Pennsylvania Pipeline Safety Conference

- DOT PHMSA Update -

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US DOT PHMSA Office of Pipeline Safety

Thursday, September 10, 2020

PHMSA Regulated Pipeline Facilities
OPS and States

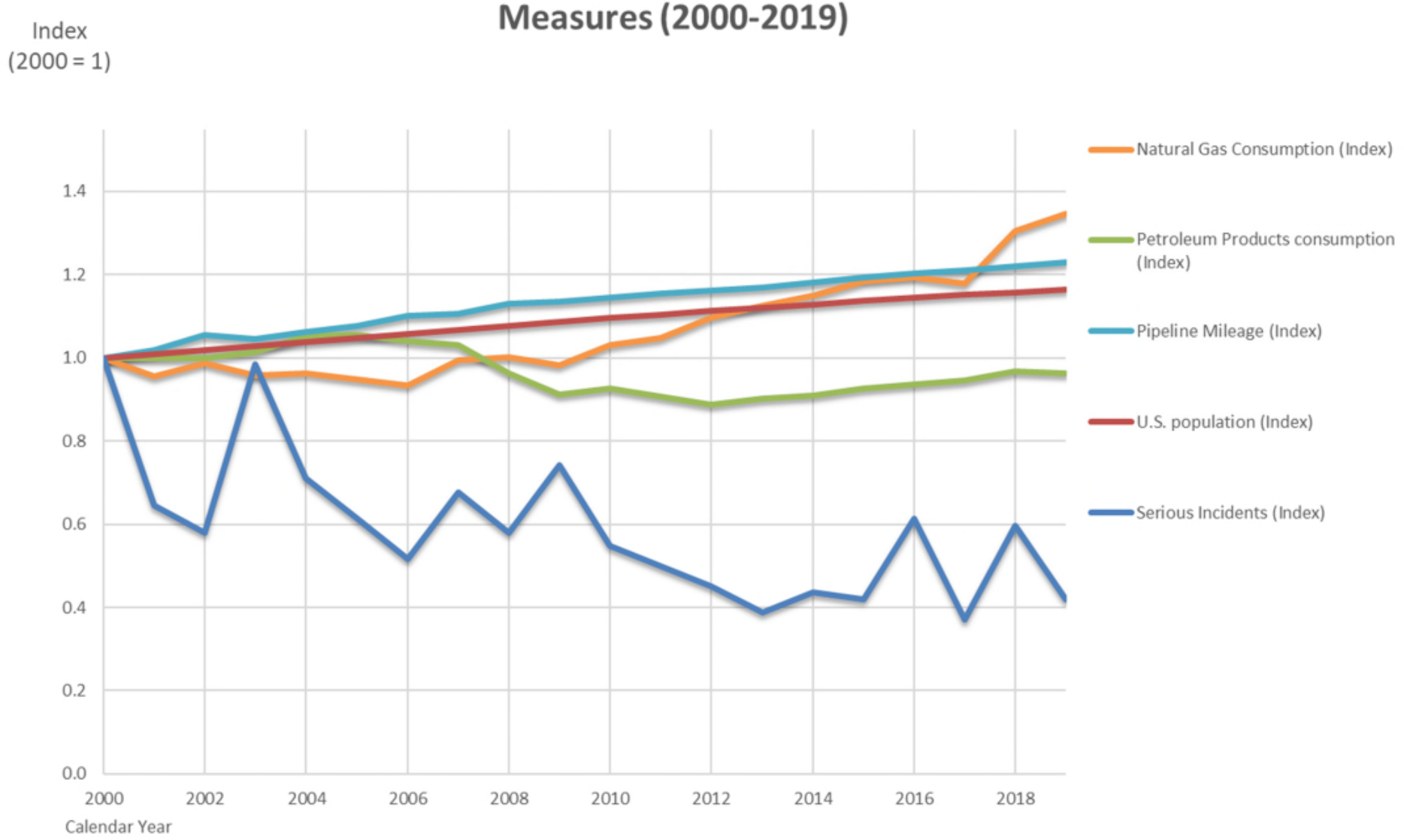
Pipeline Facilities by System Type from CY 2019 Annual Reports			
System Type	Miles	% Miles	# Operators
Hazardous Liquid	224,035 8,390 Tanks	8%	526
Gas Transmission	302,211	11%	1,101
Gas Gathering	17,502	< 1%	377
Gas Distribution	2,257,735	81%	1,350

Total Miles	2,801,483

Liquefied Natural Gas	162 Plants, 234 Tanks, 90 Operators Plants - 26 Interstate and 136 Intrastate
Underground Natural Gas Storage	403 Facilities, 458 Reservoirs 17,283 Wells, 127 Operators Facilities - 222 Interstate and 181 Intrastate

Data as-of 06-30-2020

Pipeline Serious Incidents with Context Measures (2000-2019)



Data Sources: Energy Information Administration, Census Bureau, PHMSA 2019 Annual Report Data, PHMSA Incident Data - as of 06-30-2020

Categories of Incident Reports

Serious – fatality or injury requiring in-patient hospitalization, but **Fire First** are excluded.

