U.S. DOT
Pipeline and Hazardous Materials
Safety Administration

Distribution Integrity Management Systems

Monday, March 14, 2016
SGA DIMPOLOGY 101 Session
Chris McLaren

811 Know what's below. Call before you dig.

Today's Topics

- Management Systems
- History of Distribution Integrity Management Systems
- Drivers for development of DIMP
- Distribution incidents pre/post DIMP and what are the trends

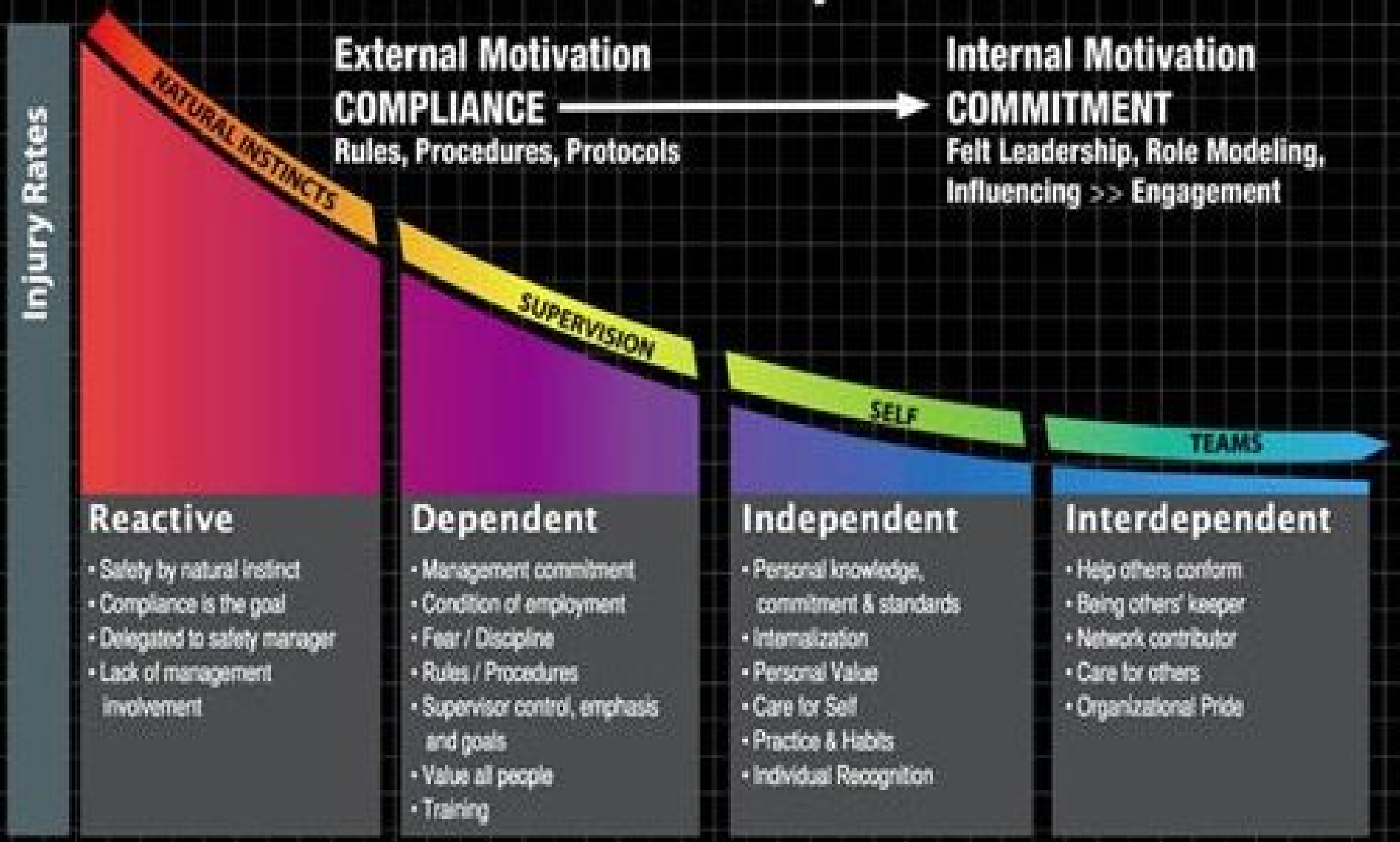
Performance Based Regulations

- Historically, regulation have been prescriptive providing tasks that must be completed to meet established minimum safety requirements
- Performance based regulations provide a framework that an operator tailors to meet their unique operating environment to meet objectives
- The program is expected to mature and be continuously improved and worked on
- Prescription is added to performance based IM regulations as time goes by to address inadequacies identified in inspections and accident investigations

Management Systems

- A framework of policies, processes and procedures used to ensure that an organization can fulfill all tasks required to achieve its objectives.
- Include accountability (an assignment of personal responsibility) and a schedule for activities to be completed, as well as auditing tools to implement corrective actions, creating an upward spiral of continuous improvement.
- A simplified model is the P-D-C-A "Plan, Do, Check, Act“ cycle of continuous improvement.
- A-D-D-I-E Model is another way to describe a continuous improvement cycle –
  - Analyze, Design, Develop, Implement, & Evaluate

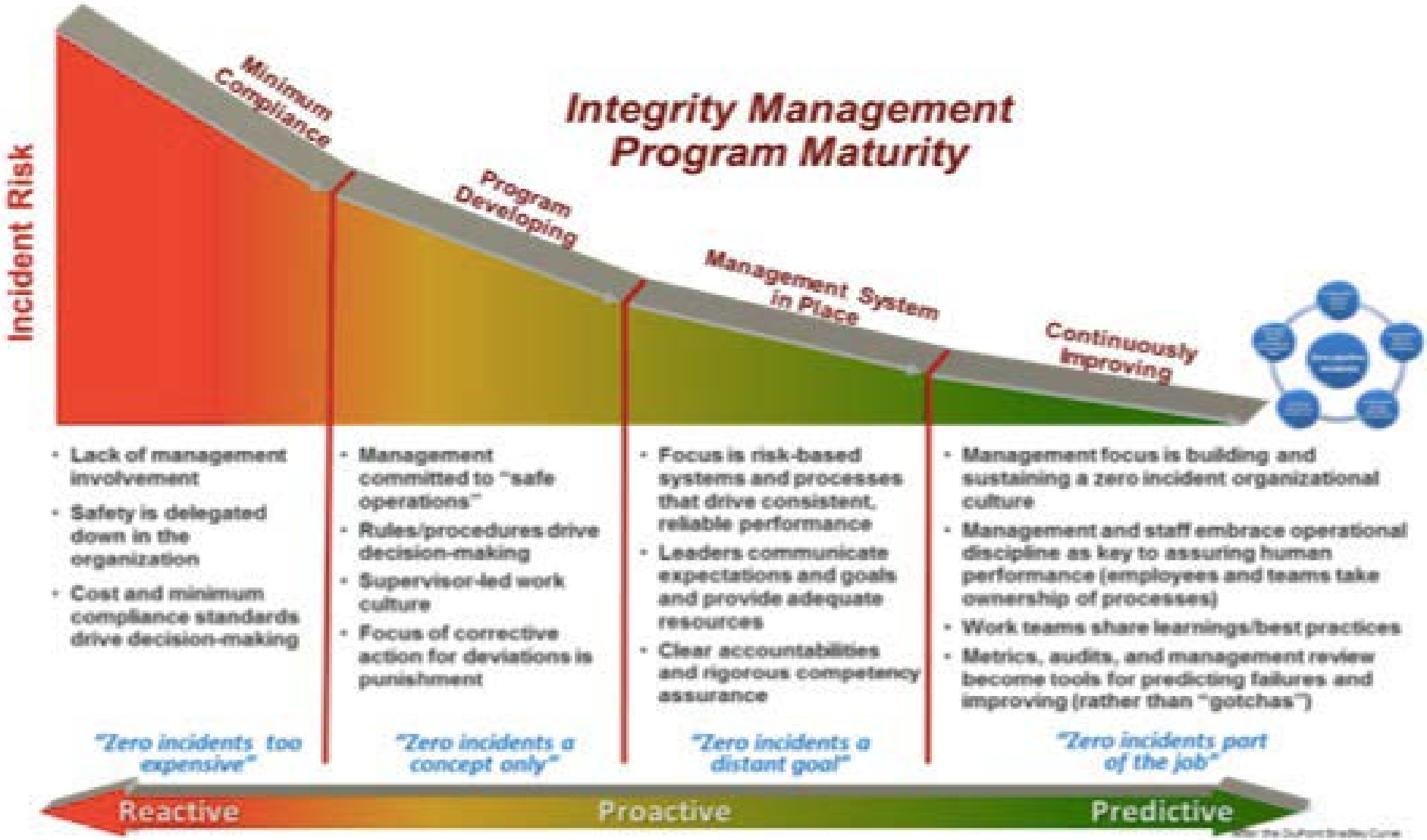
DuPont Bradley Curve



"I follow the rules because I have to"

