



Know what's below.
Call before you dig.



PHMSA
Your Safety
Our Mission

Keeping Up with the Replumbing of America

Chris Hoidal

Pipeline Safety Trust Conference

October 18, 2018

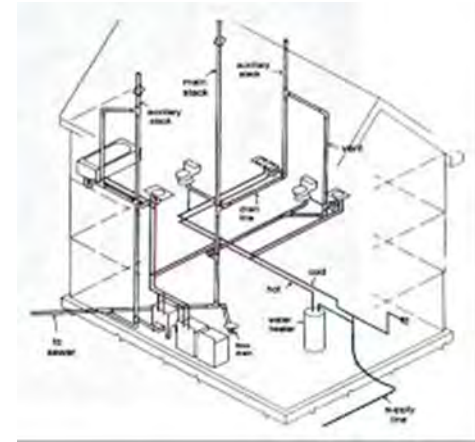


U.S. Department of Transportation
**Pipeline and Hazardous Materials
Safety Administration**

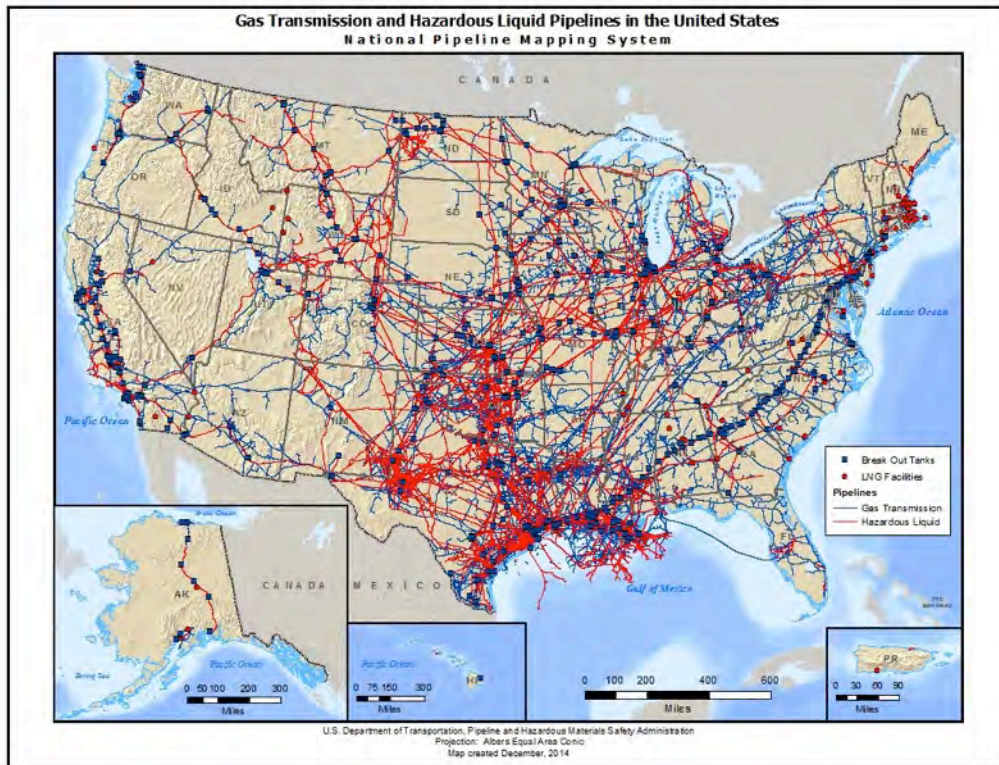
"To protect people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives."



“Replumbing” to Most People Brings to Mind This....



Unfortunately It's a Much More Serious, Urgent Undertaking for the Nation's Energy Pipelines



2011 Call to Action by USDOT Secretary

- 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.
- Cast/Wrought Iron and Bare Steel are some of the riskiest.
 - There has been a 38% and 77% decrease of cast/wrought iron mains and services, respectively since 2005.
 - Only 2% of the natural gas distribution system is still iron pipe.
 - https://opsweb.phmsa.dot.gov/pipeline_replacement/default.asp
- **Still much work to do but it must be done thoughtfully.**



Massachusetts Incident – 9/13/18

NTSB Preliminary Report released 10/12/18 -

<https://www.nts.gov/investigations/AccidentReports/Reports/PLD18MR003-preliminary-report.pdf>