Fire First are gas distribution incidents with a cause of "Other Outside Force Damage" and sub-cause of "Nearby Industrial, Man-made, or Other Fire/Explosion". *Note: "fire first exclusion" does not include vehicle damage into a gas facility, such as a vehicle running into a meter set or regulator station.*

Significant include any of the following, but **Fire First** are excluded:

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

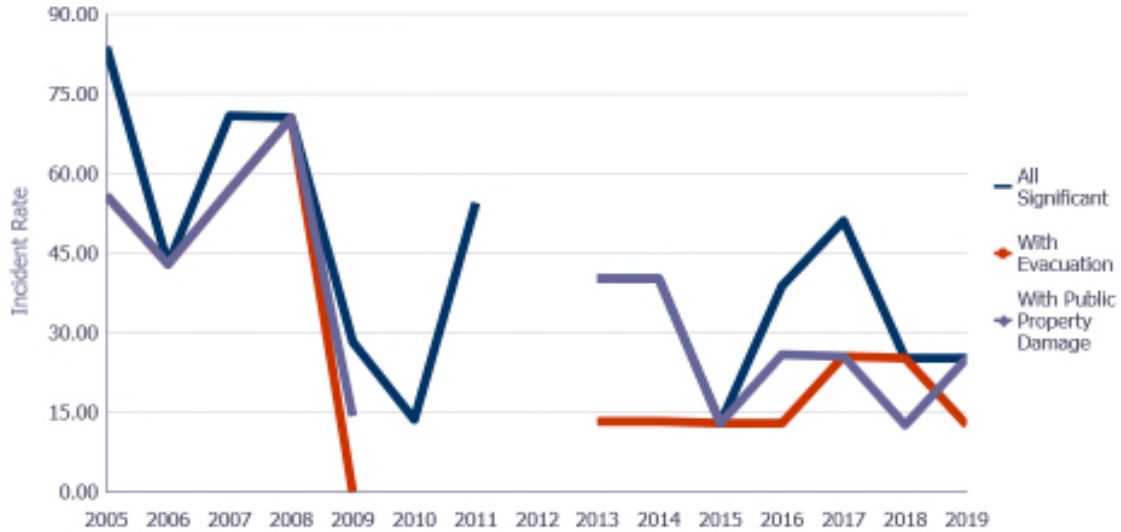
Gas Distribution Significant Incidents - Pennsylvania Specific data -

Gas Distribution Significant Incidents per million Miles
Time run: 8/26/2020 1:40:12 PM

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration
Data as of **8/25/2020**

Fed/State: (All Column Values) **Regulated By:** PA_PUC

The gas distribution **Significant Incident** per million mile rate has fluctuated, with an overall downward decrease since 2005. People have been evacuated from buildings near the incident in about half of the **Significant Incidents**. Property not owned by the pipeline operator is damaged in roughly two-thirds of the **Significant Incidents**.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Significant Incidents	6	3	5	5	2	1	4		3	3	1	3	4	2	2
Significant Incidents with Evacuation	4	3	4	5	0		2		1	1	1	1	2	2	1
Significant Incidents with Public Property Damage	4	3	4	5	1		3		3	3	1	2	2	1	2
Total Miles	71,562	69,821	70,436	70,798	70,448	72,942	73,315	74,153	74,512	74,362	76,691	77,072	78,005	79,140	79,242

Report Details **Individual Operator View** **Integrity Management Safety Program View**

Significant Incidents include a fatality, or an injury requiring overnight, in-patient hospitalization, or $50,000 or more in total costs, measured in 1984 dollars, but "fire first" incidents are excluded. "Fire first" are gas distribution incidents in which the gas release was a result of the fire, not the cause of the fire.

Service counts are converted to miles using the operator's average service length or 90 feet if the operator has not submitted an average.