"I follow the rules because I want to"

Assessing Maturity



Management Systems

- PHMSA has worked on Pipeline Risk Management Systems since 1990's
- In the 1990's, PHMSA completed the Risk Management Demonstration & Systems Integrity Projects
- 2000's - Integrity Management (IM) Regulations promulgated for Hazardous Liquid and Gas Transmission pipelines
- 2010's – IM Regulations promulgated for Gas Distribution and Hazardous Liquid Gathering pipelines
- PHMSA has continuously evaluated the implementation of the IM regulations and sought to clarify and improve them thru Rulemaking and Stakeholder Communication

Regulatory Enhancements

- In the Late 2000's, PHMSA began developing regulatory improvements based on IM inspection experience and enforcement as well as technology improvements (e.g., GIS, Data Models, Risk Models, Pipeline Inspection tools).
- Advanced Notice of Proposed Rulemaking (ANPRM)
  - 2010 – Hazardous Liquid IM ANPRM
  - 2011 – Gas Gathering and Transmission IM ANPRM
- Notice of Proposed Rulemaking (NPRM) was issued for Hazardous Liquid IM on October 1, 2015. The comment period for this NPRM ends January 8, 2016
- The issuance of the NPRM for Gas Gathering and Transmission IM is projected for Spring, 2016 http://www.transportation.gov/regulations/report-on-significant-rulemakings

Management Systems are Effective

- Management Systems are an effective in reducing risks in many Industries – pipeline, nuclear, aircraft, processing, etc.
- PHMSA requires IM systems and has discussed the use of Quality and Safety Management Systems for pipelines.
- Integrity Management is a continuous improvement regulation for Operators and Regulators have been evaluating the Rule's performance and are acting within the rulemaking process
- IM Regulations have been in the process of being revised for several years, and it will take a few more years before current changes are implemented through the negotiated rulemaking process.
- PHMSA will continue to monitor the performance of operators and the pipeline industry to identify areas for improvement

Moving from Compliance to Choice

- Our world must move from a “checkbox” mentality to understanding the health of our pipeline systems by analyzing and understanding data and information and promptly acting to reduce risks
- Safety culture is a term commonly used as a mechanism to change operator behavior from minimum compliance standards towards choosing to do the “right thing” for the safe operation and integrity of the pipeline system

DIMP Home

PHMSA
U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Pipeline Technical Resources

Return to Pipeline Safety Community

Home | Alternative MAOP | Cased Crossings and GWUT | Class Location | CRM | DIMP | Gas IM

HL IM | High Volume EFV | Low Strength Pipe | OQ | Pipeline Construction | R&D | LNG Facility Siting | Public Meetings

Gas Distribution Integrity Management Program

DIMP Menu

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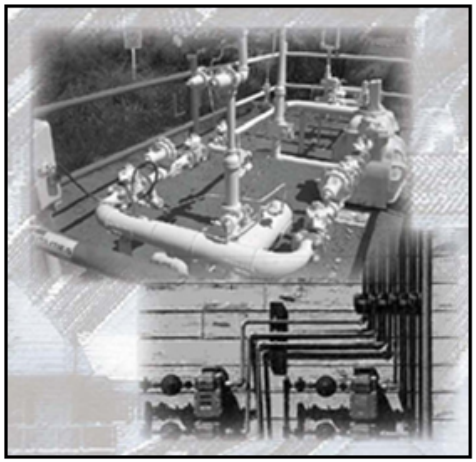


The Pipeline and Hazardous Materials Safety Administration (PHMSA) published the final rule establishing integrity management requirements for gas distribution pipeline systems on December 4, 2009 (74 FR 63906). The effective date of the rule is February 12, 2010. Operators are given until August 2, 2011 to write and implement their program.

PHMSA previously implemented integrity management regulations for hazardous liquid and gas transmission pipelines. These regulations aim to assure pipeline integrity and improve the already admirable safety record for the transportation of energy products. Congress and other stakeholders expressed interest in understanding the nature of similarly focused requirements for gas distribution pipelines. Significant differences in system design and local conditions affecting distribution pipeline safety preclude applying the same tools and management practices as were used for transmission pipeline systems. Therefore, PHMSA took a slightly different approach for distribution integrity management, following a joint effort involving PHMSA, the gas distribution industry, representatives of the public, and the National Association of Pipeline Safety Representatives to explore potential approaches.

http://primis.phmsa.dot.gov/dimp/index.htm

Serious incidents occur much more frequently on distribution pipelines

- Significant incidents (those involving fatalities, injuries requiring hospitalization, or property damage exceeding reporting thresholds) occur on distribution pipeline systems at an annual rate consistent with those on other pipelines (e.g., transmission).
- Serious incidents (those involving fatalities or injuries) occur much more frequently on distribution pipelines. During the period 1991 through 2010, six times more serious incidents occurred on gas distribution pipelines than occurred on gas transmission pipelines.
- Distribution pipelines experienced nearly nine times more serious incidents than hazardous liquid pipelines during this same period.

Should DIMP have been First?

- Should PHMSA have started with Distribution IM before Transmission IM?
- Lessons learned from Transmission IM were applied in the development of the DIMP regulation
- Accidents and incidents spur action by Congress manifested in the pipeline safety act laws
- PHMSA must act to codify congressional requirements into regulation

American Gas Foundation (AGF) Study

- It was necessary to determine how to apply integrity management principles to gas distribution pipelines
- The gas distribution pipeline industry took the lead in addressing this question. AGF sponsored a study in 2004 to provide independent technical insight into natural gas distribution system safety performance and issues that affect it. The study involved:
  - A detailed analysis of the natural gas distribution industry's safety performance;
  - An overview of current regulations and industry practices that address threats to the natural gas distribution infrastructure;
  - A description of the characteristics that differentiate natural gas transmission pipelines from distribution pipelines; and
  - Identification of industry and government initiatives that were already in place to assure continual improvement in regulation and practices affecting distribution integrity.

The Main Findings of the AGF study

- Of the 1,579 incidents for gas distribution during this period, 601 were “serious incidents” - those involving a fatality or an injury requiring hospitalization.
- There was a statistically determined downward trend in the incidence of serious incidents from 1990 through 2002. The number of such incidents each year decreased by approximately 40% over the period studied.
- Outside force damage to the infrastructure was the major cause (47%) of serious incidents during the study period.
- The predominant component of outside force damage was third party damage, (typically excavation damage inflicted on distribution facilities by a third party not related to the gas system operator or its surrogate), contributing nearly 35% to the total number of serious incidents.
- Corrosion, construction/operating error, and incidents accidentally caused by the operator each accounted for less than 10% of the serious incidents.
- 46% of serious incidents occurred on distribution mains, and 34% occurred on service lines and meter sets (combined). (Data for the remaining 20% did not include information from which to determine the portion of the pipeline system in which they occurred).
- Normalized per 100,000 miles over the study period, the average fatality and injury counts for gas distribution pipelines were essentially the same as the counts for gas transmission prior to the implementation of integrity management for transmission pipelines.

