NGLs are valuable by-products of natural gas processing. They are extracted or isolated, processed and sold separately. NGLs have a variety of different uses, including enhancing oil recovery in oil wells, providing raw materials for oil refineries or petrochemical plants, and as sources of energy.

Natural Gas Transmission Pipeline

A pipeline used to transport natural gas from a gathering, processing or storage facility to a processing or storage facility, large volume customer, or distribution system.

Notice of Proposed Rulemaking (NPRM)

A formal notice by a Federal agency of its intent to adopt specific proposed requirements into regulations. The NPRM is published in the Federal Register and then invites comments from the public on the proposed requirements, and specifies how comments are to be submitted.

Oil Sands (also called Tar Sands)

Bituminous sands, also known as oil sands or tar sands are a type of unconventional petroleum deposit. The sands contain naturally occurring mixtures of sand, clay, water, and a dense and extremely thick form of petroleum technically referred to as bitumen or "tar" due to its similar appearance, odor, and color. Oil sands are found in large amounts in many countries throughout the world, including Canada and Venezuela.

One-Call Center

An entity that administers a one-call system through which a person can notify pipeline operators of proposed excavations. Excavators can call 811 from anywhere in the U.S. to contact the appropriate one-call center.

One-Call System

A one-call system is a system that enables an excavator to communicate through a one-call center to pipeline operators to provide notification of intent to excavate. All 50 States within the U.S. are covered by one-call systems and most States have damage prevention laws that require excavators to call at least 48 hours before beginning an excavation. The one-call center will gather information about the intended excavation and issue notification tickets to affected pipeline operators. The operators can then clear the tickets or locate and mark the location of their pipelines before the excavation begins. Excavators can then take care when excavating to avoid damaging the pipelines.

Operating Pressure

The pressure of gas or liquid in a pipeline under operating conditions.

Operating Stress

Stress imposed on a pipe or structural member under operating conditions. This term normally refers to stress resulting from the internal forces due to the pressure of the gas or liquid in the pipeline; however, other forces such as thermal growth, expansion, or contraction may impose stress as well.

Operator

An individual or corporation that engages in the transportation of gas or hazardous liquids.

Operator Qualification

Requirements that assure an individual performing certain safety-related tasks has been evaluated and can perform assigned covered tasks and recognize and react to abnormal operating conditions.

Outer Continental Shelf

The Outer Continental Shelf (OCS) is a peculiarity of the political geography of the United States and is the part of the internationally recognized continental shelf of the United States, which does not fall under the jurisdictions of the individual U.S. States.

Outside Force Damage

Damage to a pipeline, resulting from some external force acting on the pipeline. Outside force damage can include the effects of earth movement, lightning, heavy rains and flood, temperature, high winds, excavation by the operator, excavation by a third party, fire or explosion external to the pipeline, being struck by vehicles not related to excavation, rupture of previously damaged pipe, and vandalism.

Performance Data/Performance Measures

Parameters or information that can be collected and evaluated to determine if a set of actions is accomplishing its intended purpose. Federal pipeline safety regulations require that pipeline operators establish performance measures as part of their integrity management programs.

Petroleum

Petroleum is an oily, flammable bituminous liquid that may vary from almost colorless to black and occurs in many places in the upper strata of the earth. It is a complex mixture of hydrocarbons with small amounts of other substances, and is prepared for use as gasoline, naphtha, or other products by various refining processes. Petroleum includes crude oil, condensate, natural gasoline, natural gas liquids, and liquefied petroleum gas.

Pig

A generic term signifying a self-contained device, tool, or vehicle that is inserted into and moves through the interior of a pipeline for inspecting, dimensioning, or cleaning. These tools are commonly referred to as 'pigs' because of the occasional squealing noises that can be heard as they travel through the pipe. To pig means to inspect or clean a pipeline using an internal inline inspection device or cleaning tool.

Pipeline

Used broadly, pipeline includes all parts of those physical facilities through which gas, hazardous liquid, or carbon dioxide is transported. A pipeline may include line pipe, valves, and other appurtenances attached to the pipe, pumping/compressor units and associated fabricated units, metering, regulating, and delivery stations, and holders and fabricated assemblies located therein, and breakout tanks.