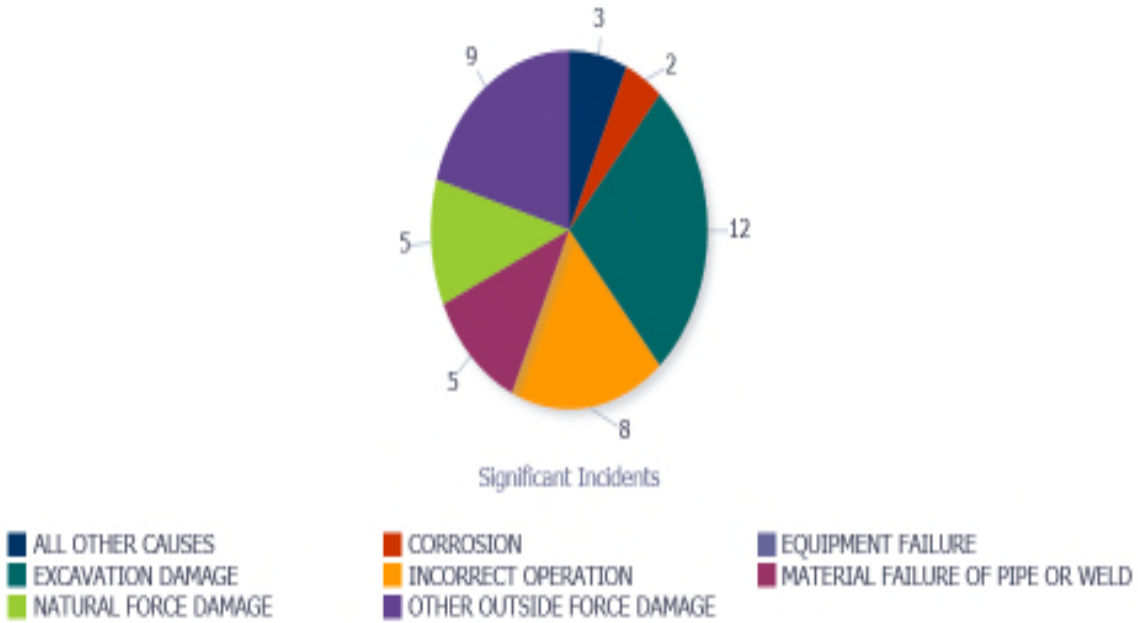
Gas Distribution Significant Incidents
- Pennsylvania Specific data -

Gas Distribution Significant Incident Cause 2005 - 2019
Time run: 8/28/2020 9:43:19 AM

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration
Data as of **8/27/2020**

Fed/State: (All Column Values) **Regulated By:** PA_PUC

Click on the Cause Name to get the Sub Cause Details and on the Pie Slice/numbers to get the Details.



	Significant Incidents													
Incident Cause Type	2005	2006	2007	2008	2009	2010	2011	2013	2014	2015	2016	2017	2018	2019
ALL OTHER CAUSES			1		1					0	0	1		
CORROSION	1			1										
EQUIPMENT FAILURE								0	0					
EXCAVATION DAMAGE	2		2	2	1	1	1	1			0		2	0
INCORRECT OPERATION	1	1					1	1	1			2		1
MATERIAL FAILURE OF PIPE OR WELD		1	1				1				1	1		
NATURAL FORCE DAMAGE			1	1			1		1	1				0
OTHER OUTSIDE FORCE DAMAGE	2	1		1				1	1		2			1

"What gets measured, gets done."

- To ensure Risk Mitigation Actions are Improving Safety, Performance must be Measured and Trended
- There are many websites that provide performance monitoring for Stakeholders on public websites at the National, Regional, and Operator level

PHMSA Data and Statistics Overview - www.phmsa.dot.gov/data-and-statistics/pipeline/data-and-statistics-overview

PHMSA DIMP Website – www.primis.phmsa.dot.gov/dimp/perfmeasures.htm

Performance Measurement

- Gas Data Quality & Analysis Team posted Gas Distribution and Gas Transmission Performance Measures on the OPS website at www.phmsa.dot.gov/data-and-statistics/pipeline/national-pipeline-performance-measures
- Key Performance Indicators (KPIs) are identified and trended

Gas Distribution Performance Measures

- Serious Incident per Mile - trends & "by cause" pie chart
- Significant Incident per Mile - 3 trends
- Leaks per Mile - 3 trends & 2 cause pies
- Excavation Damage - 2 trends
- Cast and Wrought Iron - 2 trends
- Steel Miles (Bare/Unprotected) -3 trends
- Miles by Decade Installed - 6 trends

Trends in Gas Distribution Leaks
Operator Level – Pennsylvania

Gas Distribution Leaks – Operators with 10,000 miles or more
Time run: 8/26/2020 1:55:37 PM

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration
Data as of: 08/25/2020

Fed/State: (All Column Values) **Regulated By:** PA_PUC

For multi-year rates, a rate is calculated for each year. The annual rates are summed and then averaged.