- High-pressure (75 psig) gas released into a low-pressure (.5 psig) distribution system resulted in:
 - 1 fatality, 21 hospitalized
 - 131 structures damaged (5 homes)
 - structure fires ignited by gas-fueled appliances
- Cast-iron to plastic pipe replacement program in progress
- Regulator sensing lines not moved from abandoned pipe to new pipe during tie-in
- Regulators went full open exceeding MAOP of distribution system



Massachusetts Incident – 9/13/18

- Work crew followed procedures
- Procedures did not include location of regulator sensing lines
 - Pipelines being abandoned kept calling for more gas
- Investigation ongoing and will include:
 - Coordination between the emergency responders and Operator
 - Analysis of the work package (design, preparation, execution)



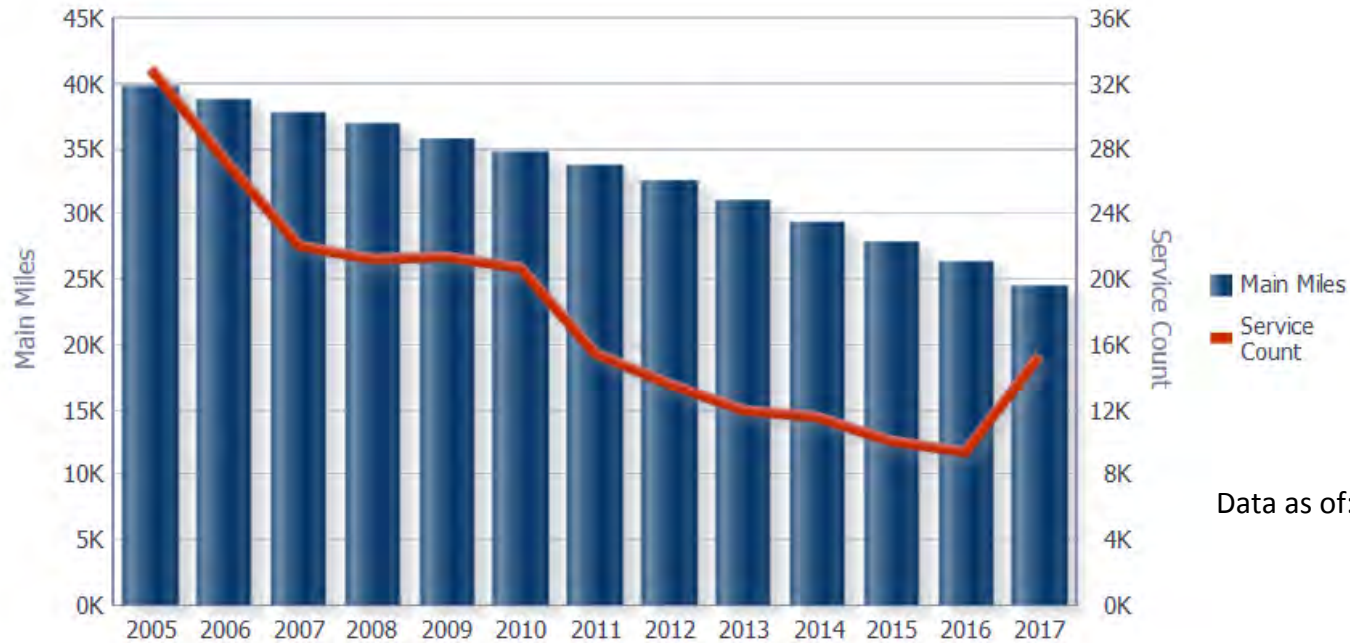
Gas Distribution Cast and Wrought Iron 2005 - 2017

Cast and Wrought Iron Main Miles have decreased 38% since 2005

Cast and Wrought Iron mains are less than 2% of the total gas distribution main miles.

Cast and Wrought Iron Service Count data quality efforts are underway

Less than .1% of all gas distribution services are Cast and Wrought Iron.