DOT Re-assessment of Reported Incidents

- PHMSA revised the form in 2004 to account for seven broad categories and 25 sub-categories of incident cause.
- PHMSA contracted with Allegro Energy Consulting to re-classify distribution pipeline incidents that had been reported from 1999 to 2003, the five years preceding revision of the incident report form. In addition to the reported "cause," each incident report included a narrative summary of the event. Allegro reviewed those narratives, and other information included in the reports, to re-classify them into the new, more-detailed cause categories. Allegro's work confirmed that consideration of the reported causes, alone, did not provide a useful understanding of the hazards that result in distribution pipeline incidents. This work was published in a report entitled *Safety Incidents on Natural Gas Distribution Systems: Understanding the Hazards* in April 2005.

Congressional Interest and Direction

- The DOT Inspector General (IG) had also concluded that integrity management should apply to distribution pipelines, in a report also issued in 2004.
- Subsequently, PHMSA was directed to report to the House and Senate Committees on Appropriations by May 1, 2005, detailing the extent to which IMP elements may be applied to the natural gas distribution pipeline industry in order to enhance distribution system safety.
- PHMSA submitted its report to Congress on June 20, 2005.

DIMP Phase 1 Report - IM for Distribution Pipelines (2005)

- Four multi-stakeholder work/study groups were established under the oversight of an Executive Steering Committee with representatives from PHMSA, industry, state regulators, state Fire Marshalls, and the public.
- The work/study groups held a series of meetings, separately and together, over a period of months to collect and analyze available information and to reach findings and conclusions to inform future work by PHMSA.
- The groups concluded that current pipeline safety regulations (49 CFR Part 192) do not now convey the concept of a risk-based distribution integrity management process and that it would be appropriate to modify the regulations to do so.

DIMP Phase 1 Conclusions

- The groups concluded that the most useful option for implementing distribution integrity management requirements was a high-level, flexible federal regulation in conjunction with implementation guidance, a nation-wide education program expected to be conducted as part of implementing 3-digit dialing for One-Call programs, and continuing research and development.
- The significant diversity among gas distribution pipeline operators and their pipeline systems also makes it impractical to establish prescriptive requirements that would be appropriate for all circumstances

Pipeline Inspection, Enforcement, and Protection Act of 2006

- Congress considered the DOT IG recommendations and PHMSA's report to Congress, both discussed above, and the results of the Phase 1 work as part of reauthorizing DOT's pipeline safety program in 2006.
- Section 9 of the PIPES Act required DOT to publish minimum standards (i.e., regulations) for integrity management programs for distribution pipelines.
- DOT could require operators of distribution pipelines to continually identify and assess risks on their distribution lines, to remediate conditions that present a potential threat to line integrity, and to monitor program effectiveness.

Developing Guidance Material

- PHMSA and NAPSR jointly petitioned the GPTC to develop and publish guidance material. GPTC has been publishing guidance (The GUIDE) to help gas pipeline operators comply with federal pipeline safety requirements in 49 CFR Parts 191 and 192 since 1970.
- PHMSA contracted with APGA's SIF to produce jointly a guidance product for these small operators. The result – Simple, Handy, Risk-based Integrity Management Plan (SHRIMP) – is a computer-based process to aid small distribution operators. SHRIMP is based on the GPTC guide, but automates many of the decisions that an operator would make in implementing the guide based on the context of a small, simple pipeline system.

Rulemaking

- PHMSA published its proposed rule for distribution pipeline integrity management on June 25, 2008.
- PHMSA agreed with the Phase 1 conclusion that the diversity among distribution pipeline systems made it impractical to establish prescriptive requirements.
- The proposed rule, as suggested by the Phase 1 conclusions, presented its requirements at a high-level, allowing a great degree of flexibility to distribution pipeline operators in how they designed their integrity management programs to satisfy those requirements.
- The final rule was published in the Federal Register on December 4, 2009. Distribution operators must develop and implement their integrity management plans by August 2, 2011.

EFVs and MFFRs

- Excess Flow Valves (EFV) - the final rule includes a requirement that distribution pipeline operators install an EFV on all new and replaced service lines serving single-family residences
- Mechanical Fitting Failure Reporting (MFFR) Requirements - the final rule includes a requirement that distribution pipeline operators report hazardous leaks involving a mechanical fitting.

National Drivers Continue to Place the Focus on Gas Distribution

- Vintage Pipe Materials
- US DOT Call to action
- Continued Incidents involving Cast Iron Mains
- DIMP
- Methane Emissions
- PHMSA Research and Development Activities

Vintage Pipelines

- The term “Vintage Pipelines” commonly refers to pipe installed prior to the 1970’s.
- Pipe making and construction practices that are no longer used, including some early variations of current practices, are termed historic. Vintage pipelines are those built using pipe or construction practices made with such historic practices.
- Different for Transmission and Distribution in some respects, but used across both.
- For Distribution Infrastructure - cast and wrought iron mains, certain vintages of plastic pipe and mechanical coupling installations, bare steel pipe without adequate corrosion control, and copper piping.

Cast and Wrought Iron Pipelines

- Cast and wrought iron pipelines are among the oldest energy pipelines constructed in the United States. Many of these pipelines were installed over 100 years ago and still deliver natural gas to homes and businesses today.
- However, the degrading nature of iron alloys, the age of the pipelines, and pipe joints design have greatly increased the risk involved with continued use of such pipelines.
- The Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 calls for DOT to conduct a state-by-state survey on the progress of cast iron pipeline replacement. For updates on the states' progress, contact information and incident and mileage data, the public should visit PHMSA's state pipeline profiles.

http://phmsa.dot.gov/pipeline/library/data-stats/state-pipeline-performance-metrics

Bare Steel Pipelines

- Uncoated steel pipelines are known as bare steel pipelines and while many of these pipelines have been taken out of service, some of these pipelines are still operating today.
- The age and lack of protective coating typically makes bare steel pipelines of higher risk as compared to some other pipelines and candidates for accelerated replacement programs.

Aging Pipelines

- Pipeline transportation is one of the safest and most cost-effective ways to transport natural gas and hazardous liquid products.
- As the United States continues to develop and place more demands on energy transportation, it becomes necessary to invest in upgrading its infrastructure, including aging pipelines.
- In 2011, following major natural gas pipeline incidents, DOT and PHMSA issued a Call to Action to accelerate the repair, rehabilitation, and replacement of the highest-risk pipeline infrastructure.
- Among other factors, pipeline age and material are significant risk indicators. Pipelines constructed of cast and wrought iron, as well as bare steel, are among those pipelines that pose the highest-risk.

US DOT Secretary Call to Action

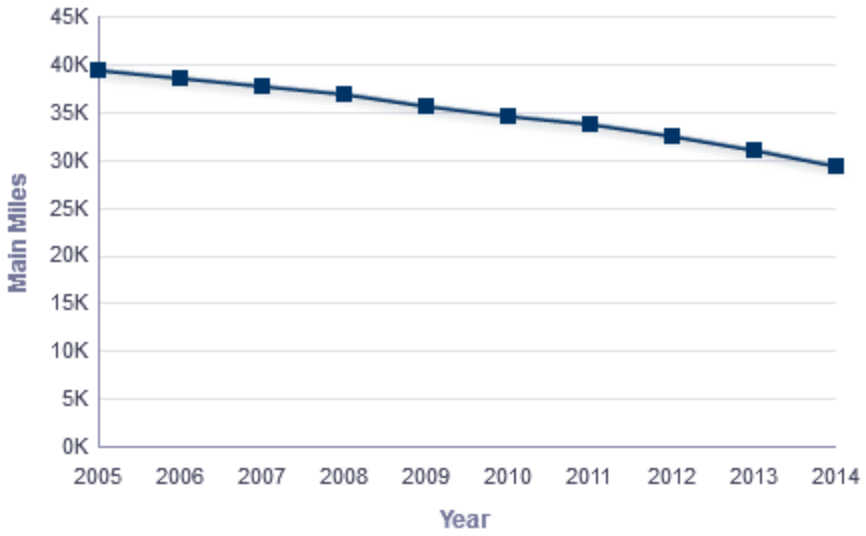
- In March 2011, former Secretary of Transportation Ray LaHood and PHMSA issued a Call to Action to engage all the state pipeline regulatory agencies, technical and subject matter experts, and pipeline operators in accelerating the repair, rehabilitation, and replacement of the highest-risk pipeline infrastructure.