Operator ID	Operator Name	5 Year Average Hazardous Leaks Eliminated (leaks per 1,000 miles)	10 Year Average Leaks Eliminated (leaks per 1,000 miles)	5 Year Average Leaks Eliminated (leaks per 1,000 miles)	10 Year Average Leaks Scheduled for Repair (leaks per 1,000 miles)	2019 Miles
15350	PEOPLES NATURAL GAS COMPANY LLC	92.60	495.63	404.68	76.05	16,273.42
20010	UGI UTILITIES, INC	81.59	258.48	228.91	40.99	20,057.70
15462	PECO ENERGY CO	70.92	215.36	189.22	17.26	13,347.32
2600	COLUMBIA GAS OF PENNSYLVANIA	58.85	374.80	314.61	115.22	11,927.37

Gas Distribution Leaks – Operators with less than 10,000 miles
Time run: 8/26/2020 1:55:37 PM

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration
Data as of: 08/25/2020

Fed/State: (All Column Values) **Regulated By:** PA_PUC

For multi-year rates, a rate is calculated for each year. The annual rates are summed and then averaged.

Operator ID	Operator Name	5 Year Average Hazardous Leaks Eliminated (leaks per 1,000 miles)	10 Year Average Leaks Eliminated (leaks per 1,000 miles)	5 Year Average Leaks Eliminated (leaks per 1,000 miles)	10 Year Average Leaks Scheduled for Repair (leaks per 1,000 miles)	2019 Miles
15469	PHILADELPHIA GAS WORKS	373.92	1,029.89	993.06	5.96	5,929.24
17405	HERMAN RIEMER GAS CO	164.25	450.60	440.64	769.14	37.68
38910	CNX RESOURCES CORPORATION	113.64	113.32	113.64	0.00	0.00
15259	UGI PENN NATURAL GAS	90.34	326.04	241.93	55.92	0.00
13061	NATIONAL FUEL GAS DISTRIBUTION CORP	70.64	223.77	198.91	6.77	7,422.36
21030	VALLEY ENERGY, INC.	70.29	127.44	97.76	1.15	265.48
32086	KNOX ENERGY COOPERATIVE ASSOCIATION, INC. C/O UTILITY PIPELINE, LTD.	54.33	326.57	252.74	235.63	273.23
2236	CHAMBERSBURG GAS DEPT	46.06	170.00	157.07	23.29	116.39
15540	PIKE COUNTY LIGHT & POWER CO	38.95	153.70	184.20	11.72	27.90
15476	PEOPLES GAS COMPANY LLC	35.26	312.28	259.28	9.21	3,044.25

Gas Transmission Performance Measures

- Serious Incident per Mile - trend & "by cause" pie charts
- Onshore Significant Incident per Mile - 3 trends, also HCA and non-HCA trends & "by cause"
- HCA Immediate Repair per Mile - trend
- HCA Leaks & ILI Detectability - 2 trends & "by cause" pie charts
- Steel Miles (Bare and Unprotected) - 2 trends
- Miles by Decade Installed - 5 trends
- Onshore Pipeline Significant Incident Rates per Decade - rate chart and "by cause" pie charts

“What gets measured, gets done.”

Reactive –> Proactive -> Predictive

Management Systems Improve Safety

Integrity Management Systems Performance Measurement

- Guidance is available on methods to develop and use metrics that provide for meaningful insights into reducing risks of specific threats and system wide risks
- ADB 2014-05 - Guidance for Meaningful Metrics
  - ADB–2012-10 Using Meaningful Metrics in Conducting Integrity Management Program Evaluations
- ADB 2014-02 - Lessons Learned from the Marshall, Michigan, Release

ADB – 2012-10

- Remind operators of their responsibilities, under Federal IM regulations, to perform evaluations of their IM programs using meaningful performance metrics. Program evaluation is a required integrity management program element as established in §192.911(i) and §192.1007(e) & (f)
- A critical program element of an operator's integrity management program is the systematic, rigorous evaluation of the program's effectiveness using clear and meaningful metrics.
- When executed diligently, this self-evaluation process will lead to more robust and effective integrity management programs and improve overall safety performance.
- This process is critical to achieving a mature IM program and a culture of continuous improvement and learning.