Data as of: 3-28-2018



Gas Distribution Steel Miles – Bare and Unprotected 2005 - 2017

Miles of **Bare Steel** has declined steadily since 2005

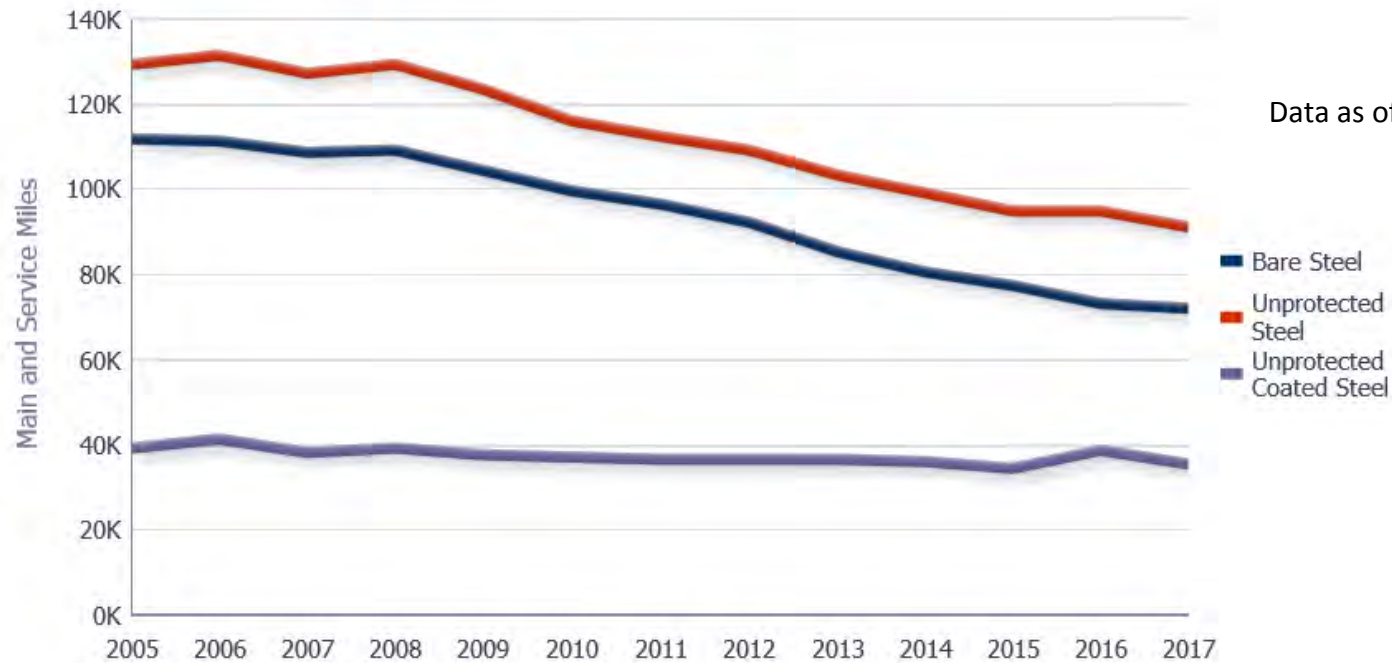
Decrease since 2005 is 36% 3% of gas distribution systems are Bare Steel

