

State-Federal Gas Distribution Team



National Association of Pipeline Safety Representatives
&
PHMSA Office of Pipeline Safety

July 2022



Distribution Team Mission Statement

The NAPSR / PHMSA Distribution Team is a collaboration of State and Federal Regulators to support improvements in the integrity of the Nations' gas distribution pipeline systems through the conduct of investigations and research to develop educational materials as well as improving our inspection methods and guidance for evaluation of Operator's Distribution systems

Disclaimer

The document is intended to provide clarity to the public regarding existing pipeline safety standards. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way, but pipeline operators must comply with the underlying safety standards.

The materials contained in this work product are for educational and awareness purposes only.



Why Focus on Distribution?

Transmission 2021 Total Miles – 301,452

Transmission 2021 Total Operator Count – 1082

Hazardous Liquids 2021 Total Miles – 229,282

Hazardous Liquids 2021 Total Operator Count – 563

Gas Gathering 2021 Total Miles – 17,077

Gas Gathering 2021 Total Operator Count – 373

Distribution 2021 Total Miles of Main and Services – **2,299,963**

Distribution 2021 Total Operator Count - 1313



Focus of Distribution Team

- Originally formed as the DIMP Team
- Threats that impact Distribution systems need to be evaluated and addressed by NAPSR & PHMSA
- As Regulations are updated, inspection tools and inspection techniques need to be modified
- Enforcement and Inspection Guidance needs to be current and shared to support consistency
- Provide Subject Matter Expert (SME) support, information, and guidance to NAPSR and NARUC



PHMSA is Team Based for Specific Duty Areas

- Breakout Tank Team
- Construction Team
- Control Room Management Team
- Corrosion Control Team
- Distribution Team
- Gas Rule Implementation Team (GRIT)
GT Integrity Management Team
- HL Integrity Management Team
- Incident Report Data Quality Team
Inspection Assistant (IA) Team
- LNG Team
- LPG Team
- O&M and Emergencies Procedures Team
- Operator Qualification (OQ) Team
- Pipeline Asset Manager (PAM) Team
- PHMSA Data Mart (PDM) – Pipeline Team
- Pipeline Inspection & Enforcement (PIE) Team
- Plastics Team
- Public Awareness and Damage Prevention Team
- Risk Ranking Index Model (RRIM) Team
- Underground Natural Gas Storage Facility Team



NAPSR Committees and Task Groups

<http://www.napsr.org/home.html>

- **APGA Security Integrity Foundation (SIF)**
- **API 1104**
- **API RP 1162**
- **API RP 1185**
- **Gathering Line Task Group**
- **ASME B31Q Committee**
- **ASTM F17**
- **CGA**
- **Compendium Task Group**
- **Corrosion Control Team (PHMSA IBR Standards Review)**
- **Distribution Inspection Form Task Group**
- **Distribution Team Task Group**
- **Drug & Alcohol Inspection Task Group**
- **Gas Transmission Final Rule Implementation Team (GRIT)**
- **Gas and Liquid Pipeline Advisory Committees**
- **GPTC**
- **Grant Allocation/Strategic Planning Committee**
- **GTI**
- **Legislative Committee**
- **Liaison Committee**
- **LPAC**
- **NARUC**
- **NFPA 58**
- **NFPA 59**
- **PHMSA Community Technical Assistance Grants**
- **PIPA**
- **Pipeline Safety Research and Development (R&D)**
- **PHMSA TQ NAPSR Liaison**
- **PPDC**
- **Plastics Task Group**
- **OQ Task Group**



Distribution Team Scope

- Develop consensus inspection, guidance, and continuing education materials to support States and PHMSA in successfully inspecting distribution systems.
- Evaluate the results of gas distribution inspections and the industry's experience complying with Part 192 Distribution Regulations and take actions to improve the safe operation of distribution systems and to address risks to the integrity of distribution systems



Distribution Team Objectives

- Analyze inspection results data and industry Performance Measures to identify risks
- Develop continuing education materials
- Develop and maintain inspection forms and inspection guidance
- Maintain Frequently Asked Questions (FAQs) to provide consensus expectations of operator's programs
- Support PHMSA and NAPSRS as Subject Matter Experts
- Support consistent implementation of distribution regulations
- Provide feedback to stakeholders on Best Practices and Lessons Learned and support stakeholders



Distribution Team Composition

NAPSR State Participants

- Illinois (Lead)
- Ohio
- Nevada
- Alabama
- Tennessee
- Texas
- Connecticut
- New Mexico
- North Carolina

PHMSA Federal Participants

- PHP 50 State Programs (Lead)
- PHP 8 – Accident Investigation
- PHP 30 - Regulations
- PHP 60 - Enforcement
- PHP 70 – Training and Qualifications
- PHP 80 – Engineering
- PHP 200 – Southern Region
- PHP 300 – Central Region
- PHC Legal Support