ADB – 2014-05

- PHMSA developed guidance on the elements and characteristics of a mature program evaluation process that uses meaningful metrics
- Major topic areas addressed in the guidance document include:
  - Establishing Safety Performance Goals
  - Identifying Required Metrics
  - Selecting Additional Meaningful Metrics
  - Data Collection and Metric Monitoring
  - Program Evaluation Using Metrics

Everyone Must Be Involved

- Everyone must be involved in safety and do their part to support an Integrity Management System
- Every significant incident results in pressure on Government to promulgate more Regulations
- In Failure Investigations, Regulators commonly find that Human Performance is a root cause
- 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

Addressing Risks to Improve Safety

- **§192.603(c) Abnormal operation. (4)** Periodically reviewing the response of operator personnel to determine the effectiveness of the procedures controlling abnormal operation and taking **corrective action where deficiencies are found**.
- **192.613 Continuing surveillance** (a) Each operator shall have a procedure for continuing surveillance of its facilities to **determine and take appropriate action** concerning changes in class location, failures, leakage history, corrosion, substantial changes in cathodic protection requirements, and other unusual operating and maintenance conditions. …
- **192.617 Investigation of failures** Each operator shall establish procedures for analyzing accidents and failures, including the selection of samples of the failed facility or equipment for laboratory examination, where appropriate, for the purpose of **determining the causes of the failure and minimizing the possibility of a recurrence**.
- **Integrity Management Risk Reduction Requirements**

Safety Culture is Relevant

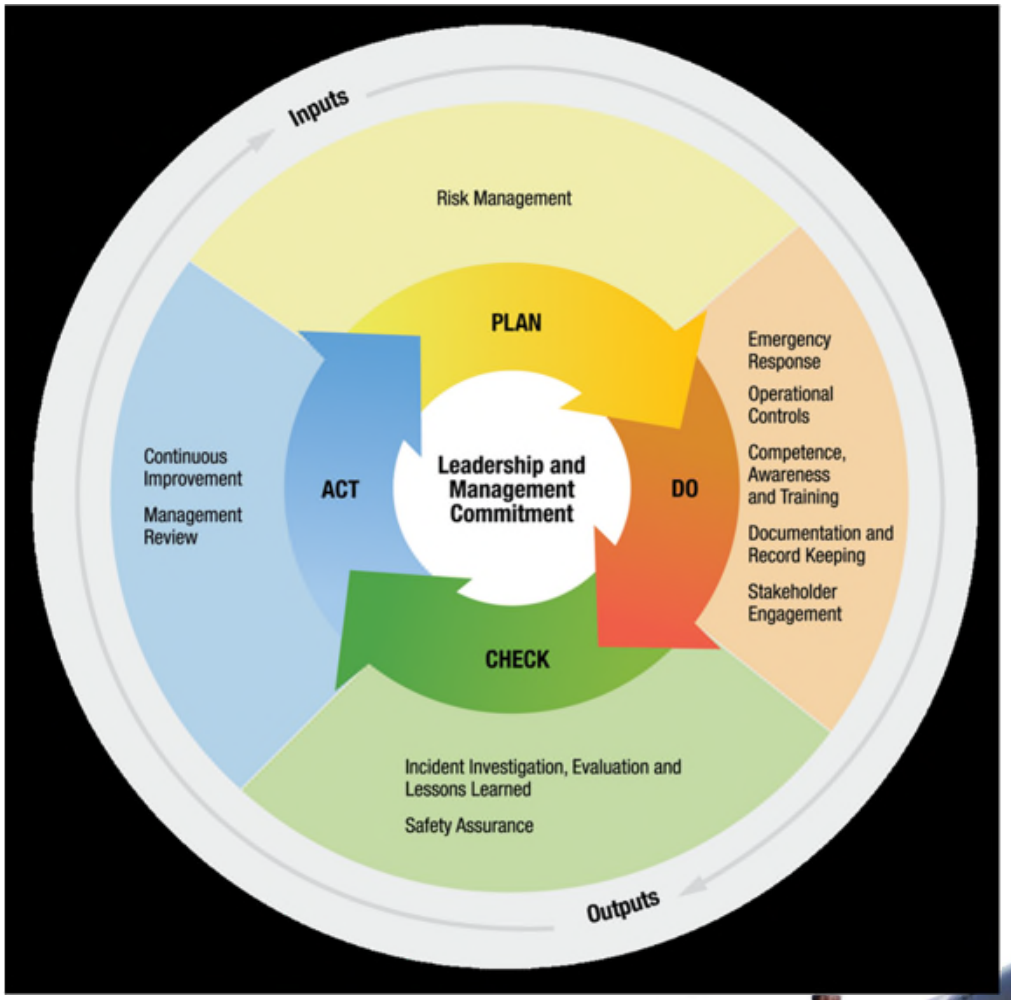
- Safety Culture stresses doing the right thing regardless of competing interests or who is watching
- Integrity and Safety Management Systems provide mechanisms for Industry to fix their own problems before precursor events lead to incidents
- Safety Culture provides a platform from which to drive continuous improvement in the safe operation and integrity of a pipeline system
- Continuous improvement is a requirement to meet the minimum safety regulations for integrity management programs.