Pipelines and Informed Planning Alliance (PIPA)

A cooperative stakeholder coalition organized to combat a trend of increasing risks due to encroachment on transmission pipeline rights-of-way. PIPA's goal is to help communities understand transmission pipeline risks and make more informed decisions about land use planning and development in the vicinity of transmission pipelines.

Pre-1970 Electric Resistance Welded (ERW) Pipe

Pipe that was manufactured prior to 1970 with a low-resistance electric-weld longitudinal-seam that can be susceptible to certain types of seam failures.

Prescriptive Regulations

Prescriptive regulations provide specific rules an operator must follow.

Pressure

Force exerted on a given area usually expressed in pounds per square inch (PSI). Oil and natural gas transported within a pipeline exert pressure on the pipe wall.

Preventive and Mitigative Measures

Activities designed to prevent or reduce the likelihood of a pipeline failure (preventive) and/or mitigate the consequences of a pipeline failure (mitigative). Examples of preventive measures include enhanced damage prevention practices, conducting periodic close interval surveys, or inspecting pressure relief devices more frequently. Examples of mitigative measures include the installation of emergency flow restricting devices, improving leak detection system capability, or conducting drills with local emergency responders.

Probability

A measure of the likelihood that an event will occur within some unit of time.

Propane

A by-product of natural gas processing and petroleum refining that is commonly used as an energy fuel. Propane is normally a gas but is compressed to a liquid for pipeline transport and portability of use in a variety of applications.

Protective Coating (see Coating)

Pump Station

A facility that includes pumps and equipment for pumping fluids from one place to another. A pump station for natural gas pipelines is normally referred to as a compressor station.

Remote Actuation

The ability to cause a piece of equipment, such as a pipeline shutoff valve, to perform its function from a location other than where the device is located.

Repair

The act of returning a damaged or defective item to its original condition. Pipeline repairs address defects or anomalies that can reduce the strength of a pipe or the integrity of the pipeline, and can include replacing pipeline components or sections of pipe.

Right-of-Way (ROW)

A defined strip of land on which an operator has the rights to construct, operate, and/or maintain a pipeline. A ROW is usually composed of a string of contiguous properties, some of which may be owned outright by the operator or, more often, may be acquired through easements for specific use of the ROW.

Risk

A measure of the likelihood that an adverse event could occur and the magnitude of the expected consequences should it occur.

Risk Assessment

The process of identifying, defining, and analyzing pipeline risks. A risk analysis can be either quantitative or qualitative.

Risk Management

The process by which an organization understands, makes decisions, and takes action to reduce the risk of a facility it operates.

Root Cause

The basic, underlying causal factor in an accident or incident, which if removed would have prevented the accident or event from occurring.

Rupture

The process or instance of breaking open or bursting, as in the rupture of a pipe. A pipe rupture is the propagation or growth of a defect to such an extent that the pipe becomes completely unserviceable.

Safety Culture

A term used to describe the way in which safety is managed in the workplace. The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management.

Serious Pipeline Incident

PHMSA defines a serious pipeline safety incident is an event involving a fatality or injury requiring in-patient hospitalization.

Service Line

A natural gas distribution line that transports gas from a common source of supply (e.g., a main) to (1) a customer meter or the connection to a customer's piping, whichever is farther downstream, or (2) the connection to a customer's piping if there is no customer meter. (A customer meter is the meter that measures the transfer of natural gas from the distribution system operator to the consumer.)

Shale Gas

Natural gas produced from shale. Shale gas has become an increasingly important source of natural gas in the United States over the past decade.

Shutoff Valve

Shutoff valves are used to close a line and stop the flow of material. Some shutoff valves are manually operated while others are automated to act when a preset condition (such as a failure in the system) occurs.

Significant Pipeline Incident

PHMSA defines Significant Incidents as those incidents reported by pipeline operators when any of the following specifically defined consequences occur: (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; or (4) liquid releases resulting in an unintentional fire or explosion.

Specified Minimum Yield Strength (SMYS)

The minimum yield strength, expressed in pounds per square inch (psi), prescribed by the specification under which pipe material is purchased from the manufacturer.

Stress

Resultant internal forces within the wall of a pipe that resist the internal pressure exerted by the transported products.