Educational Materials

- The Distribution Team uses PowerPoint presentations to disseminate educational material to stakeholders
- Allows each State program to present material to its staff or to operator groups during state seminars
- Eases the workload on individual States to investigate and evaluate topics of concern to NAPSR
- Provides for consistency in the message
- Provides a level of detail necessary for stakeholders to understand concerns and applicability of topic



Some Completed Activities

The Distribution Team has completed activities in the past few years to support Stakeholders and publish work product, including:

- Aldyl-A and vintage plastic pipe evaluations
- Cast Iron investigations and research
- Cross-bores
- Biogas and alternate fuels
- 192.605(c)(5) Abnormal Operating Procedures
- 192.739(a) Reliability
- 192.749 Vault Maintenance
- 192.756 Fusion Equipment Maintenance
- Bentonite Clay and Fusion Welds
- Butt Fusion Cooling Times
- GD AR Cause Instructions latent TPD
- Indoor Regulators (NTSB)
- Meter Break-away Fittings
- SRCR Reporting
- Water Fittings in Gas service
- Weak Link in trenchless technologies 192.329/376



Some Current Activities

The Distribution Team's current activities include:

- Vent-less Slam Shut Regulators
- Sulfur/Dithiazine Depositions
- 192.181 Valve Installation
- New Technologies
- High Pressure Distribution
- Define Business Districts
192.721/723
- Documentation Required for
Construction
- Excavation Damage Root Causes
– Contract Locators
- Hydrogen as a Fuel Gas
- Ultrasonic Gas Meters
- Lithium Batteries
- MAOP Records - NAPSRR
Resolution
- EFV FAQ Modifications
Posted
- Farm Tap FAQ Modifications
- DIMP FAQ Modifications
- GD AR Part E reporting



Lithium Batteries / Gas Meters

- Lithium batteries are used in gas meters
- Lithium batteries have been known to start a fire (Samsung)
- Fires near meter sets that are attributed to anything other than the gas meter noted in NRC reports
- Fires where the only portion of the house consumed are near the gas meter investigated
- Is there an issue with these lithium batteries?
- Distribution Team has a working group evaluating any threats
- Any history or experience from Stakeholders is appreciated
- Work product is forthcoming and supports improved failure investigation methods including forensic evaluations



Elemental Sulfur/Di-thiazine Deposition

- Distribution Team developed a presentation provided to NAPSRS and PHMSA regarding topic
- Distribution Team has met with a major pipeline operator to discuss this issue
- Appears this issue has been impacting pipelines for several years
- When noted, discussions need to be held with the producers
- The Distribution Team will update the presentation with additional material and submit to NAPSRS
- The goal is to share the most up to date information and improve awareness of this threat as a failure mode
- Failure investigation procedures and processes are key to preventing recurrence of failures (§192.617).



Hydrogen and Alternate Fuels

- Interest in the US on green (non-fossil fuel), blue (carbon captured), and brown (no capture- legacy) hydrogen gas.
- Both blended (10-15%) hydrogen and pure hydrogen pipelines (>1500 miles regulated hydrogen transmission 42 operators)
- No data collection specific to hydrogen blends at PHMSA. No definitions. Work is being performed.
- PHMSA Hydrogen and Emerging Fuels R&D Public Meeting and Forum included Hydrogen usage discussions and topics - <https://primis.phmsa.dot.gov/meetings/MtgHome.mtg?mtg=153>
- Needs:
 - Identify technical/safety/regulatory gaps; prioritize and develop them; understand what is coming in order to stay ahead..
 - Develop list of planned projects – Identify impacts on pipelines and States that have taken actions or are planning to.



High Pressure Distribution

- Goal is to provide guidance on classifying High-Pressure Distribution lines
- Clarify/Classify a Transmission line customer
- What is main intent of pipeline?
- Classification of customers and how many?
- Define/Describe a High-volume customer
- What constitutes a distribution center? Definition
- Undocumented MAOP/Unknown SYMS effect on HPD?
- Provide examples and discuss scenarios for implementation
- Check on risk analysis in DIMP for consequence?