Safety Management Systems (SMS) - PHMSA's Regulatory Expectations

- PHMSA does not intend to incorporate API RP 1173 (Pipeline SMS) by reference into the federal regulations.
- PHMSA performed Volunteer, Non-Punitive Pilot Audits to understand implementation.
- All Management System standards from various industries have very similar requirements.
- Pipeline SMS and OSHA's PSM are not the same.
- SMS focuses more on organizational leadership and commitment, stakeholder engagement, safety culture, and continuous learning and improvement.

Pipeline Operators, No Matter Their Size, Can Benefit From a PSMS and Continual Process Improvements

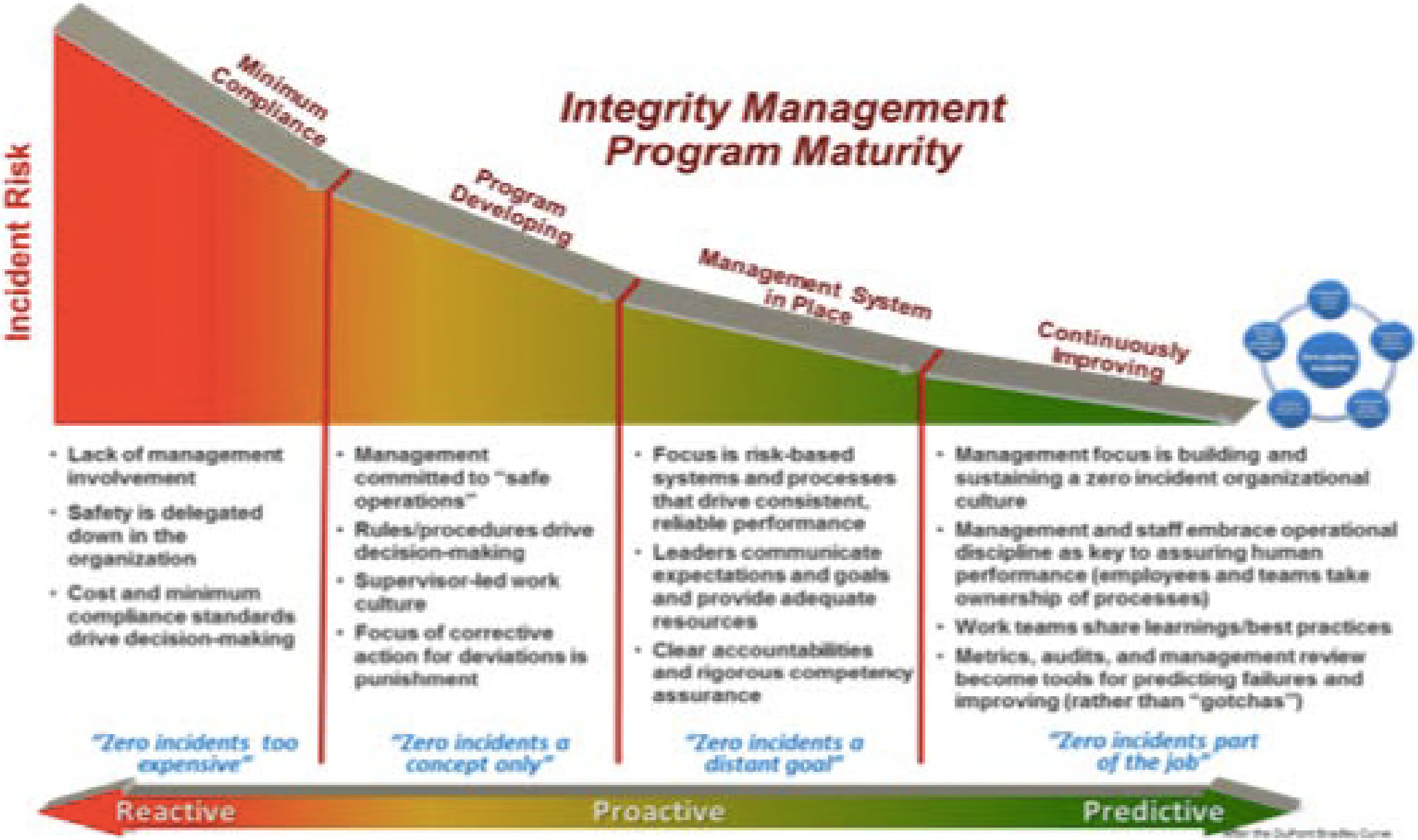
- PSMS is centered around Safety Leadership at ALL levels and Management Commitment.
- PSMS fosters and requires continual improvement.
- Continual Improvement is a requirement of existing Integrity Management Regulations



