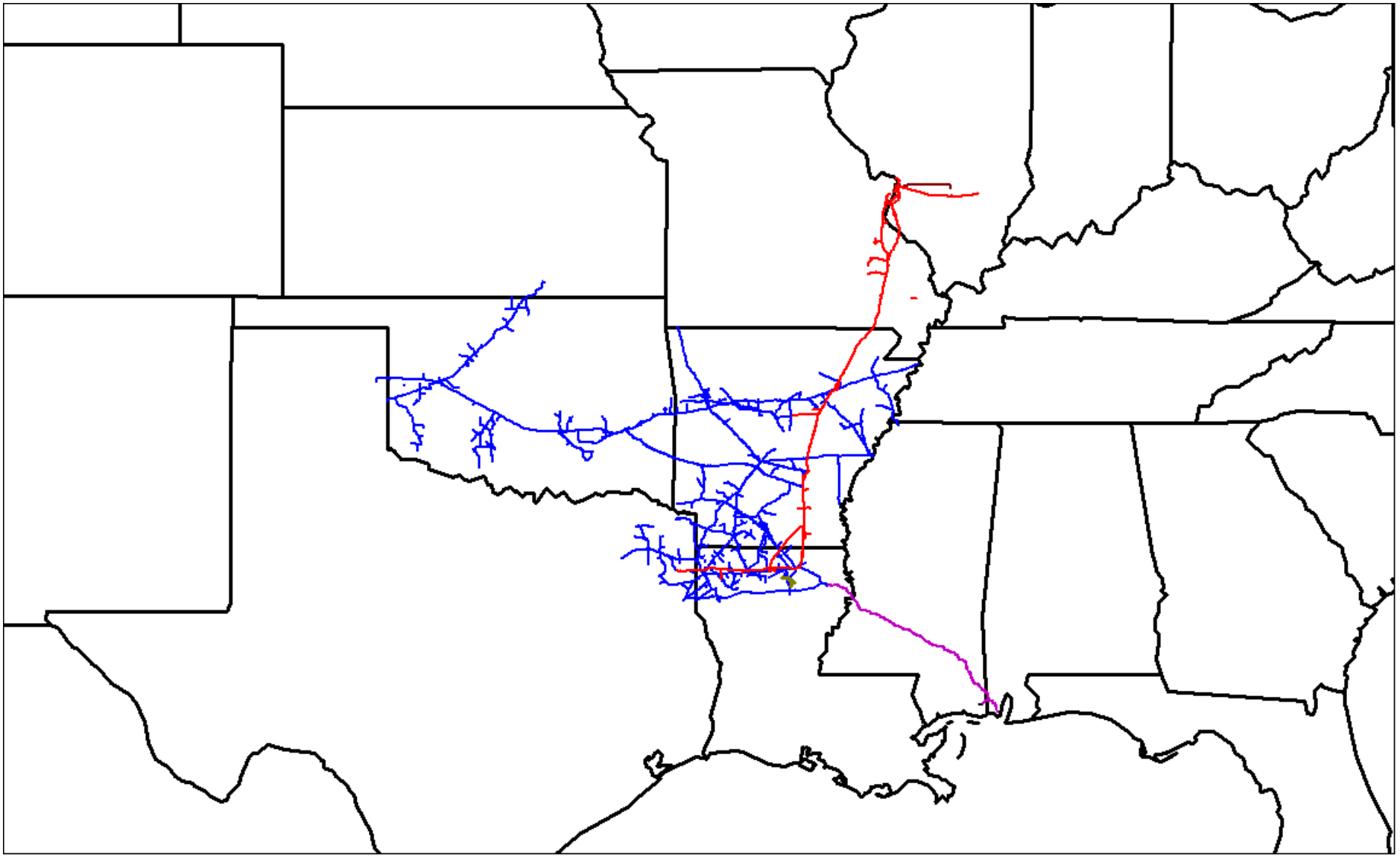
Interstate Natural Gas Association of America