Business District Definition

- Working Group noted inconsistencies in operators' definitions of what constitutes a business district
- Review of available Guidance, Interpretations, Enforcement Guidance, PHMSA Final Orders, Preambles to Final Rule(s), etc.
- Review business district definitions from operators and states (anonymous and not related to the operator) – many use GPTC guidelines
- IA questions were added regarding did the operator define a business district and then apply the definition



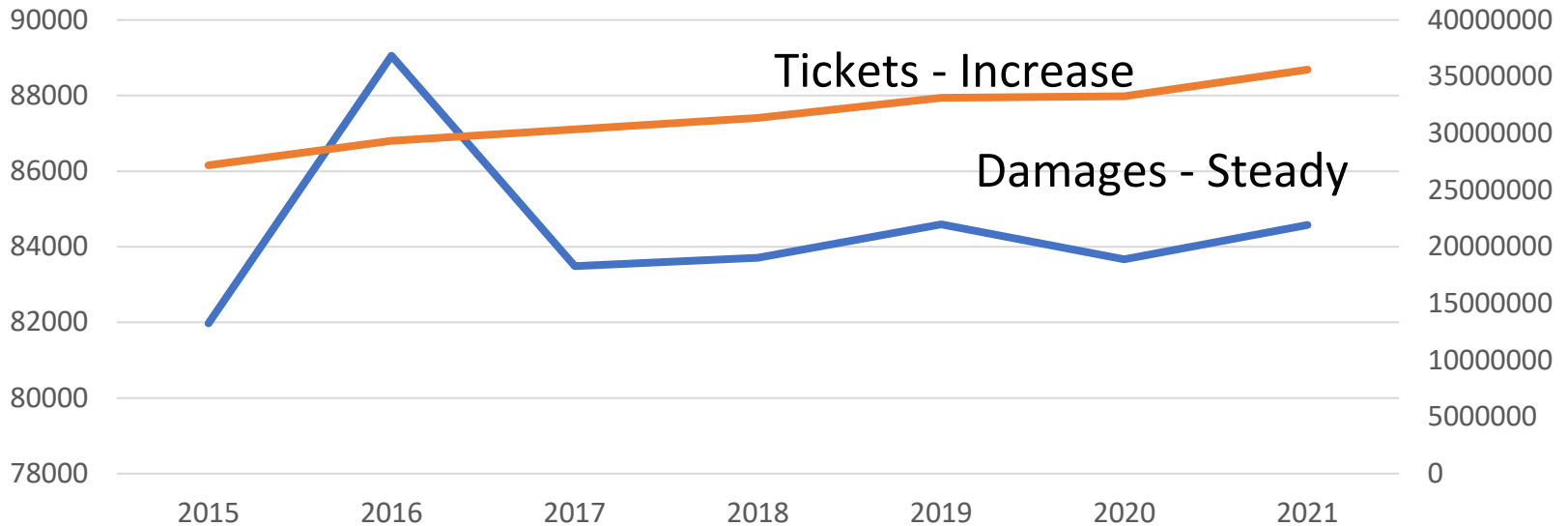
Excavation Damage Root Causes

- Excavation damage remains leading cause of significant leaks and incidents
- Excavation damage numbers remain consistent while rate of damages per tickets goes down (number of tickets increasing)
- Some State Safety Programs are encountering issues with facility owners failing to locate their facilities
- On the [National Pipeline Performance Measures](https://www.phmsa.dot.gov/data-and-statistics/pipeline/national-pipeline-performance-measures) webpage - <https://www.phmsa.dot.gov/data-and-statistics/pipeline/national-pipeline-performance-measures>
 - Excavation Damage - Incidents, Leaks, and Damages