Stress Corrosion Cracking (SCC)

An anomaly that can occur in steel pipe. SCC is environmentally-assisted cracking that can result when the combined action of stress, an electrochemical cracking environment, and temperature causes cracks to initiate and grow in susceptible steel.

Supervisory Control and Data Acquisition System (SCADA)

A pipeline control system, usually computerized, designed to gather information such as pipeline pressures and flow rates from remote locations and regularly transmit this information to a central control facility where the data can be monitored and analyzed. Through this same system, the central control facility can often issue commands to the remote sites for actions such as opening and closing valves and starting and stopping pumps.

Third-Party Damage Prevention

Third-party damage prevention includes all efforts and programs designed to prevent outside force damage to underground facilities, especially pipelines, which can occur during excavation activities by someone other than the pipeline operator or its contractors.

Threat

Something that is a source of potential danger or harm. For example, excavation damage presents a threat to pipelines. Pipeline accidents present a threat to communities.

Time-Dependent Threats

Threats that change with time. For example, active corrosion represents a time-dependent threat to steel pipe.

Ton-Miles

A measure of the quantity of petroleum transported (in tons) over the distance it is transported (in miles).

Trade Association

An organization founded and funded by businesses that operate in a specific industry. An industry trade association participates in public relations activities, such as advertising, education, political donations, lobbying and publishing, but its main focus is collaboration between companies or standardization. Associations may offer other services, such as producing conferences, networking or charitable events or offering classes or educational materials. Many associations are non-profit organizations governed by bylaws and directed by officers who are also members.

Transmission Line

A natural gas transmission pipeline is a pipeline, other than a gathering line, used to transport natural gas from a gathering, processing or storage facility to a processing or storage facility, large volume customer, or distribution system. A large volume customer may receive similar volumes of gas as a distribution center, and includes factories, power plants, and institutional users of gas. Often used to describe hazardous liquid pipelines, a transmission line is a pipeline used to transport crude oil from a gathering line to a refinery, and refined products from a refinery to a distribution center.

Underground Utilities

Pipelines and other utilities, such as electrical and telephone lines, that are buried underground.

Yield Strength

The stress level at which a material begins to deform permanently.

Additional Resources

Footnoted References

1. PHMSA Annual Reports Mileage Data PHMSA provides natural gas transmission, gas distribution, and hazardous liquid pipeline annual mileage data as determined from annual reports submitted by pipeline operators.
2. AOPL Report on Shifts in Petroleum Transportation. January 4, 1011 Pipelines continue to increase their share of total crude oil and petroleum products transported. The Association of Oil Pipe Lines (AOPL) released its annual report on January 4, 2011, showing shifts in petroleum transportation from 1990 through 2008. Volumes increased 5.3 percent from 2007 to 2008.
3. Annual Energy Review, U.S. Energy Information Administration The U. S. Energy Information Administration (EIA) produces a report of historical annual energy statistics. Included are data on total energy production, consumption, and trade; overviews of petroleum, natural gas, coal, electricity, nuclear energy, renewable energy, international energy, as well as financial and environmental indicators; and data unit conversion tables.
4. Annual Energy Review, U.S. Energy Information Administration
5. PHMSA Stakeholder Communication Website
   PHMSA's Stakeholder Communications website provides public access to a wealth of information regarding pipeline transportation. From pipeline incident and mileage statistics to damage prevention information, users will find useful information that to help understand pipeline safety in their communities. See the data on Serious Pipeline Incidents on the website.
6. Analysis of U.S. Oil Spillage. API Publication 356, August 2009
   Total petroleum industry spillage has decreased consistently over the last 40 years. Seventy-seven percent less oil is being spilled since the 1970s and 46 percent less since the 1960s. The analyses in this report examine oil spillage into U.S. waters.
7. AOPL Report on Shifts in Petroleum Transportation. January 4, 1011
8. API 579-1/ASME FFS-1, June 5, 2007 (API 579 Second Edition)
   API Recommended Practice 579 provides a general procedure for assessing fitness for service (FFS) for pipes and other process equipment such as pressure vessels and tanks. This standardized assessment procedure provides "technically sound consensus approaches that ensures the safety of plant personnel and the public while aging equipment continues to operate, and can be used to optimize maintenance and operation practices, maintain availability and enhance the long-term economic performance of plant equipment." API 579 can be purchased from API. The methodology requires a detailed understanding of the physical condition of the asset being evaluated.

