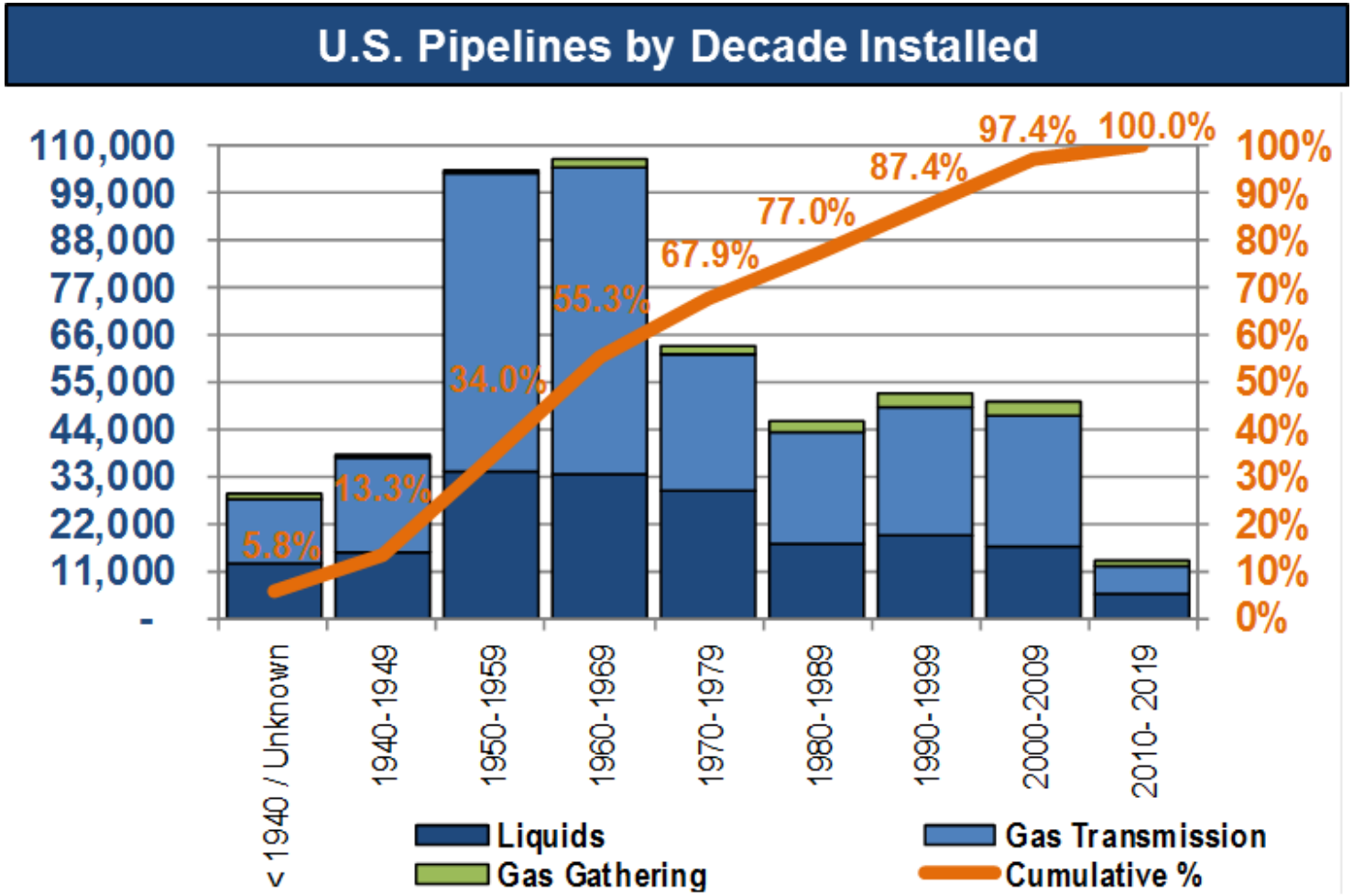
Pipeline Integrity Management: National Networks Upgrade

Ryan Chadwick and Martin Marini
October 5, 2013

Pipeline Age in US



Source: Pipeline Safety Trust

mlpprotocol.com

Iron Pipe Inventory

- Approximately 97 percent of natural gas distribution pipelines in the U.S. were made of plastic or steel at the end of 2011. The remaining 3 percent is mostly iron pipe.
- There are 32,439 miles of cast and wrought iron pipeline in the US, with a large portion in the following states:

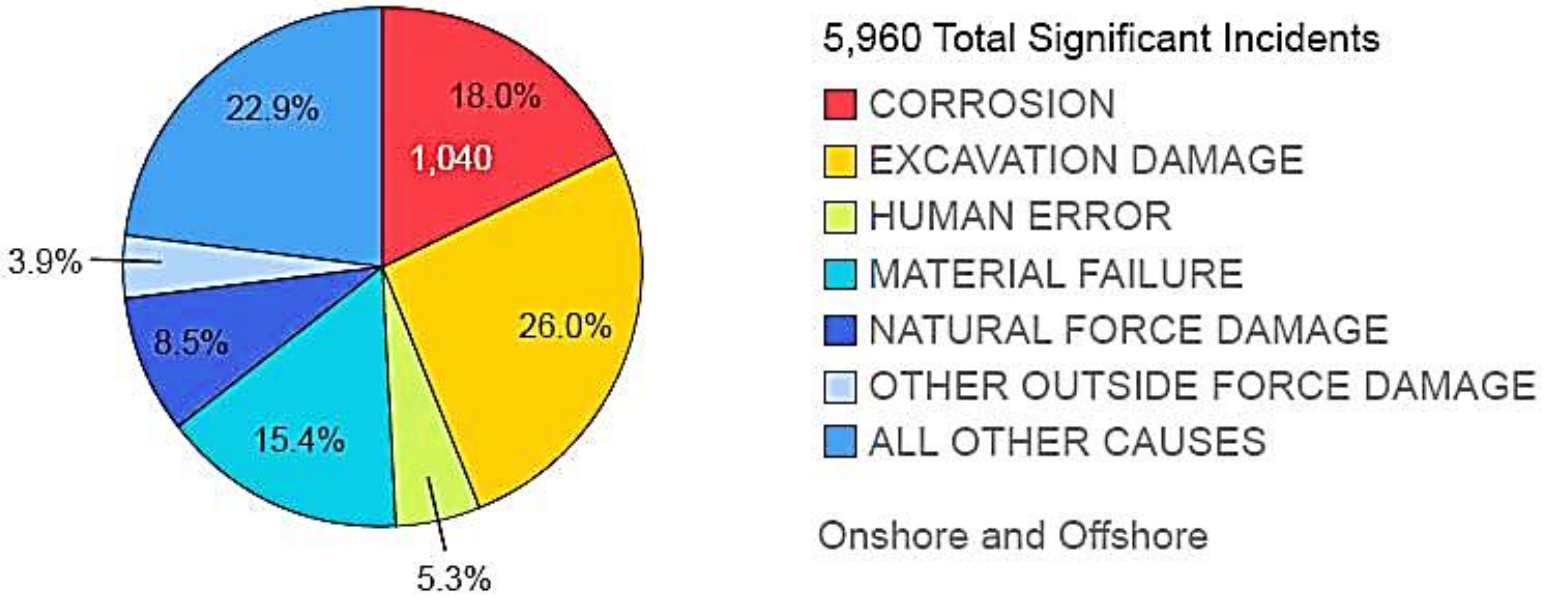
State	Miles
NEW JERSEY	5,044
NEW YORK	4,417
MASSACHUSETTS	3,792
PENNSYLVANIA	3,221
MICHIGAN	3,101
ILLINOIS	1,744
CONNECTICUT	1,467
MARYLAND	1,399
ALABAMA	1,383
MISSOURI	1,113

Bare Steel Pipe Inventory

- Bare steel pipelines are at higher risk that coated pipe because of age and lack of protective coating.
- There are 61,324 miles of bare steel pipeline in the US, with a large portion in the following states:

State	Miles
OHIO	9,043.87
PENNSYLVANIA	8,086.17
NEW YORK	6,899.50
TEXAS	6,099.91
CALIFORNIA	5,268.69
KANSAS	3,487.43
WEST VIRGINIA	2,962.98
OKLAHOMA	1,856.60
MASSACHUSETTS	1,779.79
NEW JERSEY	1,707.70
ARKANSAS	1,406.28

Pipeline Significant Incidents (1988-2008)



- In 2012, over 68% of Hazardous Liquids and Gas Transmission Significant Incidents were caused by corrosion or material/weld/equipment failure.

PHMSA

- Pipeline & Hazardous Materials Safety Administration is responsible for implementing and enforcing pipeline regulations nationally in the US.
- Integrity Management regulations:
  - Hazardous Liquid 2000/2002
  - Gas Transmission 2004
  - Gas Distribution 2010
- 38% increase in enforcement personnel since 2008.
- Prescriptive and management-based regulations.
- Documentation and process reviews.
- Field visits.

Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011

- Operators of transmission lines in high consequence areas (HCAs) must determine or reconfirm maximum allowable operating pressure (MAOP) of each segment.
  - Verify records;
  - Reconfirm MAOP if records incomplete; or
  - Strength test untested pipe operating at >30% SMYS.
- PHMSA required to report on cast iron pipe replacement.
- PHMSA required to evaluate expanding integrity management system requirements beyond HCAs .
- PHMSA required to respond to NTSB recommendations to eliminate grandfather clause for pre-1970 gas transmission pipelines and to require reconfiguring of all gas transmission pipelines to be piggable.
- PHMSA proposing Integrity Verification Process (IVP) that would apply to 91,000 miles of gas transmission lines in HCAs and moderate consequence areas (MCAs).

Near-Term Outlook

- Pipeline operators will continue to replace iron pipe.
- Pipeline operators may need to repair or replace some pipe to avoid derating under MAOP regulations.
- Enforcement environment is trending towards more enforcement.