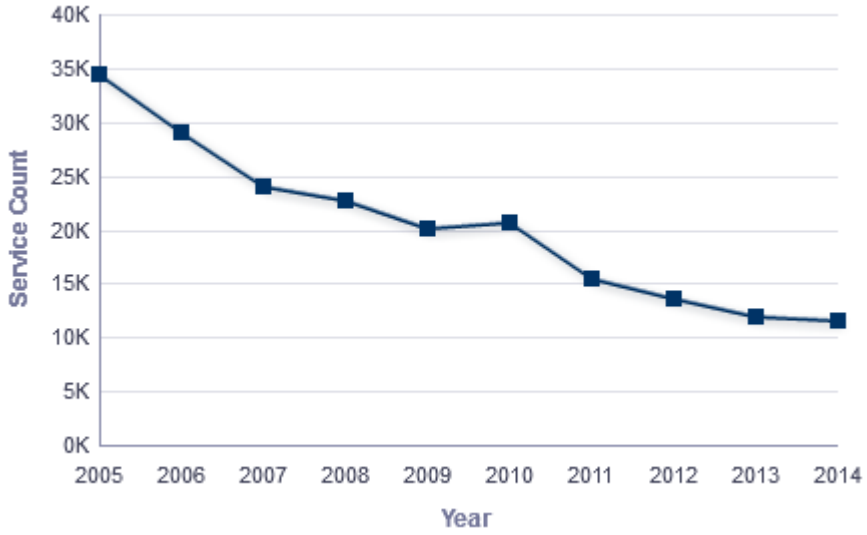
Call to Action Highlights

- Letters requesting for assistance with Cast Iron Replacement to Governors, State Regulators (NAPSR) & Commissioners (NARUC)
- Letters to Industry
- Letters to Technical, Safety, and Environmental Organizations
- Letters to Local and State Organizations
- Letter to Federal Energy Regulatory Commission (FERC)
- White Paper on State Replacement Programs
- Request for State Governors' Assistance with Cast Iron Replacement
- Call to Action - Action Plan

Progress in Modernization

- Gas Distribution Cast/Wrought Iron Main Miles and Service Count Trend
- More progress is needed in accelerating replacements





Progress in Modernization

- Pipeline Miles by Material - Gas Distribution

		2014	
System Type	**Pipe Material**	**Total Miles**	**% of Miles**
MAIN	STEEL	544,520.3	25.1%
	PLASTIC	689,344.1	31.8%
	OTHER MATERIALS	930.2	0.0%
	IRON	29,982.8	1.4%
	COPPER	19.9	0.0%
SERVICES	STEEL	233,335.4	10.8%
	PLASTIC	637,180.1	29.4%
	OTHER MATERIALS	19,750.7	0.9%
	IRON	152.3	0.0%
	COPPER	12,104.6	0.6%
Grand Total		**2,167,320.4**	**100.0%**

Distribution IM Impact

- The regulation requires distribution operators to develop and implement a distribution integrity management program with the following elements:
  - Knowledge
  - Identify Threats
  - Evaluate and Rank Risks
  - Identify and Implement Measures to Address Risks
  - Measure Performance, Monitor Results, and Evaluate Effectiveness
  - Periodically Evaluate and Improve Program
  - Report Results

Knowledge

- Data quality is a common concern, and an appropriate level of resource allocation is required;
  - Outdated, incomplete, obvious errors.
  - Outdated data systems difficult to use or sort.
  - Data cleanup and scrubbing is often required.
- Field data acquisition forms and internal IT processes to incorporate new information and correct inaccurate information may need to be modified.
- Procedures for identification and collection of additional and missing information must be included in DIMP to ensure consistent collection and processing.

Identify Existing and Potential Threats

§192.1007 What are the required elements of an integrity management plan? A written integrity management plan must contain procedures for developing and implementing the following elements:

(b) Identify threats. The operator must consider the following categories of threats to each gas distribution pipeline: Corrosion, natural forces, excavation damage, other outside force damage, material or welds, equipment failure, incorrect operations, and other concerns that could threaten the integrity of its pipeline. An operator must consider reasonably available information to identify existing and potential threats. Sources of data may include, but are not limited to, incident and leak history, corrosion control records, continuing surveillance records, patrolling records, maintenance history, and excavation damage experience.

PHMSA Safety Advisory Bulletins

- ADB–2012–05 was issued March 23, 2012
- The subject is Cast Iron Pipe (Supplementary Advisory Bulletin) to Address Continued Concerns Rising Out of Recent Cast Iron Incidents.
- This advisory bulletin reiterates two prior Alert Notices which remain relevant, urges 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, requests state agencies to consider enhancements to cast iron replacement plans and programs, and alerts owners and operators of the pipeline safety requirements for the investigation of failures.

Potential Threats

- Some Operators struggle with potential threats beyond existing threats that are important
  - Threats the Operator has not previously experienced (from industry or PHMSA information)
  - Threats from aging infrastructure and materials with identified performance issues may need to be considered existing threats depending on the materials in question and the operating environment
  - Threats that endangered facilities but have not resulted in a leak (e.g., exposed pipe, near misses).
  - Non-leak threats (overpressure, exposure)
  - Manufacturing and Construction Threats
  - Maintenance history

Consideration of Potential Threats

- Examples of potential threats commonly not being considered by operators:
  - Over pressurization events
  - Regulator malfunction or freeze-up
  - Cross-bores into sewer lines
  - Materials, Equipment, Practices, etc. with identified performance issues
  - Vehicular or Industrial activities
  - Incorrect maintenance procedures or faulty components
  - Rodents, plastic eating bugs, tree roots
  - Other potential threats specific to the operator's unique operating environment

Evaluate and Rank Risks

- System subdivision for the evaluation and ranking of risks must be sufficient to appropriately analyze risk(s) present in the Operator's unique operating environment.
- Geographical segmentation may be appropriate when systems are separated by space or a specific, predominate threat exists (e.g., where flooding can be expected, earthquake prone area, uniform construction).
- However, materials or construction may be the predominate threat(s) in a region, and segmentation may need to be refined to accommodate different failure rates to adequately differentiate and identify significant potential and existing threats.