9. Pipeline Inspection, Protection, Enforcement, and Safety (PIPES) Act of 2006; Public Law 109-468. Dec. 29, 2006
   The 109th Congress passed the PIPES Act of 2006 to amend title 49, United States Code, to provide for enhanced safety and environmental protection in pipeline transportation, to provide for enhanced reliability in the transportation of the Nation's energy products by pipeline, and for other purposes.

Referenced and Identified Organizations

American Gas Association (AGA)
The American Gas Association, founded in 1918, represents 199 local energy companies that deliver clean natural gas throughout the United States. There are more than 70 million residential, commercial, and industrial natural gas customers in the U.S., of which 91 percent — more than 65 million customers — receive their gas from AGA member utilities.

Association of Oil Pipe Lines (AOPL)
Established in 1947, AOPL is a nonprofit organization whose membership is comprised of owners and operators of liquid pipelines. AOPL members carry nearly 85 percent of the crude oil and refined petroleum products moved by pipelines in the United States. As a trade association, AOPL: represents common carrier crude and petroleum product pipelines, as well as carbon dioxide pipelines, before Congress, regulatory agencies, and the courts; provides coordination and leadership on key industry issues, including pipeline rates and services, pipeline safety initiatives, pipeline security, and the industry's Environmental and Safety Initiative; and, acts as an information clearinghouse for the public, media, and pipeline industry regarding liquid pipeline issues.

American Public Gas Association (APGA)
APGA is the not-for-profit nationwide association for publicly- and community-owned gas utilities. It represents over 700 members in 36 States. APGA advocates on issues that impact its members and the communities they serve. The Association also works to educate its members on best safety practices, legislative issues, effective business and operational strategies, and hosts conferences promoting the benefits of natural gas as a responsible and efficient energy source.

American Petroleum Institute (API)
API is the only national trade association that represents all aspects of America's oil and natural gas industry. API's more than 400 corporate members come from all segments of the industry. From the largest major oil company to the smallest of independents, they are producers, refiners, suppliers, pipeline operators and marine transporters, as well as service and supply companies that support all segments of the industry.

American Society of Mechanical Engineers (ASME)
ASME is a not-for-profit membership organization that enables collaboration, knowledge sharing, career enrichment, and skills development across all engineering disciplines. Founded in 1880 by a small group of leading industrialists, ASME has grown through the decades to include more than 120,000 members in over 150 countries worldwide.

Bureau of Land Management in the Department of the Interior (BLM)
BLM is an organization within the U. S. Department of the Interior. BLM has a multiple-use mission, set forth in the Federal Land Policy and Management Act of 1976. Relative to pipelines, BLM manages Federal onshore oil, gas, and coal operations that make significant contributions to the domestic energy supply.

Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)
The U. S. Department of the Interior's (DOI), Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), is the Federal agency responsible for overseeing the safe and environmentally responsible development of energy and mineral resources on the Outer Continental Shelf.

Common Ground Alliance (CGA) The CGA is a nonprofit organization dedicated to shared responsibility in damage prevention and promotion of the damage prevention Best Practices identified in the Common Ground Study Report. The purpose of the CGA is to ensure public safety, environmental protection, and the integrity of services by promoting effective damage prevention practices.

Community Assistance and Technical Services (CATS)
CATS is a PHMSA program initiative designed to advance public safety, environmental protection and pipeline reliability by facilitating clear communications among all pipeline stakeholders, including the public, the operators and government officials. An important aim of the CATS program is to reach out to all pipeline safety stakeholders. CATS managers are located within each PHMSA region.

Department of the Interior's (DOI)
The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future. DOI manages one-fifth of the Nation's landmass and 1.7 billion acres off its shores.

Department of Homeland Security (DHS)
DHS is responsible for the protection of "critical infrastructure", which is defined by Federal law as "systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters." Transportation pipelines are a part of our country's critical infrastructure.