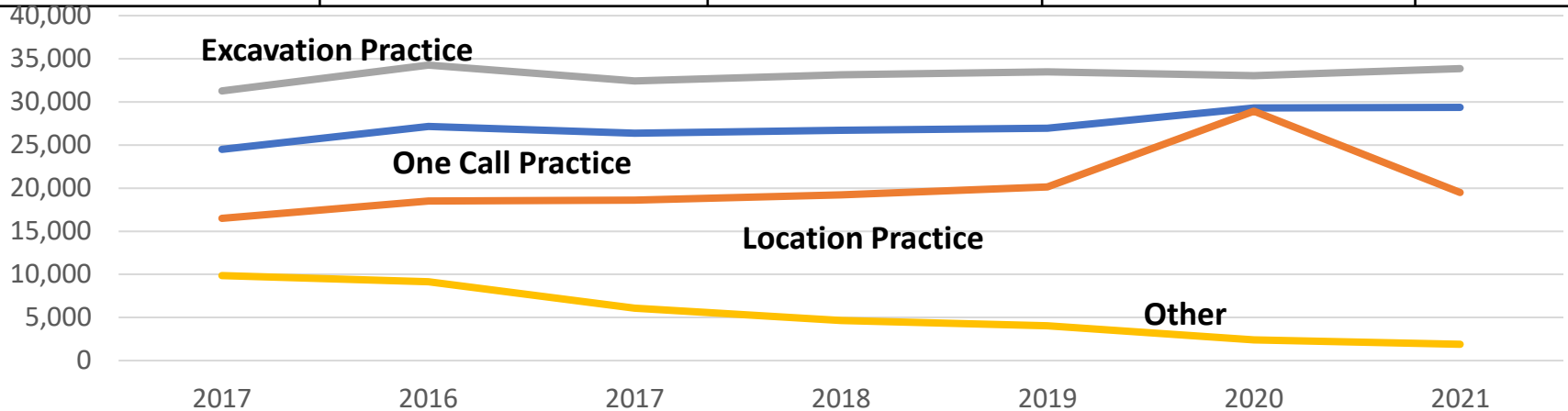
Excavation Damage Trend

Year	Tickets	Damages	Damages per Thousand Tickets
2015	27,189,566	81,976	3
2016	29,346,857	89,057	3
2017	30,348,328	83,489	2.8
2018	32,352,955	83,712	2.7
2019	33,144,756	84,595	2.6
2020	33,270,320	83,668	2.5
2021	35,628,977	84,579	2.4



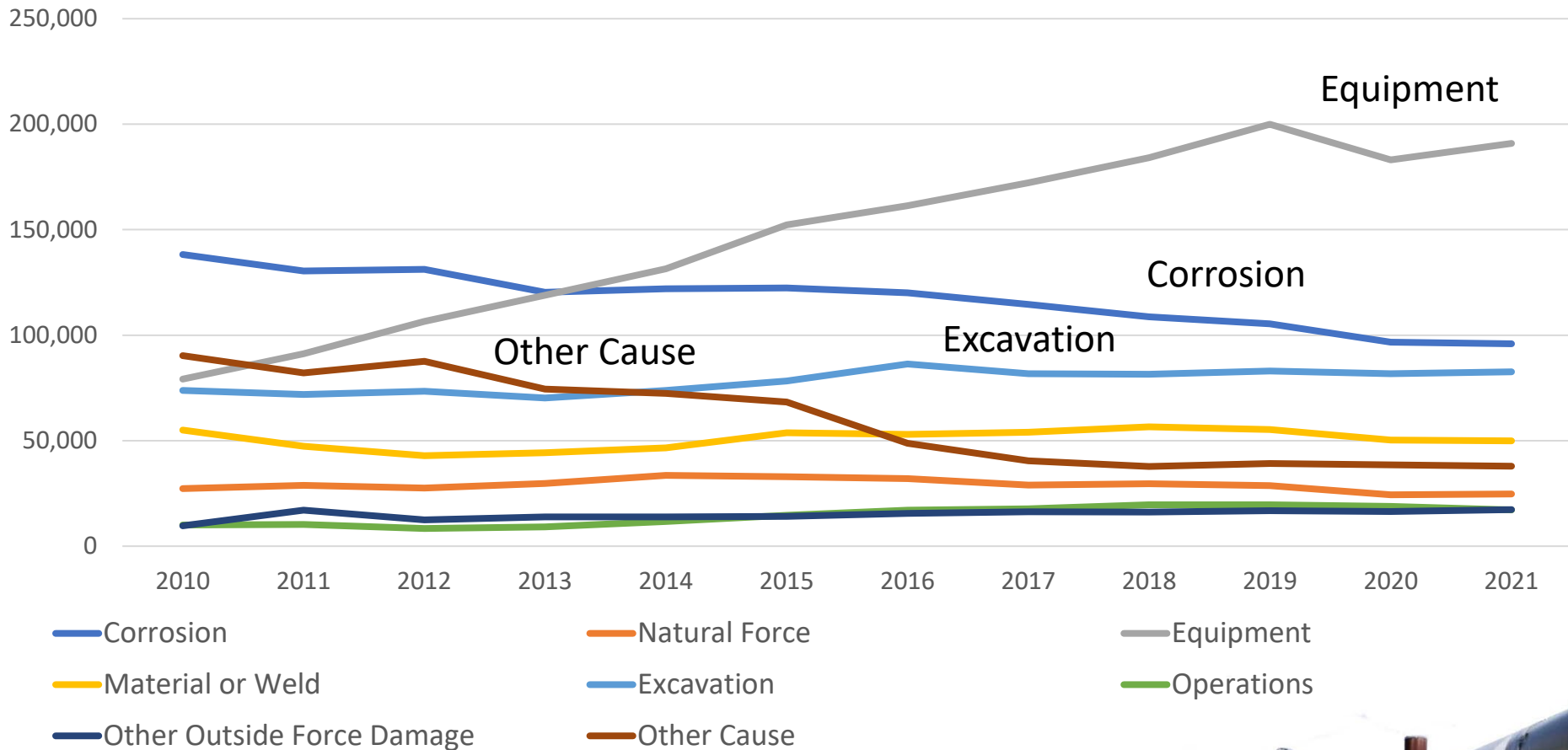
Excavation Damage Root Causes

Year	Excavation Practice not Sufficient	One Call Practice not Sufficient	Location Practice not Sufficient	Other
2017	31,288	24,514	16,492	9,843
2016	34,262	27,138	18,515	9,142
2017	32,429	26,366	18,603	6,091
2018	33,149	26,703	19,218	4,650
2019	33,473	26,944	20,146	4,046
2020	33,059	29,306	28,911	2,392
2021	33,850	29,351	19,484	1,888
Overall (2017-2021)	39%	32%	22%	6%