Risk Assessment

As Presented at the PHMSA Risk Assessment Workshop on July 21, 2011

CenterPoint Energy - Pipelines Footprint



Risk assessment background

- **Our business is transporting a flammable gas in an underground network throughout the countryside, in cities, towns, through farms, and near homes… so our business has inherent risk.**

- **While our goal is zero, we will always be managing risk, each and every day.**

- **Managing risk is critical to protecting the people in the communities we traverse and serve, as well as our employees and other people around our facilities**

Risk assessment background

- **PHMSA regulations issued in 1970 established specific safety design and operational practices for all pipelines that essentially encompassed some risk management principles:**
  - Regulations require conservative assumptions regarding material properties when properties are unknown
  - Mitigation of threats by a variety of means including more conservative design and operations when near populations

- **INGAA engaged GRI in 1993 to examine the potential value that risk assessment/management can have for the pipeline industry**

- **INGAA worked with PHMSA and API to further develop risk management principles specifically applicable to pipelines in the mid-1990s and conducted risk management demonstration projects.**

Risk assessment background

- **ASME B31.8S and resulting IM programs built upon the earlier risk management work greatly enhancing operators' ability to identify threats and to manage risk**
  - Properties and risks of older materials and construction processes have been classified and cataloged, providing for better risk identification
  - Consensus standards require unknown properties to be accounted for in pipeline risk assessments through the use of conservative assumptions
  - Baseline assessments in HCA's will be completed in 2012 and reassessments underway
  - Although <5% of pipeline mileage is located within HCA's, 53% of mileage has been assessed per one recent INGAA survey

Risk assessment background

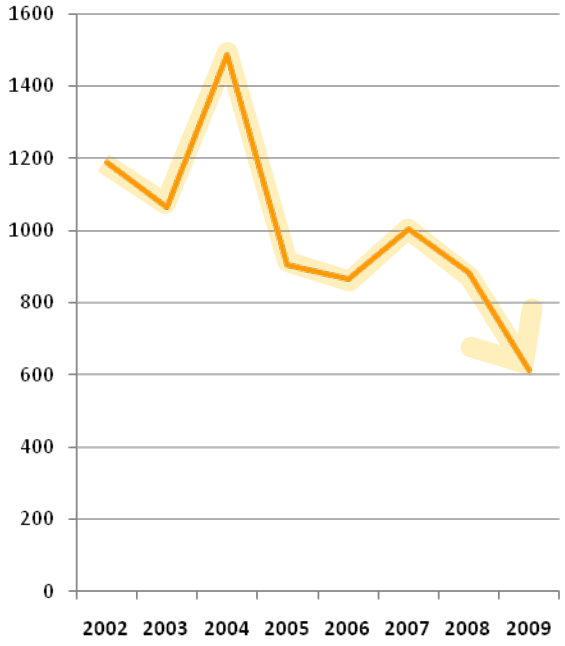
- **Other PHMSA regulations and advisory bulletins addressed and enhanced additional aspects of risk management, including:**
  - Public awareness
  - Damage prevention
  - Operator qualification
  - Records for MAOP validation
- **Industry has published numerous studies analyzing the causes and consequences of natural gas transmission pipeline incidents**
- **The results of these enhancements are clear in the context of leak history and number of incidents…**

Risk Management leads to Progress –Transmission Pipeline Leaks are Declining

Leak trends in the Major Cause Categories are showing positive results

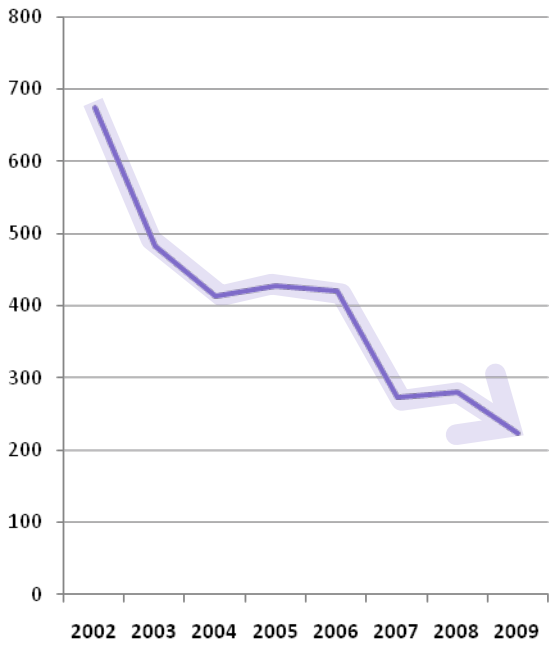
- Corrosion is the major cause of gas leaks, but;
- Excavation Damage is the predominant cause of Serious Accidents