Department of Energy (DOE)
DOE's mission is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. As a part of that mission, DOE works to ensure the reliability of our energy supplies.
Department of Transportation (USDOT)

The U.S. Department of Transportation's mission is to serve the United States by ensuring a fast, safe, efficient, accessible and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future. DOT was established by an act of Congress on October 15, 1966.

Environmental Protection Agency (EPA)
The mission of U. S. Environmental Protection Agency is to protect human health and the environment. EPA's purpose is to ensure that national efforts to reduce environmental risk are based on the best available scientific information and that Federal laws protecting human health and the environment are enforced fairly and effectively.

Federal Energy Regulatory Commission (FERC)
FERC is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines. FERC's responsibilities include but are not limited to: regulating the transmission and sale of natural gas for resale in interstate commerce; regulating the transportation of oil by pipeline in interstate commerce; approving the siting and abandonment of interstate natural gas pipelines and storage facilities; and, ensuring the safe operation and reliability of proposed and operating LNG terminals.

International Association of Fire Chiefs (IAFC)
The mission of the IAFC is to provide leadership to current and future career, volunteer, fire-rescue and EMS chiefs, chief fire officers, company officers, and managers of emergency service organizations throughout the international community through vision, information, education, services, and representation to enhance their professionalism and capabilities.

International Association of Fire Fighters (IAFF)
The IAFF represents more than 298,000 full-time professional fire fighters and paramedics who protect 85 percent of the Nation's population. More than 3,200 affiliates and their members protect communities in every State in the United States and in Canada. In addition to city and county fire fighters and emergency medical personnel, the IAFF represents State employees, Federal workers, and fire and emergency medical workers employed at certain industrial facilities.

Interstate Natural Gas Association of America (INGAA)
INGAA is the North American association representing interstate and interprovincial natural gas

pipeline companies, and speaks for the companies that own and operate those lines. INGAA's website includes information on INGAA activities as well as the natural gas pipeline industry.

National Association of Pipeline Safety Representatives (NAPSR)
NAPSR is a non-profit organization of State gas pipeline safety directors, managers, inspectors and technical personnel who serve to enhance pipeline safety. NAPSR was founded on December 2, 1982.

National Association of Regulatory Utility Commissioners (NARUC)
NARUC is a non-profit organization founded in 1889. Its members include the governmental agencies that are engaged in the regulation of utilities and carriers in the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands. NARUC's member agencies regulate the activities of telecommunications, energy, and water utilities. NARUC members are obligated to ensure the establishment and maintenance of such energy utility services as may be required by public convenience and necessity, and to ensure that such services are provided at rates and conditions that are just, reasonable and nondiscriminatory for all consumers.

National Association of State Fire Marshals (NASFM)
NASFM represents the most senior fire official of each of the 50 United States and District of Columbia. State fire marshals' responsibilities vary from State to State, but marshals tend to be responsible for fire safety code adoption and enforcement, fire and arson investigation, fire incident data reporting and analysis, public education and advising governors and State legislatures on fire protection. Some State Fire Marshals are responsible for fire fighter training, hazardous materials incident responses, wild land fires and the regulation of natural gas and other pipelines.

National Energy Board of Canada (NEB)
The National Energy Board (NEB) is an independent Federal agency established in 1959 by the Parliament of Canada to regulate international and interprovincial aspects of the oil, gas, and electric utility industries. The purpose of the NEB is to regulate pipelines, energy development, and trade in the Canadian public interest. These principles guide NEB staff to carry out and interpret the organization's regulatory responsibilities. The NEB is accountable to Parliament through the Minister of Natural Resources Canada.

National Propane Gas Association (NPGA)
NPGA is the national trade association representing the propane industry. Its membership includes small businesses and large corporations engaged in the retail marketing of propane gas and appliances, producers and wholesalers of propane equipment, manufacturers and distributors of propane gas appliances and equipment, fabricators of propane gas cylinders and tanks, and propane transporters.

Natural Resources Defense Council (NRDC)
NRDC is an environmental action group with 1.3 million members. It is a not-for-profit, tax-exempt, membership organization. Its stated mission is "To safeguard the Earth: its people, its plants and animals and the natural systems on which all life depends."