Identify and Implement Measures to Address Risks

- Replacement of Vintage Materials is a Priority to PHMSA, and acceleration in any established replacement programs is warranted
- Increased Leak Survey Frequency to identify emerging threats
- Establish replacement schedules to Repair or replace the problem materials or equipment.
- Monitor coupons & internal pipe conditions when cut (bell hole report)
- Correct cathodic protection deficiencies
- Evaluate gas supply inputs and take corrective action with supplier

Performance Measurement

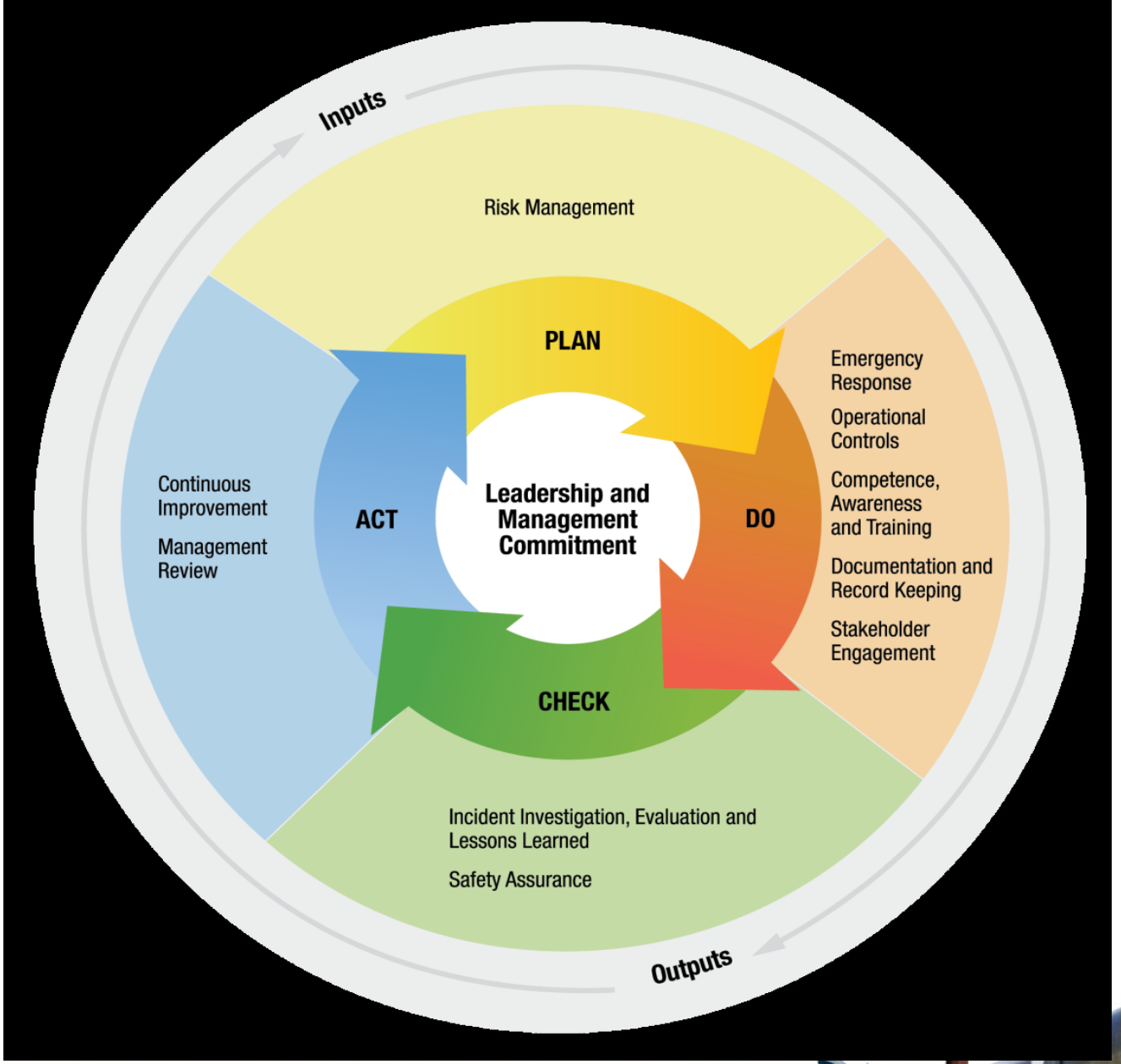
- A DIMP must include procedures for establishing baselines and monitoring Performance Measures required in 192.1007(e) –
  - Total number of leaks and the Number of hazardous leaks either eliminated or repaired categorized by cause
  - Number of hazardous leaks either eliminated or repaired categorized by material
  - Number of excavation damages and tickets
- Operators must develop and monitor performance measures from an established baseline to evaluate the effectiveness of its IM program.
- Each Activity Implemented to Reduce Risk must have a Performance Measure established to monitor its effectiveness

Periodic Evaluation and Improvement

- 192.1007(f) *Periodic Evaluation and Improvement.*
- An operator must re-evaluate threats and risks on its entire pipeline and consider the relevance of threats in one location to other areas.
- Each operator must determine the appropriate period for conducting complete program evaluations based on the complexity of its system and changes in factors affecting the risk of failure.
- An operator must conduct a complete program re-evaluation at least every five years.
- The operator must consider the results of the performance monitoring in these evaluations.

Plan, Do, Check, Act API 1173

Continuous Improvement is the intent and requirement of IM regulations



Form 24 – 1007(f) section

28	.1007 (f)	Did the periodic evaluation include the following: • Verification of general system information (e.g., contact information; form names; action schedules, etc.)? • New information acquired since the previous evaluation? • Review of threats and risks? • Was the risk model re-run? • Review of performance measures? • Review of measures to reduce risks? • Evaluation of the effectiveness of measures to reduce risks? • Modification of measures to reduce risks, if necessary?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Inspector Comments						