Corrosion Leaks



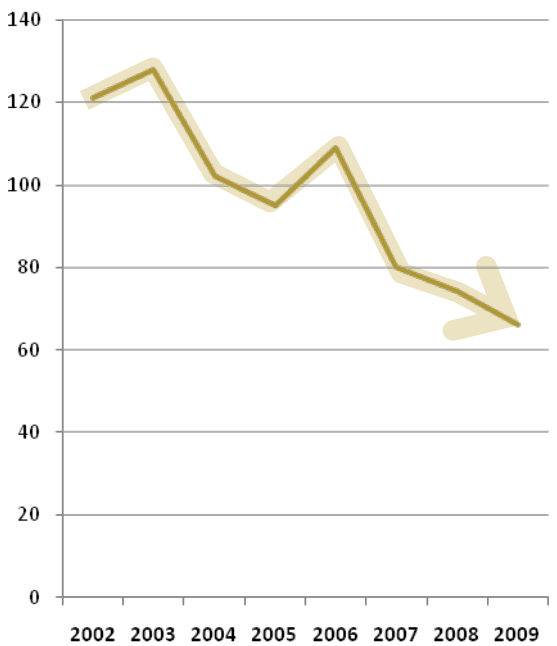
46% reduction

Material & Weld Leaks



65% reduction

Excavation Damage Leaks



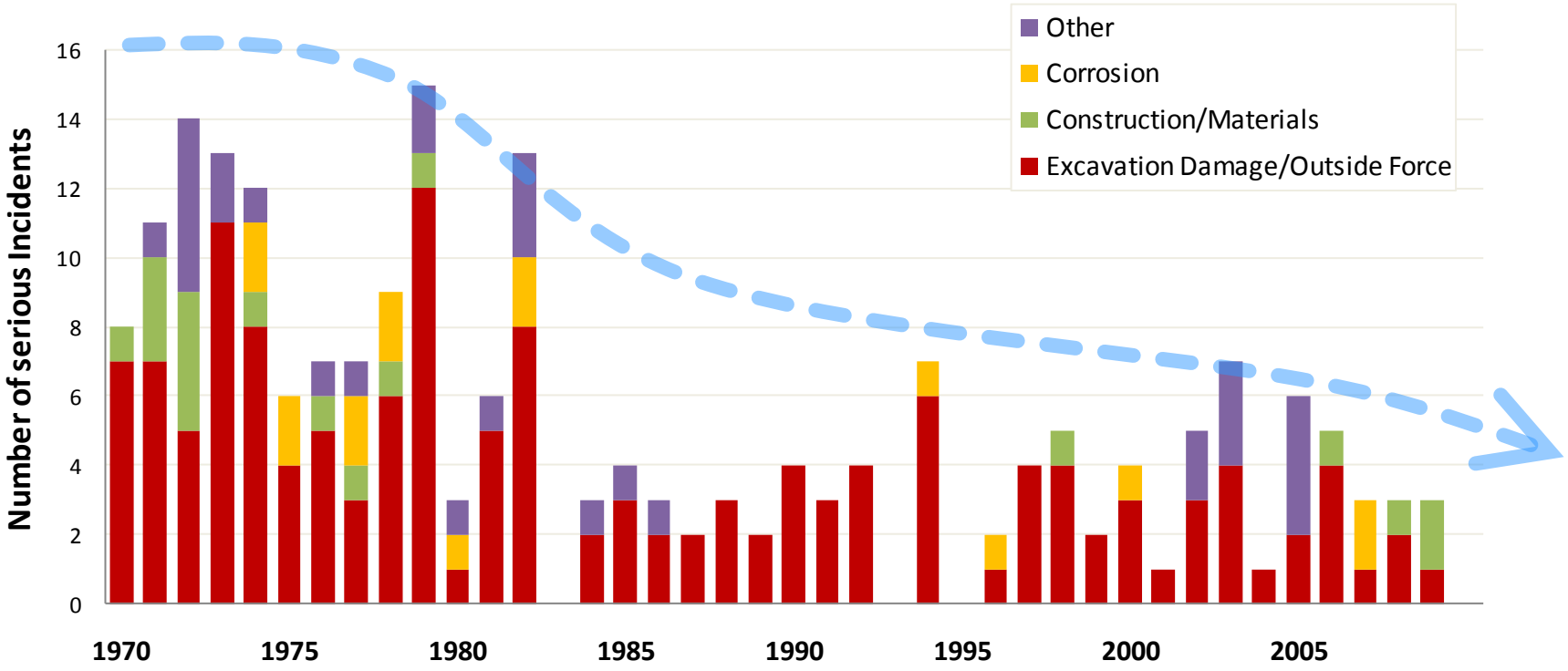
54% reduction

Source: Annual report data submitted by all PHMSA -regulated operators (INGAA and non-INGAA) for 2002-2009, onshore only. ***Leaks*** *are defined as unintentional releases of natural gas*

Serious Transmission Pipeline Incidents Involving Public are also Declining

Serious Incidents involving the public have been declining for four decades

However, ***Significant Incidents**** - while infrequent - are still occurring at an unacceptable level



Source: PHMSA web site, incident report data submitted by all PHMSA regulated operators (INGAA and non-INGAA) for 1970-2010 involving death or injury of a member of the public; onshore only.

INGAA

Guiding Principles of Pipeline Safety

- **Our goal is zero incidents** - a perfect record of safety and reliability for the national pipeline system. *We will work every day toward this goal.*
- **We are committed to safety culture** as a critical dimension to continuously improve our industry's performance.
- **We will be relentless in our pursuit of improving** by learning from the past and anticipating the future.
- **We are committed to applying integrity management principles on a system-wide basis.**
- **We will engage our stakeholders** - from the local community to the national level - so they understand and can participate in reducing risk.

INGAA Board Level Pipeline Safety Task Force

Taskforce Workstreams:

1. Integrity Management Continuous Improvement ("IMCI")
2. Communications
3. Legislative