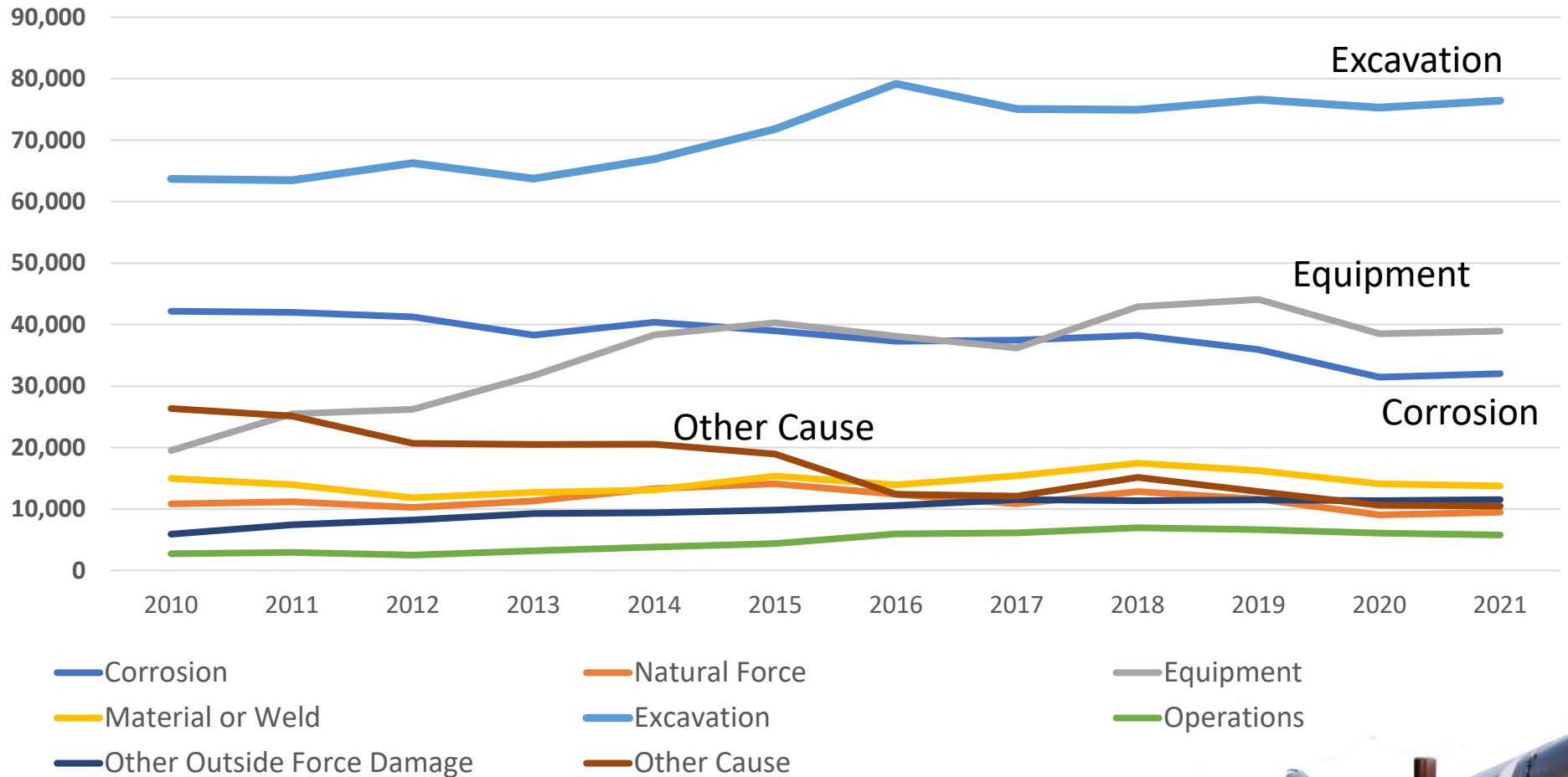
Distribution Data Analysis

All Leaks by Cause from Annual Reports



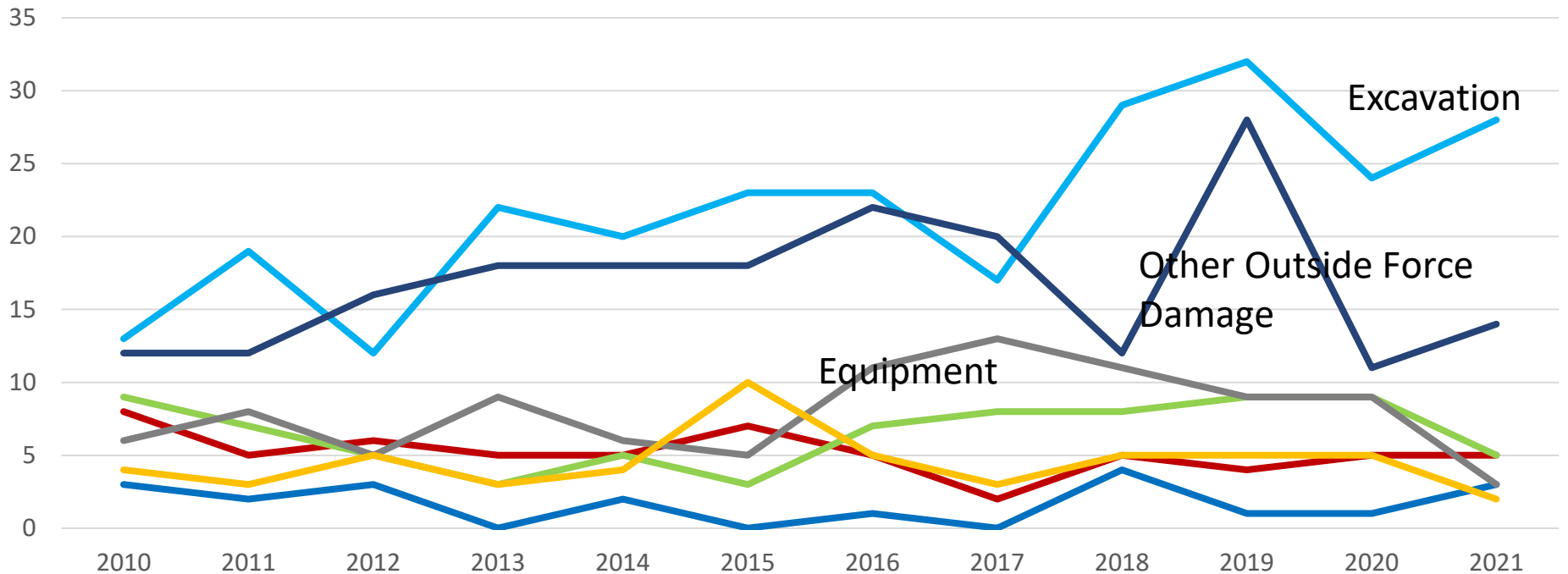
Distribution Data Analysis

Hazardous Leaks by Cause from Annual Reports



Distribution Data Analysis

Cause of Significant Incidents