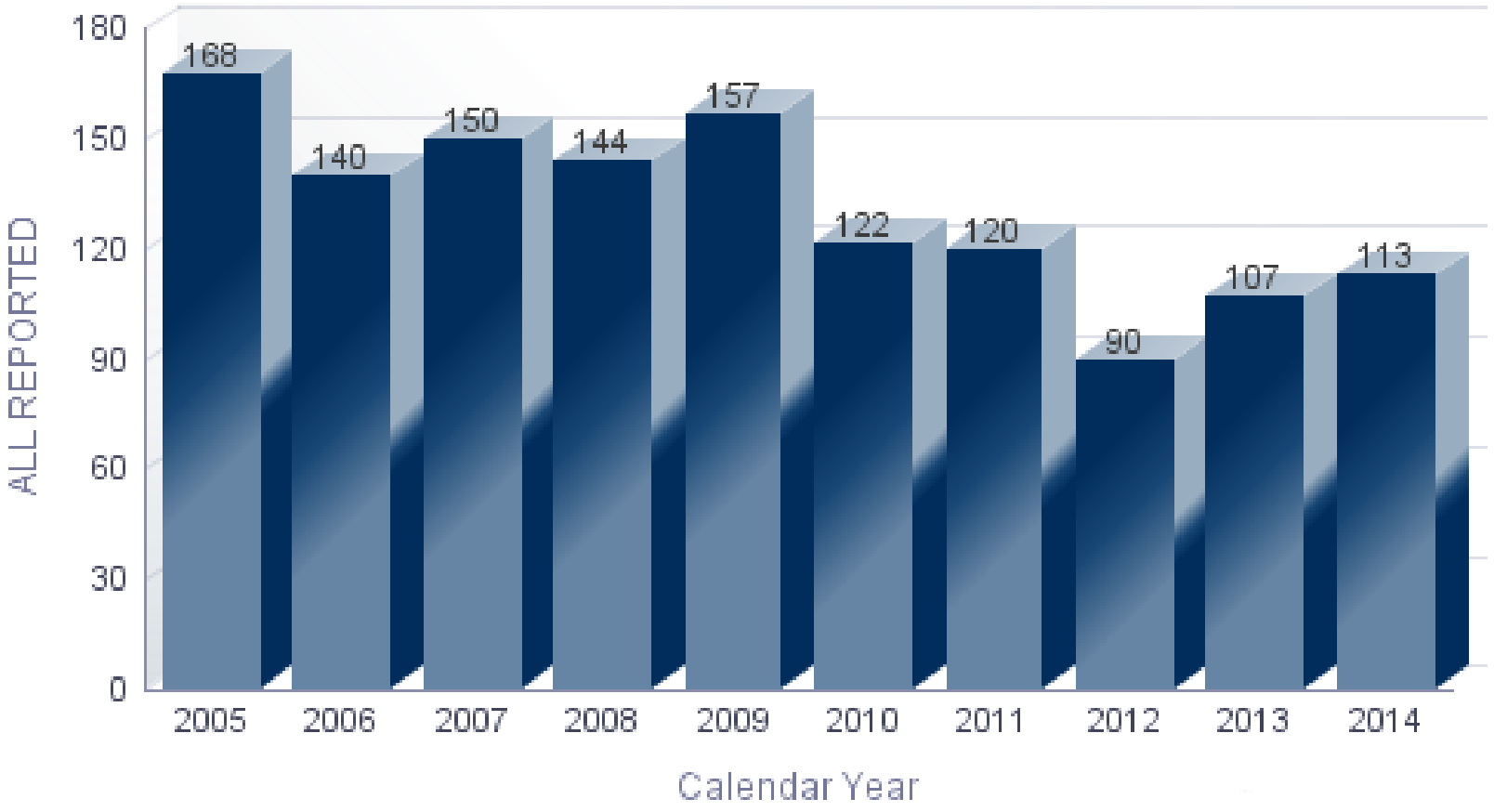
Form 24 – 1007(f) section

29	.1007 (e)	If any established performance measures indicated an increase in risk beyond an acceptable level (as established in the DIMP plan), did the operator implement new risk reduction measures along with their associated performance measures?	☐	☐	☐	☐
Inspector Comments						
30	.1007 (f)	If the periodic evaluation indicates that implemented measures to reduce risks are NOT effective, were risk reduction measures modified, deleted or added?	☐	☐	☐	☐
Inspector Comments						

Form 24 – 1007(f) section

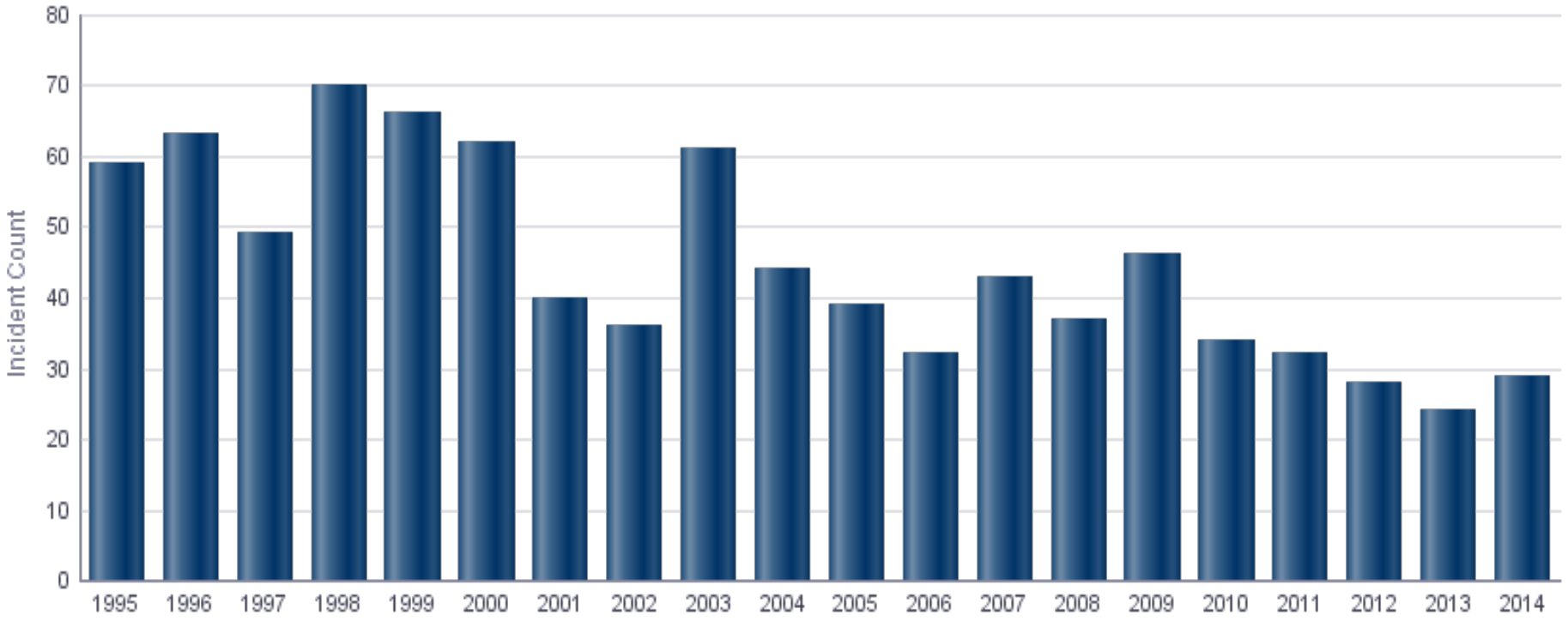
31	.1007 (f)	Did the periodic evaluation indicate that the selected performance measures are assessing the effectiveness of risk reduction measures? If not, were performance measures modified, deleted or added? (describe in Inspector comments)	☐	☐	☐	☐
Inspector Comments						
32	.1007 (f)	Did the operator follow its procedures in conducting periodic evaluation and program improvement?	☐	☐	☐	☐

Gas Distribution Incidents



Serious Incidents

All System Types show downward trend with slight rise in 2014

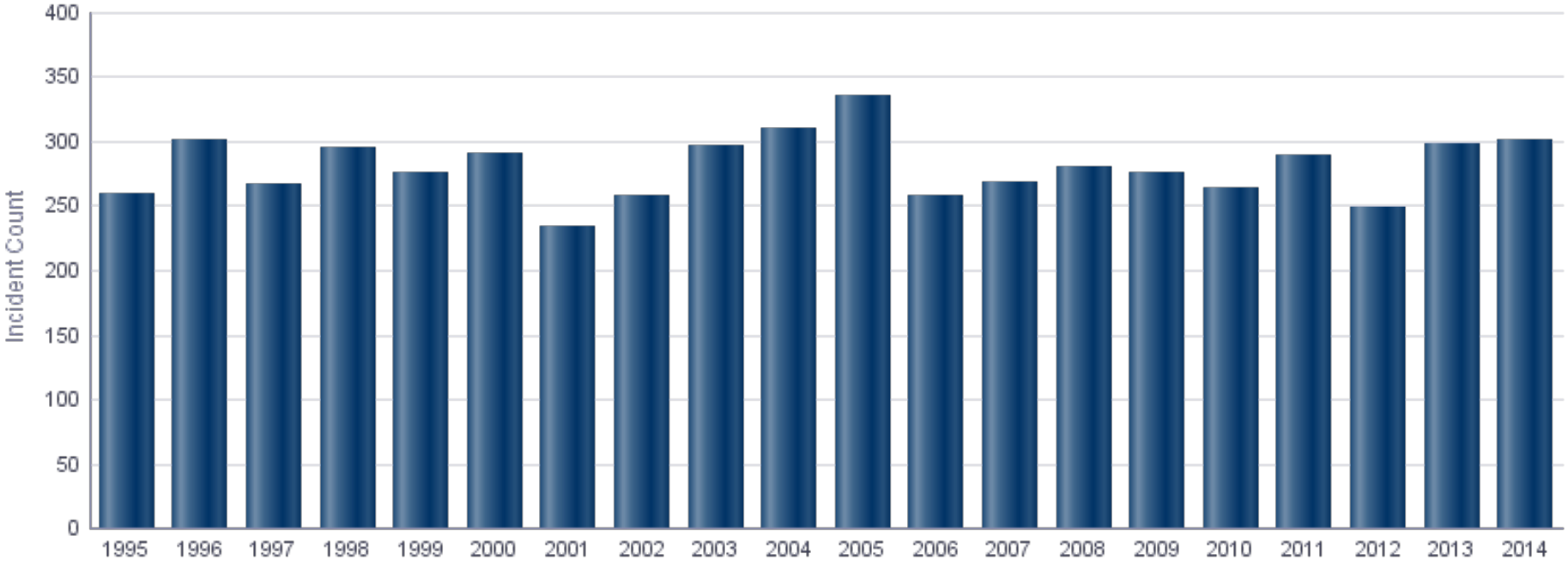


data as-of 2/2/2015

Serious – fatality or injury requiring in-patient hospitalization

Significant Incidents

All System Types seems to have plateaued



data as-of 2/2/2015

Significant includes Serious incidents as well as incidents costing $50,000 or more in total costs, measured in 1984 dollars; Highly volatile liquid (HVL) releases of 5 barrels or more; Non-HVL liquid releases of 50 barrels or more; or Liquid releases resulting in an unintentional fire or explosion