Lessons Learned Programs

- Implementing lessons learned programs support development of a safety culture
  - Corrective Action Programs
  - Near Miss Reporting
  - FAA – Aviation Safety Alert Programs
  - FRA - Confidential Close Call Reporting
- Quantitative Data Programs take longer to implement and see results

Assessing Maturity



Improving Quality Management Systems (QMS) for Pipeline Construction Activities

- QMS was Topic M in Gas IM ANPRM in 2011
- PHMSA sponsored a Construction Management R&D paper - used as basis for API RP 1177 https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=504
- API RP 1177 – Recommended Practice for Steel Pipeline Construction Quality Management Systems

Regulatory Update

- *The following PHMSA regulatory updates are simply an overview*
  - *Details can be found in the Federal Register postings*
- *https://www.phmsa.dot.gov/regulations-and-compliance*
- *www.reginfo.gov*
- *https://www.transportation.gov/regulations/report-on-significant-rulemakings*

Recent and Upcoming Final Rules

Published:

1. Safety of On-Shore Hazardous Liquid Pipelines (published 10/1/2019)
2. Safety of Gas Transmission Pipelines (mandates) (published 10/1/2019)
3. Emergency Orders (published 10/1/2019)
4. Underground Storage Facilities for Natural Gas (published 2/12/20)

Upcoming:

1. Safety of Gas Transmission Pipelines (RIN-2)
2. Safety of Gas Gathering Pipelines (RIN-3)

Recent and Upcoming Proposed Rules

Published:

1. Rupture Detection and Valve (NPRM)
   (published 2/6/2020; comment period ended)
2. Liquid Pipeline Regulatory Reform (NPRM)
   (published 4/16/2020; comment period ends 6/15/20)
3. Gas Pipeline Regulatory Reform (NPRM)
   (published - 6/9/2020; comment period end 8/9/20)

Upcoming:

1. Standards Update (NPRM)
2. Class Location Requirements (NPRM)

Current Rulemakings in Process

2020 PAC Activity

- The Gas Pipeline Advisory Committee (GPAC) and the Liquid Pipeline Advisory Committee (LPAC) will have to meet for each NPRM, as applicable
- Meetings scheduled for November 18th - 19th
- More meetings may be added

Recently Issued Rulemakings

Safety of On-Shore Hazardous Liquid Pipelines
Safety of Gas Transmission Pipelines (mandates)
Emergency Orders

- Final Rules published 10/1/2019
- Effective date for GT and HL final rules: 7/1/2020
- Effective date for emergency order final rule 12/2/2019
- Received petition for reconsideration on 10/31/2019 (Gas Transmission final rule)
  - PHMSA response on 12/20/19
- FAQ's under development/Houston Public meeting

Recently Issues Rulemakings

Safety of Underground Natural Gas Storage Facilities

- Final rule published 2/12/2020
- Major topics of the final rule:
  - Operators must comply with minimum safety standards, including compliance with API Recommended Practices (RPs):
    - API RP 1171, Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs (First Edition, 2015)
    - API RP 1170, Design and Operation of Solution-mined Salt Caverns Used for Natural Gas Storage (First Edition, 2015)
  - Removes the requirement that modified the non-mandatory RPs
  - Removes the requirement that an operator must provide a written justification for not performing a non-mandatory RP
  - Formalizes deadlines for operators to implement their IM programs and conduct baseline risk assessments
  - Adds a requirement for operators of solution-mined salt caverns to follow same risk management practices as other natural gas storage operators
  - Narrows the scope of reportable events or changes at a facility

Current Rulemakings in Process

Safety of Gas Transmission (RIN-2)
(Final rule stage)

- NPRM published 4/8/2016
  - Comment period closed 7/7/2016
  - Split from original Gas Transmission NPRM
- GPAC meetings held January 2017; June 2017, Dec 2017, March 2018
- Major Topics under consideration:
  - Repair criteria for both HCA and non-HCA areas
  - Extreme weather inspections
  - Strengthening assessment requirements
  - Corrosion control
  - Management of change
  - IM clarifications
- Final rule anticipated by fall of 2020

Current Rulemakings in Process

Safety of Gas Gathering Lines (RIN-3)
(Final rule stage)

- NPRM published 4/8/2016
  - Comment period closed 7/7/2016
  - Split from original Gas Transmission NPRM
- GPAC meeting held June 2019
- Major topics of rule:
  - Revision to the definitions for gas gathering (production, gathering, incidental gathering, elimination of RP 80 reference)
  - Data collection for all gas gathering lines (including unregulated gas gathering): Annual reporting and Incident Reporting
  - Appropriate regulations large diameter-high pressure lines and establish minimum set of requirements for pipelines 8.625 inches in diameter and greater
- Final rule anticipated by fall of 2020