National Transportation Safety Board (NTSB)
NTSB is an independent Federal agency charged by Congress with investigating significant accidents in all modes of transportation -- pipeline, aviation, railroad, highway, and marine. NTSB issues safety recommendations are aimed at preventing future accidents.

Office of Information and Regulatory Affairs (OIRA)
The Office of Information and Regulatory Affairs (OIRA) is located within the U. S. Office of Management and Budget and was created by Congress with the enactment of the Paperwork Reduction Act of 1980 (PRA). OIRA carries out several important functions, including reviewing Federal regulations, reducing paperwork burdens, and overseeing policies relating to privacy, information quality, and statistical programs.

Office of Management and Budget (OMB)
The OMB is within the Executive Branch of the U. S. Government. The management side of OMB oversees and coordinates the Federal procurement policy, performance and personnel management, information technology (e-Government) and financial management. In this capacity, OMB oversees agency management of programs and resources to achieve legislative goals and Administration policy.

Office of Pipeline Safety (OPS)
OPS is the PHMSA office that is responsible for regulating the safety of design, construction, testing, operation, maintenance, and emergency response of U.S. oil and natural gas pipeline facilities.

Pipeline and Hazardous Materials Safety Administration (PHMSA)
PHMSA is one of 10 agencies within the U.S. Department of Transportation. Through PHMSA, DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the Nation's pipeline transportation system and the shipments of hazardous materials by all transportation modes, including the Nation's pipelines. PHMSA's Administrator is appointed by the President and is the agency's chief executive, providing direction to PHMSA employees within the agency's Washington, DC Headquarters and five regional offices.

Pipelines and Informed Planning Alliance (PIPA)
PIPA is a cooperative stakeholder coalition led by PHMSA to combat a trend of increasing risks due to encroachment on transmission pipeline rights-of-way. PIPA's goal is to help communities understand transmission pipeline risks and make more informed decisions about land use planning and development in the vicinity of transmission pipelines. PIPA issued a

report in December 2010 that recommends practices for specific stakeholder groups to reduce the risks that result from the growth of communities and changes in land use near pipelines. The PIPA Report and recommended practices can be found online.

Pipeline Performance Tracking System (PPTS), American Petroleum Institute

The PPTS is a component of the oil pipeline industry's Environmental and Safety Initiative, a multi-discipline approach to understanding and improving industry performance. The availability of more detailed data is crucial to that objective. There are currently more than 50 operators participating, representing about three-quarters of the oil pipeline mileage in the U.S. Participants report on all operated facilities, whether under the regulatory oversight of the U.S. Department of Transportation's Office of Pipeline Safety or not.

Plastic Pipe Database Committee (PPDC)

The PPDC is a joint government/industry committee to develop a database of plastic pipe and fitting failures that occurred in the gas industry. The PPDC experts review data on plastic pipe failures submitted by participating distribution systems to look for trends that may indicate whether any type of plastic or fitting is failing prematurely. The PPDC's efforts have resulted in several advisory bulletins from PHMSA notifying utilities to be alert for problems with certain plastic piping components

Pipeline Research Council International (PRCI)

PRCI is a community of the pipeline companies, and the vendors, service providers, equipment manufacturers, and other organizations supporting the pipeline industry. Formed in 1952, PRCI is dedicated to assuring the maximum efficiency of research development and deployment through a highly-leveraged funding model of member and external funding, information sharing, cooperative project development, and the broad dissemination and application of its research results.

Pipeline Safety Trust (PST)

The Pipeline Safety Trust promotes fuel transportation safety through education and advocacy, by increasing access to information, and by building partnerships with residents, safety advocates, government, and industry, that result in safer communities and a healthier environment.

U.S. Coast Guard (USCG)

The U.S. Coast Guard is one of the five armed forces of the United States and the only military organization within the Department of Homeland Security. A part of the Coast Guard's mission is realized through its Marine Environmental Protection program, which develops and enforces regulations to avert the introduction of invasive species into the maritime environment, stop unauthorized ocean dumping, and prevent oil and chemical spills. This program is complemented by the Marine Safety program's pollution prevention activities.