ALL OTHER CAUSES

CORROSION

EXCAVATION DAMAGE

INCORRECT OPERATION

MATERIAL/WELD/EQUIP FAILURE

NATURAL FORCE DAMAGE

OTHER OUTSIDE FORCE DAMAGE

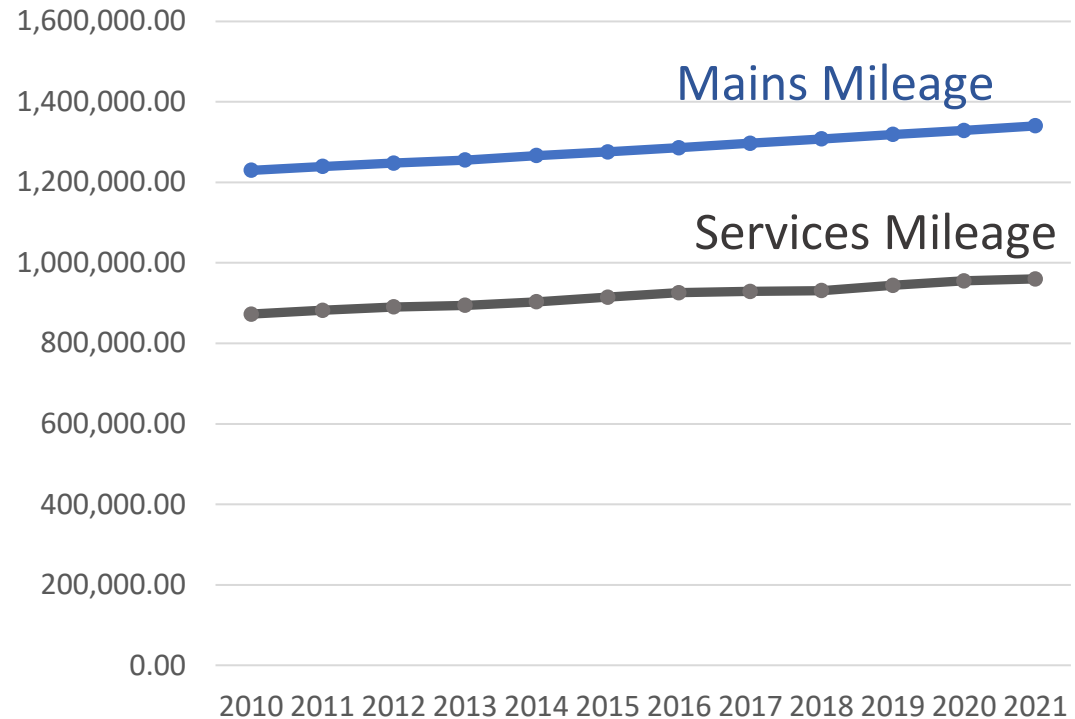


Distribution Data Analysis

Gas Distribution Mileage

Annual Reports 2021

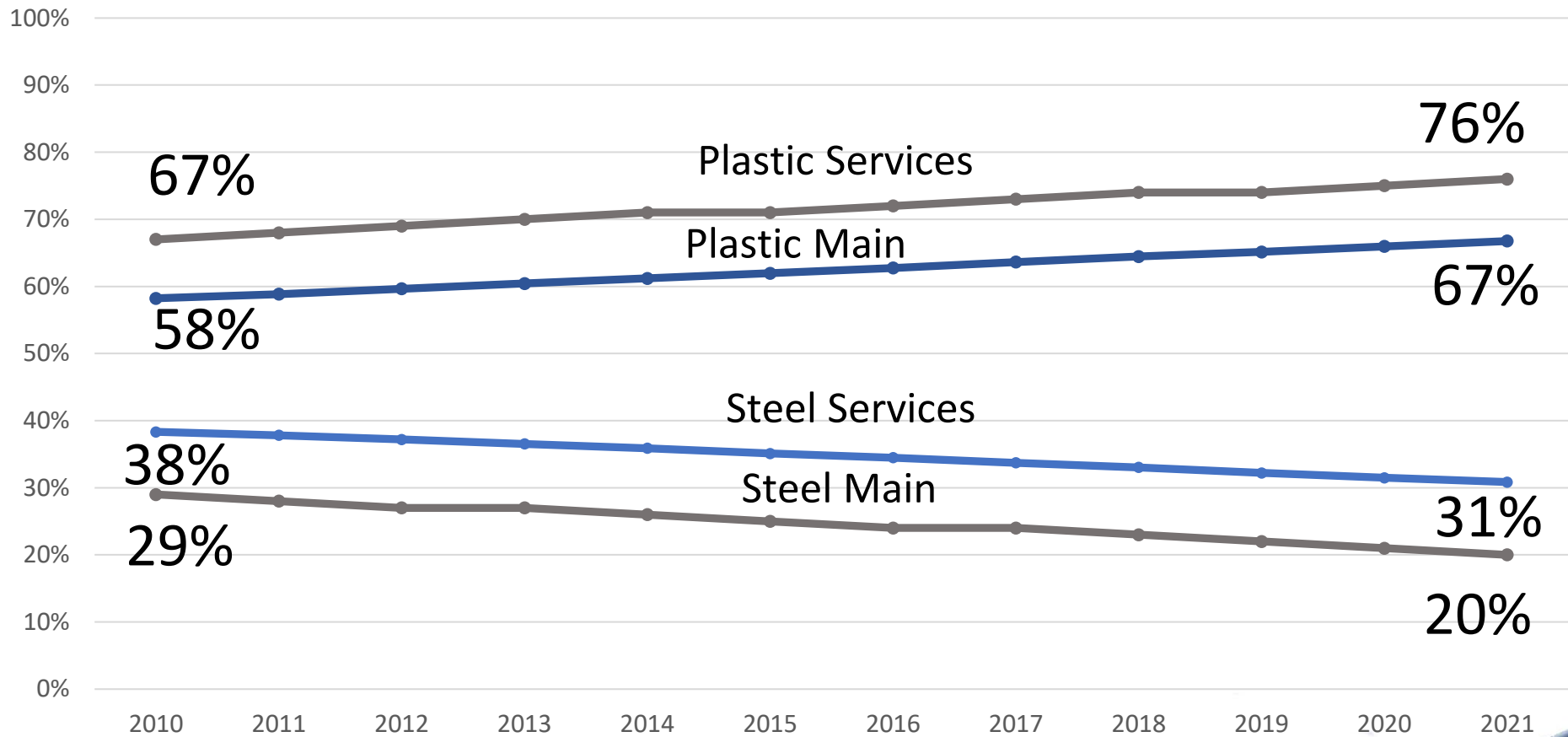
	Pipe Material	Total Miles	% of Miles
Main	STEEL	515,479.4	22.4%
	PLASTIC	804,833.5	35.0%
	OTHER MATERIALS	1,245.5	0.1%
	IRON	18,812.5	0.8%
	COPPER	6.0	0.0%
Services	STEEL	193,851.0	8.4%
	PLASTIC	730,763.9	31.8%
	OTHER MATERIALS	26,843.9	1.2%
	IRON	84.9	0.0%
	COPPER	8,189.1	0.4%