Miles of **Unprotected Steel** has declined steadily since 2005

Decrease since 2005 is 30% 4% are Unprotected Steel

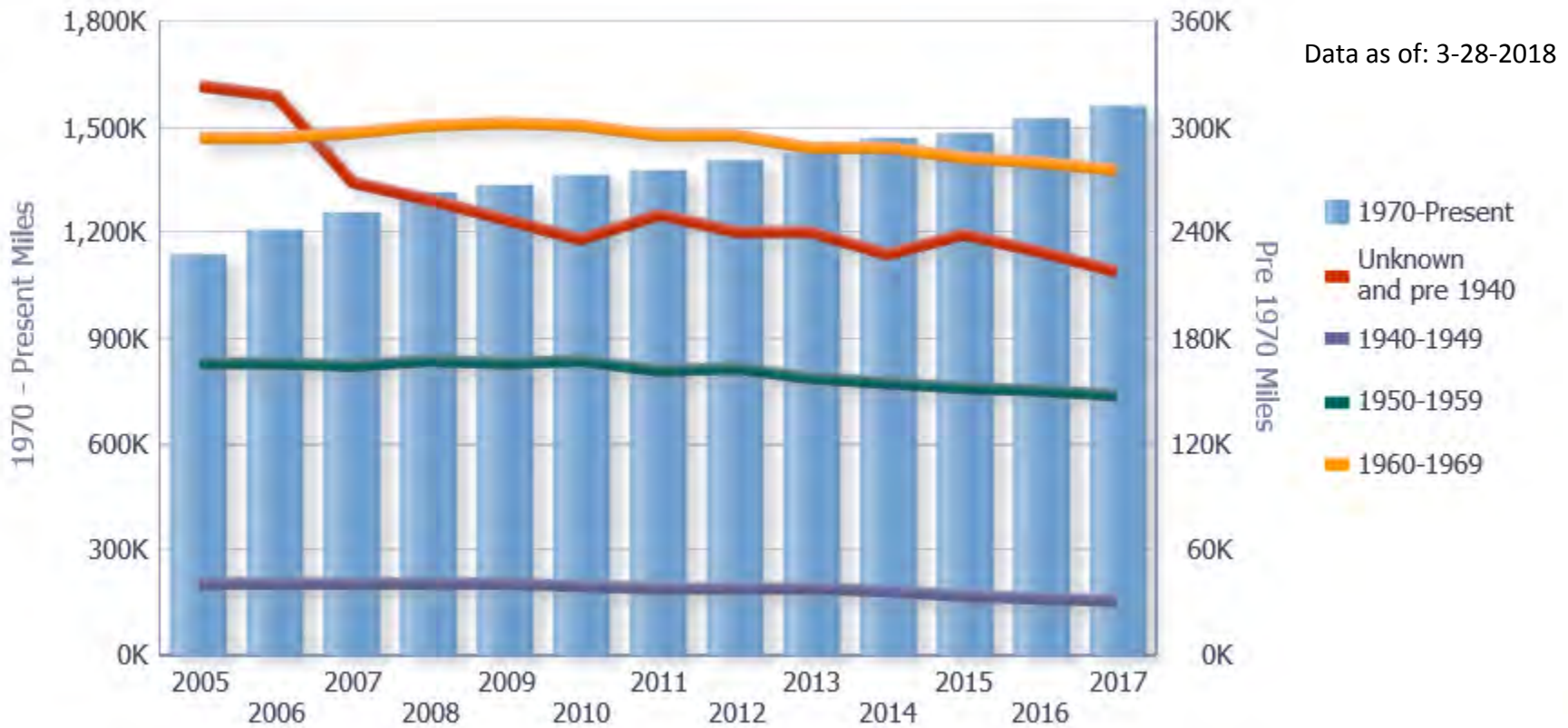
Miles of **Unprotected Coated Steel** has declined since 2005

Decrease since 2005 is 9% 2% are Unprotected Coated Steel



Gas Distribution Miles by Decade Installed 2005 - 2017

Miles of pipeline system installed **Pre-1970** has declined 18% since 2005
30% of gas distribution systems were installed Pre-1970



Continued Cast Iron Challenges

Different states = different risks & different priorities

- Need to focus on highest risk pipe in each state
- Older pipe can be difficult to assess/repair
- Very expensive to consumers
- Potentially very disruptive to the public



Cast Iron Replacement is Tip of Replumbing “Risk” Iceberg

Need more capacity:

- The pipeline network is being pushed hard right now due to increased throughput from new or revitalized oil and gas fields. Existing pipelines are also in the wrong areas.

Repurposing of existing pipelines:

- Change of flow direction or commodity being transported.
- Even if well maintained steel pipe doesn't degrade over time, much of the pipeline system has been exposed to 60+ years of threats like land movement, excavation dings, rock movement, etc. or damage predating the Pipeline Safety Code. -- Not all pipeline addressed by IMP are these repurposed ones.

Replumbing with new or repurposed pipelines can introduce new risk if not managed well:

- Change introduces new risk even for new pipelines if not well managed, regardless if the pipelines are new, replaced, or repurposed.



Aging Infrastructure: (% by Decade in USA)

| Decade | Hazardous Liquid | Gas Transmission | Gas Distribution Main | Service |
|-----------------|------------------|------------------|-----------------------|---------|
| Unknown & <1920 | 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% |