Other Selected References and Links

AGA Response to PHMSA Request for Information. Dave McCurdy, American Gas Association, April 10, 2011
In his letter regarding "AGA Response to PHMSA Request for Information", Dave McCurdy, AGA President & CEO, notes that the "information seeks to place pipeline safety data in a context that explains how operators apply integrity management principles in existing regulations and standards to operate what is the safest energy transportation system in America." He urges PHMSA to establish a data analysis group comprising all pipeline safety stakeholders "because no single entity possesses the perspective needed to objectively analyze the performance of the diverse pipeline safety infrastructure."

API Recommended Practice 1162, "Public Awareness Programs for Pipeline Operators"
API RP 1162 was developed through the collaborative efforts of pipeline industry representatives, Federal and State pipeline safety regulators, and the public. This industry consensus standard provides guidance and recommendations to pipeline operators for the development and implementation of enhanced public awareness programs. It addresses various elements of such programs, including the intended audiences, the kinds of information to be communicated, frequencies and methodologies for communicating the information, and evaluation of the programs for effectiveness. A nonprintable electronic copy of API RP 1162 may be viewed and downloaded.

Distribution Integrity Management Program (DIMP)
The PHMSA published the final rule establishing integrity management requirements for gas distribution pipeline systems on December 4, 2009 (74 FR 63906). The effective date of the rule is February 12, 2010. Operators had until August 2, 2011 to write and implement their program.

INGAA Foundation Report: Securing Our Future: Developing the Next Workforce
The natural gas transmission industry faces a difficult challenge in maintaining an adequate technical workforce today and throughout the next decade. This study assesses the risks to the industry's workforce and knowledge assets resulting from the present level of internal company activities along with external factors. The analysis is based on data gathered from executives, managers, operations, and human resource professionals within the natural gas transmission industry and secondary data sources. Recommended strategies are given for the INGAA Foundation and member companies to follow along with short-, medium- and long-term actions necessary to meet the workforce challenges.

INGAA Foundation Report: Critical Skills Forecast For the Natural Gas Transmission Industry
This report takes an in-depth look into the positions and functions required in the industry. By identifying positions, skills, and knowledge that may be in short supply and critical functions in the design, construction, operation and maintenance of pipelines, this study locates the largest

risk "intersections" of workforce and tasks -- and gives the industry a place to focus efforts to enhance skill development methods and materials for these vital positions.

PHMSA Stakeholder Communication Website
PHMSA's Stakeholder Communications website provides public access to a wealth of information regarding pipeline transportation. From pipeline incident and mileage statistics to damage prevention information, users will find useful information that to help ensure pipeline safety in their communities.

National Pipeline Mapping System (NPMS)
The National Pipeline Mapping System is a geographic information system (GIS) that consists of geospatial data, attribute data, public contact information, and metadata pertaining to the interstate and intrastate hazardous liquid trunk lines and hazardous liquid low-stress lines as well as gas transmission pipelines, liquefied natural gas (LNG) plants, and hazardous liquid breakout tanks jurisdictional to PHMSA.

NTSB Investigations
The National Transportation Safety Board (NTSB) is charged by Congress with determining the probable cause of transportation accidents, promoting transportation safety, and assisting victims of transportation accidents and their families. NTSB investigates only major pipeline accidents. As a result of its investigations the NTSB identifies probable causes and issues recommendations to any operator or regulator involved in the incident. Current investigations can be found on the website.

Oil Oozes through Your Life. New York Times, Stephanie Clifford, June 25, 2011
This article discusses the uses and transportation of petroleum products.

State Damage Prevention Program Characterization (SDPPC)
The SDPPC is an effort initiated by PHMSA to assess the extent to which each State is taking steps to incorporate the nine elements of effective damage prevention programs into the State's damage prevention program. The nine elements were cited by Congress in the Pipeline Inspection, Protection, Enforcement, and Safety (PIPES) Act of 2006. Working with State pipeline safety program managers and one-call centers, PHMSA sought to gain a better understanding of the successes and challenges existing in State damage prevention programs, where States need improvement, and where PHMSA should focus it's aid.

Title 49 of the Code of Federal Regulations (CFR)
Federal regulations are officially codified in the Code of Federal Regulations (CFR). Title 49 covers Transportation. The current pipeline safety regulations are codified under Title 49, Chapter 1, Subchapter D, and Parts 186 through 199.