Distribution Data Analysis

Percent Steel versus Percent Plastic

2010-2021 Annual Report

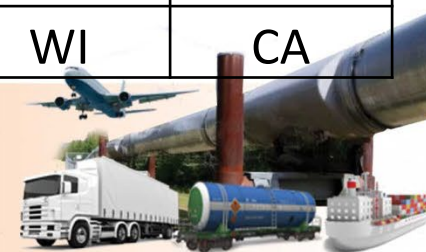


Distribution Data Analysis

Top 10 States based on 2021 Annual Reports

Mains			
Total Miles	Percent Steel Miles	Percent Plastic Miles	Percent Leaks Mile
TX	IL	NV	DC
CA	NE	AK	MA
IL	LA	ME	WV
MI	OR	DE	MD
OH	MS	VT	RI
NY	CA	UT	PA
PA	OH	MN	NY
GA	KS	WI	CT
IN	KY	MT	VA
TN	MO	VA	TX

Services			
Total Miles	Percent Steel Miles	Percent Plastic Miles	Percent Leaks Mile
CA	LA	ME	AR
MI	MT	MT	TX
TX	WY	NV	HI
IL	MS	MN	IL
OH	AL	VT	LA
GA	NM	AK	MS
NY	CA	KS	OK
IN	HI	AZ	WV
NJ	NE	VA	FL
WI	OK	WI	CA



Inspection Results Data Analysis

- The Distribution Team analyzes inspection results from the PHMSA Inspection Assistant (IA) Program – Inspection Results
- Approximately half of State Programs use IA to document inspection results
- Evaluate inspection data for inconsistencies in reporting results among PHMSA and States to improve consistency
- Identify gaps in inspection tools where regulations are not adequately covered
- Reverse engineering incidents to determine inspection questions related to an incident's cause(s) to seek improvement in conduct of inspections and to support failure investigations
- Evaluate results to identify topic areas to emphasize or focus inspections on certain inspection questions or modules



Inspection (IA) Results Data Analysis

Top Code Sections Cited for UNSAT

Cited Code	General Description
192.605(a)	Procedures – Inadequate or Failure to follow procedures
192.353(a)	Meters and Regulators – Location
192.616(c)	Public Awareness – Failure to follow procedures
192.481(b)	Atmospheric Corrosion Control – Inadequate coating
192.147(a)	Flanges and Flange Accessories – Incorrect flanges
192.355(b)(2)	Meters and Regulators – Protection
192.455(a)	External Corrosion Control – Lack of cathodic protection
192.479(a)	Atmospheric Corrosion – Lack of coating
192.357(a)	Meters and Regulators – Installation
192.1007(b)	Integrity Management - Identify Threats
192.491(c)	Corrosion Control Records – Failure to maintain records
192.605(b)(8)	Procedures – Failure to review work performed
192.615(b)(2)	Emergency Plans – Failure to train personnel
192.1007(a)(3)	Integrity Management – Identify and Gather Missing Information
192.1007(c)	Integrity Management - Rank Risks



NAPSR Participation with PHMSA

- Reviewing Interpretations
- Incidental Subject Matter Expert tasks
- PIPES Act 2020, Section 113 support activities
- PIPES Act 2020, Section 114 Implementation Team
- PIPES Act 2020, Leonel Rondon Act regulatory support activities (Sections 202-206)
- Distribution related Inspection content



Other Distribution Team Activities

- Request information from the states related to Distribution
 - NAPSR tasks
 - Surveys
 - Contact SMEs
- Share information with the states
 - Notices sent to all states
 - If information is requested by any NAPSR member
- Input and discussion driving Team that then creates Working Groups for specific topics



Distribution Team Meetings

- Monthly Team teleconference meetings
- Working Groups typically meet monthly
- Tri or bi-Annual face to face meetings
 - Depending on workload and travel restrictions
- Meetings with AGA and APGA
- Meetings with GTI
 - Working on similar projects – Methane Emissions and Hydrogen usage in natural gas systems



Questions and Comments

- What are your thoughts on how we may better support the integrity and safe operation of distribution systems?
- Any topics that you would like the team to research?
- Any comments on the work product that you may have been presented