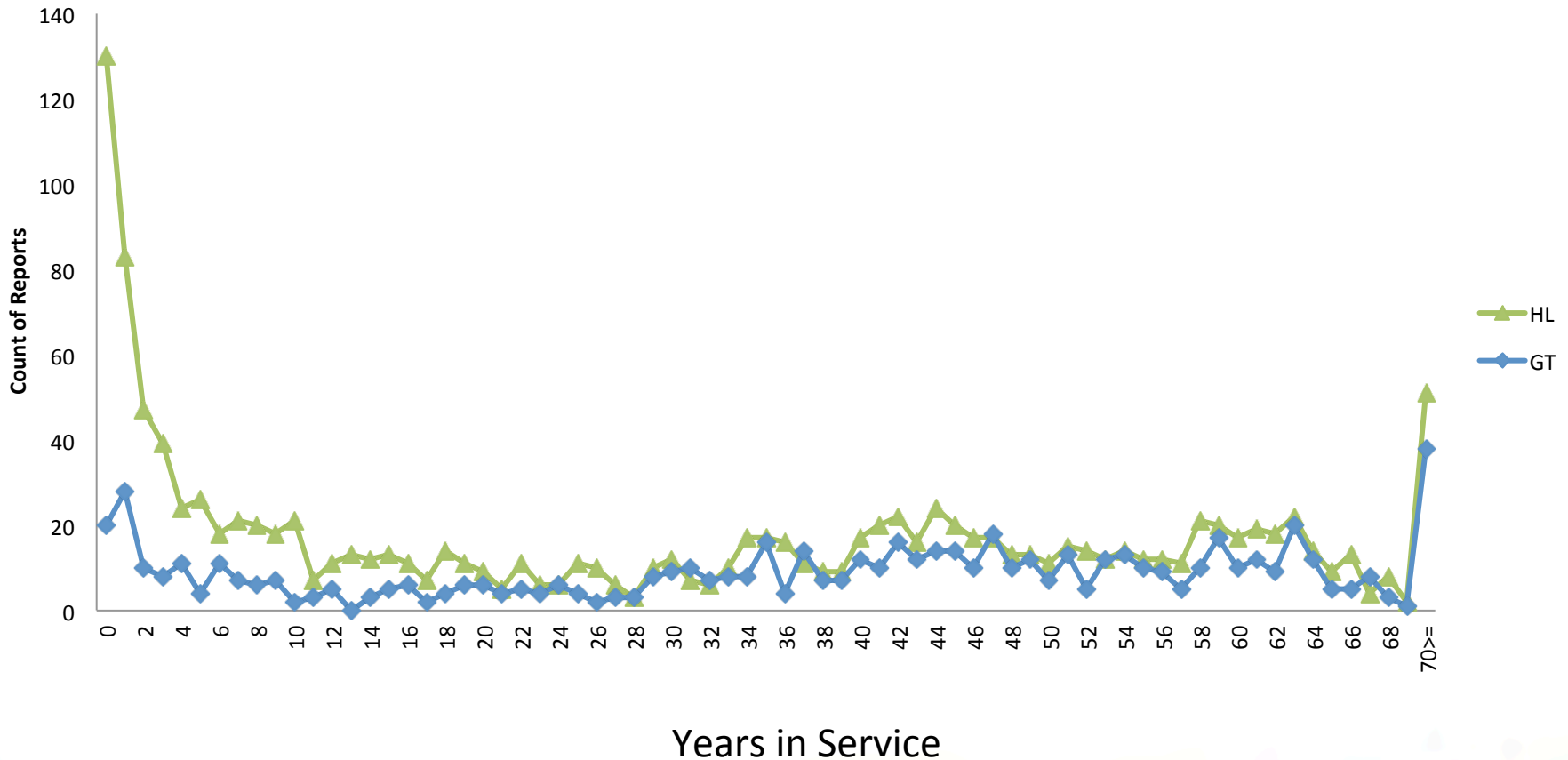
Summary Statistics:

- 56%** of Hazardous Liquid infrastructure is from the 1920s-1950s.
- 58%** of Gas Transmission infrastructure is from the 1920s-1950s.
- 47%** of Gas Distribution Main infrastructure is from the 1920s-1950s.
- 44%** of Hazardous Liquid infrastructure is from the 1960s-1990s.
- 42%** of Gas Transmission infrastructure is from the 1960s-1990s.
- 53%** of Gas Distribution Main infrastructure is from the 1960s-1990s.
- 40%** of Service infrastructure is from the 1920s-1950s.
- 60%** of Service infrastructure is from the 1960s-1990s.



Time to Failure

All Reported Hazardous Liquid Accidents and Gas Transmission Incidents (2010-2015)



PHMSA and State Focus

Continue close oversight of new construction and inspect frequently after commissioning.

Focus on management of change procedures to minimize introduction of new risks.

Do research in the area of risk management such as our Risk Management Working Group

Explore regulatory reform to free up resources to improve more risky pipelines, e.g. Class Location Regs?