Significant Gas Transmission Incident Rates

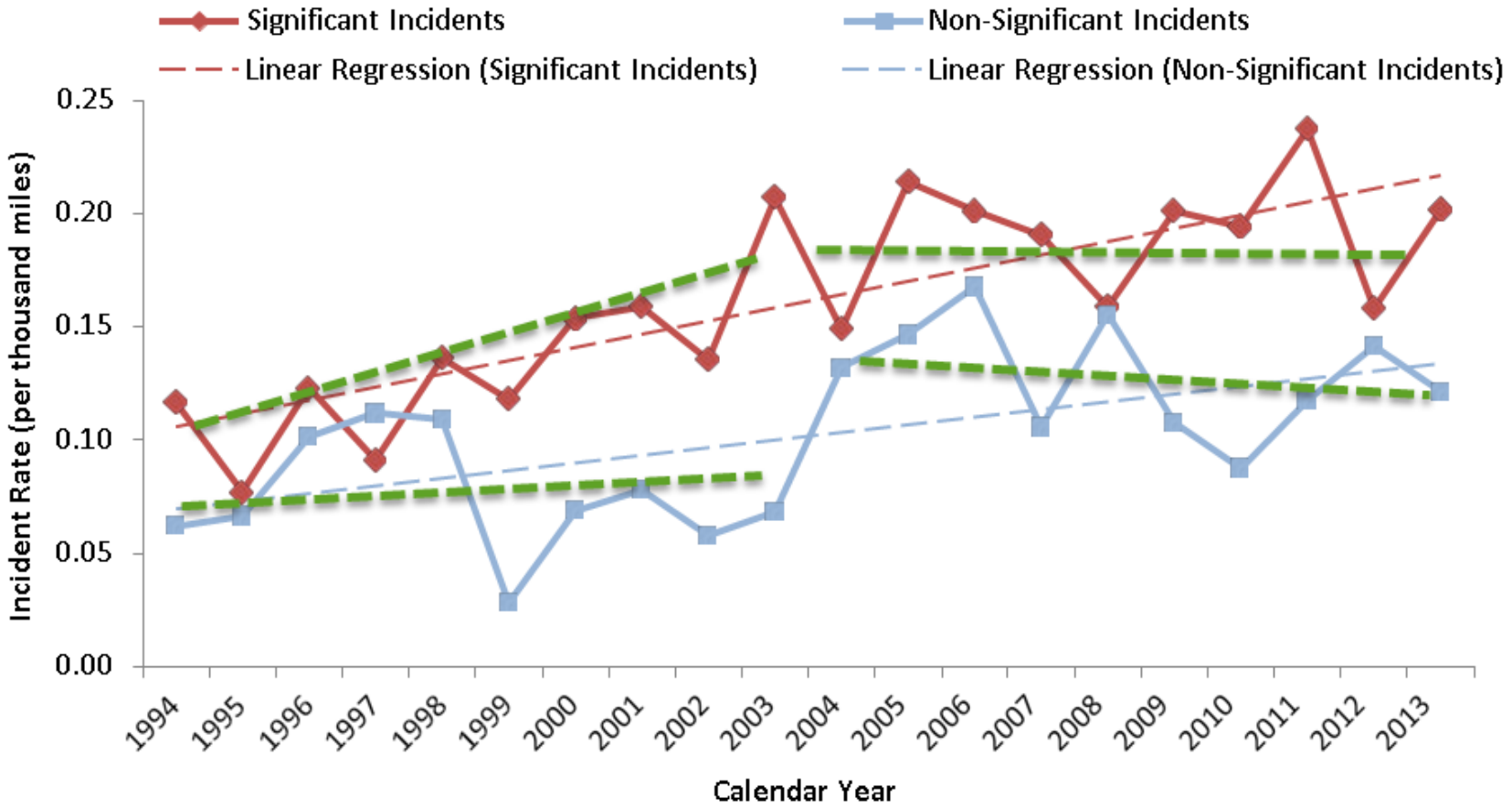
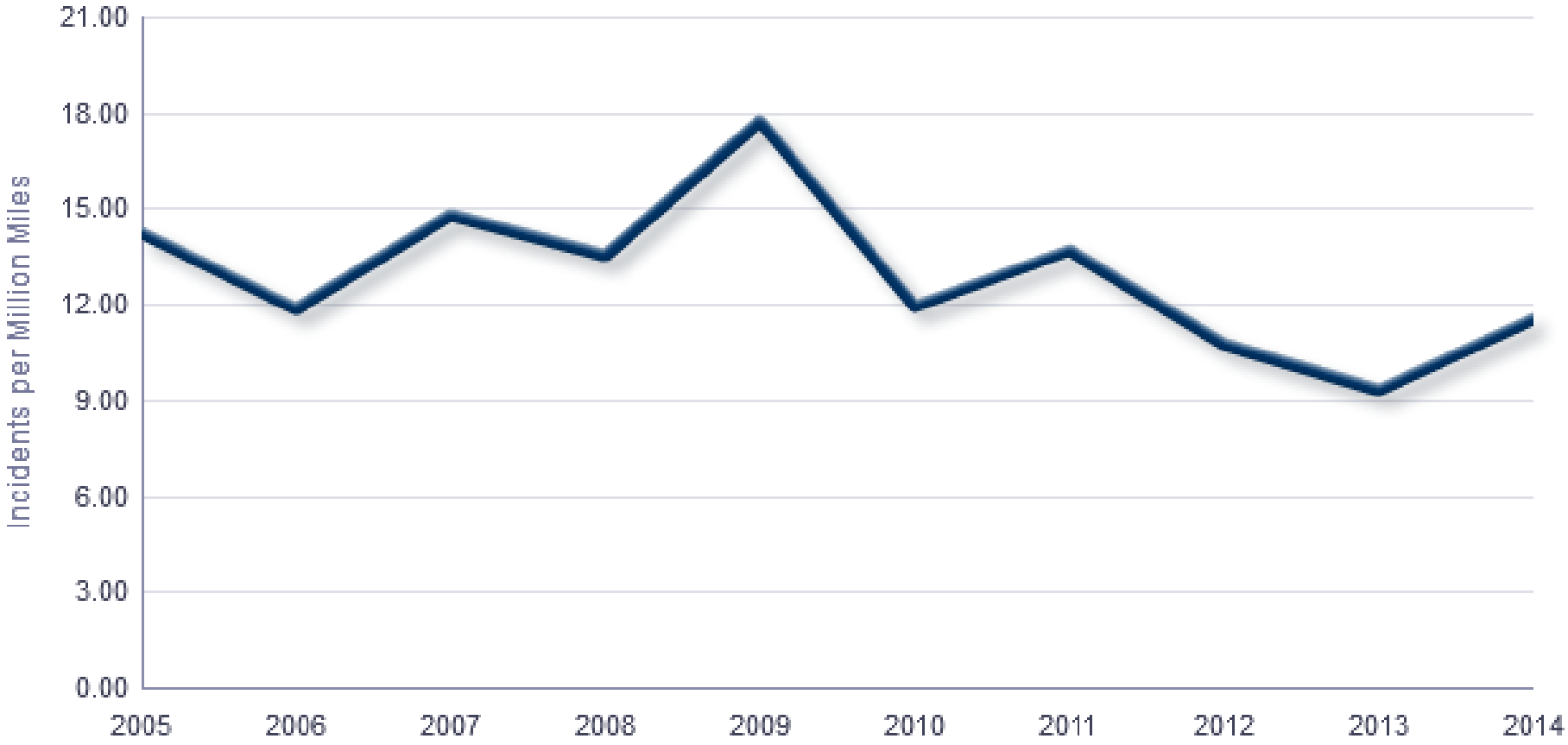