Current Rulemakings in Process

Rupture Detection and Valve Rule
(NPRM stage)

- NPRM published 2/6/20
  - Comment due by 4/6/20
  - PAC meetings held July 22sd & 23rd
- Major proposals:
  - Installation of automatic shut-off valves (ASV) or remote controlled valves (RCV) on newly constructed or entirely replaced (2 miles or more) natural gas and hazardous liquid transmission pipelines (with nominal diameters ≥ 6 inches) with the objective of improving overall incident response for new and replaced pipelines
  - Operators must be able to detect ruptures within 10 minutes
  - Valves must be closed within 40 min of detection or as soon as practicable
  - 2011 PIPES Act, NTSB Recommendations and studies performed by both PHMSA and GAO

Current Rulemakings in Process

Liquid Pipeline Regulatory Reform (2137-AF37) (NPRM stage)

- NPRM published 4/16/20
  - Comment due by 6/15/20
- Major topics under consideration:
  - Propose a number of amendments intended to ease regulatory burdens on hazardous liquid pipelines regarding:
    - Submitting information to PHMSA
    - Response plan clarifications
    - Accident reporting criteria
    - Remote monitoring of rectifiers
    - Corrections to IM guidance
  - Amendments drawn from PHMSA's internal E.O. 13777 review, comments on U.S. DOT notices, and petitions for rulemaking

Current Rulemakings in Process

Gas Pipeline Regulatory Reform (2137-AF36) (NPRM stage)

- NPRM published – 6/9/20
  - Comment due by 8/10/20
  - PAC meeting – Early Fall 2020

  - E.O. 13771 deregulatory action

  - Amendments drawn from PHMSA's internal E.O. 13777 review, comments on U.S. DOT notices, and petitions for rulemaking

Current Rulemakings in Process

Gas Pipeline Regulatory Reform (2137-AF36) (NPRM stage)

- Major topics under consideration:
  - Propose a number of amendments intended to ease regulatory burdens on gas distribution and transmission pipelines regarding:
    - DIMP requirements for farm taps and master meters
    - Mechanical fitting failure reports
    - Incident reporting criteria
    - Remote monitoring of cathodic protection rectifiers
    - Atmospheric corrosion assessment requirements for gas distribution service pipelines
    - Standards for polyethylene pipe and pressure vessels
    - Welder requalification
    - Pre-installation testing

Current Rulemakings in Process

Liquefied Natural Gas
(NPRM stage)

- Major topics under consideration:
  - Revise 49 CFR Part 193 to incorporate current industry developed standards (via NFPA 59A-2019)
  - Address LNG Export Facilities
  - Address Small Scale LNG Facilities
  - Incorporate other provisions as necessary
  - Address April 15, 2019 Presidential E.O. 13868

- NPRM TBD

Current Rulemakings in Process

Standards Update
(NPRM stage)

- Major topics under consideration:
  - Address the set of incorporated by reference (IBR) standards throughout PHMSA's Part 192 and Part 195 with updated revisions of standards from all standard organization bodies
- NPRM late fall of 2020

Current Rulemakings in Process

Class Location Requirements (NPRM stage)

- Major topics under consideration:
  - Examining options for existing pipe when class locations change due to population increases near pipeline and MAOP is not commensurate with new class location

- ANPRM published 7/31/18

- Current requirements when class locations change:
  - Reduce operating pressure
  - Confirm new MAOP with pressure test
  - Replace pipe with thicker wall pipe
  - Special permits to operate segments at previous MAOP while performing certain measures to mitigate risk and ensure safety

- NPRM anticipated by summer of 2020

Current Rulemakings in Process

USA Definition – Beaches and Coastal Waterways (ANPRM stage)

- Major topics under consideration:
  - Address Section 19 of 2016 PIPES Act which requires PHMSA to:
    - Expand definition of USA's to include Great Lakes, coastal beaches, and marine coastal waterways
    - Subject pipelines in such areas to Integrity Management regulations in 49 CFR 195
- PHMSA held public meetings on November 17, 2017 and June 12, 2019
- PHMSA recently updated its National Pipeline Mapping System (NPMS) by reclassifying the Great Lakes region as an unusually sensitive area (USA) ecological resource
- ANPRM date TBD

Current Rulemakings in Process

Hazardous Liquid Repair Criteria (NPRM Stage)

- Split from original Hazardous Liquid NPRM published on 10/13/2015
- LPAC held on 2/1/2016
- Major Topics under consideration:
  - Repair criteria for both HCA and non-HCA areas
  - Examining both immediate and near term conditions
  - Addressing metal loss, dent, and crack anomalies
- NPRM TBD

Questions and Comments?

Thank you for your participation in Pipeline safety!