Figure 5. Incident rate (per 1,000 miles) for significant and non-significant incidents (1994–2012)

Gas Distribution Serious Incidents per Million Miles of Pipe

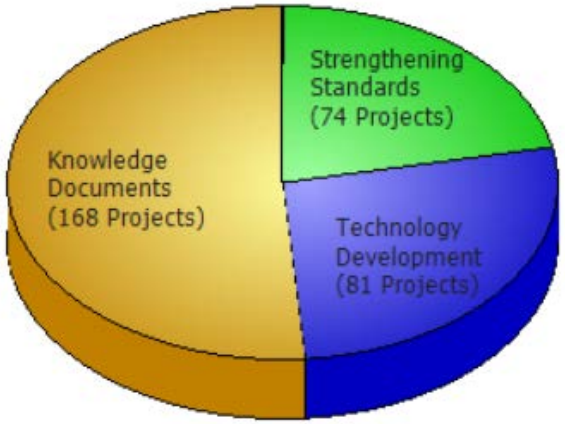


Summary of Gas Distribution Pipeline Performance

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Leaks eliminated/repaired	516,226	502,245	485,930	487,058	552,976	485,935	481,442	491,538	482,865	507,776
Hazardous Leaks eliminated/repaired						186,531	192,011	187,416	191,125	206,064
Leaks Scheduled for Repair at End of Year	103,084	93,466	91,968	92,208	123,966	121,111	115,685	114,860	105,655	115,126
Excavation Damages per 1000 Excavation tickets						3.8	3.7	3.5	3.1	3.0
Total Number of EFVs on Single-Family Residential Services Installed During Year						506,529	599,591	684,299	777,154	817,019
Estimated Number of EFVs in System at End of Year						6,360,647	7,039,335	7,655,563	8,498,973	9,361,870

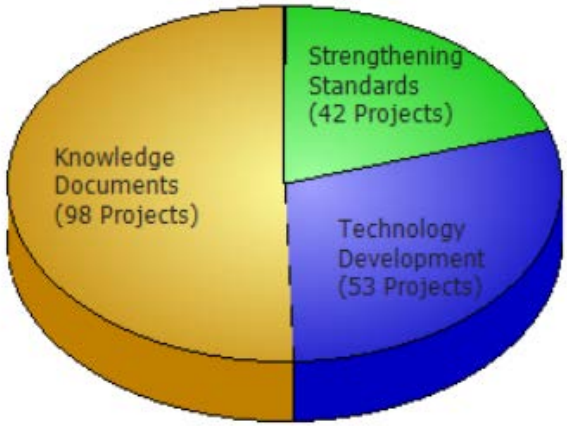
Large R&D Focus on Distribution

Focus:
All Challenges/Pipeline Types



Objective	Projects	PHMSA	Co-Share	Total
Strengthening Standards	74	$28.27M	$23.36M	$51.63M
Technology Development	81	$45.07M	$45.47M	$90.55M
Knowledge Documents	168	$54.76M	$51.98M	106.74M

Focus:
Natural Gas Distribution



Objective	Projects	PHMSA	Co-Share	Total
Strengthening Standards	42	$16.18M	$12.49M	$28.68M
Technology Development	53	$30.50M	$30.15M	$60.65M
Knowledge Documents	98	$31.77M	$24.70M	$56.47M

Focus on distribution since 2002 with bumps in focus after DIMP, DOT Call to Action and Methane reduction drivers. Many projects relevant to more than one pipeline type!

Ongoing Research – Cast Iron

Projects are sortable by threats and material types at: https://primis.phmsa.dot.gov/matrix/

Seq.	Program Category	Project ID and Title	Status	Contractor	PHMSA	Resource Share	Report Release
1.	Anomaly Detection	DTPH56-13-T-000011, Above-ground Detection Tools Including Disbondment and Metal Loss for all Metals Including Cast-Iron Graphitization	Active	Gas Technology Institute	$415,121	$230,709	Feb 2016
2.	Pipe Remediation/ Rehabilitation	DTPH56-13-T-000012, Evaluation of Structural Liners for the Rehabilitation of Liquid and Natural Gas Piping Systems	Active	Operations Technology Development NFP	$425,650	$185,000	Aug 2015
3.	Pipe Remediation/ Rehabilitation	DTPH56-13-T-000013, Technology Transfer, Demonstrations and Post-Mortem Testing of Cast Iron and Steel Pipe Lined with Cured-in-Place Pipe Liners	Active	Northeast Gas Association	$477,571	$253,728	Aug 2015
				Total:	**$1,318,342**	**$669,437**	

What's Next For Cast Iron in Distribution Systems?

New Research to be Awarded!

Solicited Topic	Topic Objective	Notes
Evaluation of Corroded Cast Iron Pipe	Develop/strengthen methodologies to characterize the structural significance of graphitic corrosion in cast iron pipes.	Project Award By Sept 2015
Engineering Critical Assessment of Cured in Place Pipe Liners at Bends, Valves and Service Taps	The project must move beyond investigations of just the liners and investigate liner interaction with the host pipe at bends, valves, service taps and other complex configurations in order to demonstrate liner capability to carry the loads when the host pipe is degraded or such as when the liner is tapped.	No submissions were received for PHMSA's consideration. No award can be made.
Refine/Enhance/Develop Leak Survey Technologies and Methodologies to Quantify Detected Emissions from Relatively Small Volume Rate Leaks to Prioritize a Remedial Action Plan	Develop/enhance technology and methodology to volumetrically quantify non-hazardous or Grade 3 Leaks to enable risk ranking that is congruent to current Green House Gas reporting requirements.	Multiple Project Awards By Sept 2015

Climate Change Impact

- Growing focus on mitigating fugitive methane
- EPA to potentially regulate LDCs via the Clean Air Act
- Studies by the Environmental Defense Fund illustrate volumes released by LDCs and that replacement/rehabilitation of old pipe breeds rapid/large reductions

Mitigating Fugitive Methane

- PHMSA closely following issues and policy development by others - White House, Congress and Industry
- Coordinating with EPA with data sharing, meetings and PHMSA participation at EPA Gas Star Program events
- Coordinating with the Environmental Defense Fund efforts and added EDF representation on PHMSA's congressionally mandated Pipeline Advisory Committee
- Reviewing natural gas regulations to understand leak paths and possible actions germane to our statutory mission
  - However, safety case largely already made in support of hazardous leak reductions
  - Remaining non-hazardous leaks generally economic in nature
    - NARUC, FERC and the Congress

Downstream Natural Gas Initiative

- The Downstream Natural Gas Initiative is a group of natural gas utilities collaborating to address key technical and regulatory factors affecting methane emission reduction opportunities from natural gas distribution systems.
- Partners will work to identify and encourage programs that accelerate investments in infrastructure and promote outstanding operations, including modernizing their systems, utilizing next generation technologies, and quantifying emissions.
- The initiative is focused on opportunities that can substantially reduce methane emissions and support safe, reliable, and cost-effective service
- http://www.mjbradley.com/content/downstream-natural-gas-initiative

PHMSA Websites

Please regularly use PHMSA websites as they are a primary form of communication with Stakeholders

PHMSA Office of Pipeline safety

http://phmsa.dot.gov/pipeline

DIMP Home Page

http://primis.phmsa.dot.gov/dimp/index.htm

Pipeline Safety Stakeholder Communications

http://primis.phmsa.dot.gov/comm/

Pipeline Replacement Updates

http://opsweb.phmsa.dot.gov/pipeline_replacement/

Thank you for Your participation in Pipeline Safety

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