4. Regulatory

IMCI Initiatives:

1. Stakeholder Outreach
2. Risk Management
3. Integrity Management Tools
4. Pipelines Built Prior to PHMSA Regulations
5. Technology Development & Deployment
6. Management Systems
7. Emergency Preparedness Response
8. New Construction
9. Gas Storage

IMCI Risk Management Initiative

- **IMCI Risk Management initiative consists of two parallel efforts:**
  - Team 2A: Define approaches to broadening IM practices (i.e. review IM outside of HCA's)
  - Team 2B: Given almost a decade of IM implementation, conduct a fresh and comprehensive review of:
    - ASME B31.8S and overall threat matrix
    - Threat definitions and terminology
    - Critical review of significant threats
    - Stable threats (unless acted upon) and material fatigue
    - Threat interaction (complex analysis of threat combinations requiring outside study)
    - Root cause analysis of incidents to learn from and enhance threat assessments
    - Effective data integration practices/models

Managing the Multiple Threats to Pipeline Safety

Management requires comprehensive data integration, risk assessment, multiple tools and focused efforts

Category	Probability	Management
Corrosion: • Internal • External • Stress Corrosion	Threat increases over time	Prevention, Periodic Assessment, Repair and Mitigation
Defects: • Manufacturing • Fabrication & Construction • Equipment	Threat is stable unless activated by change in service conditions	Prevention, Initial Assessment and Repair
Events: • Excavation Damage • Incorrect Operation • Natural Force Damage • Other outside forces	Threat occurs unpredictably	Prevention, Education, Training and Surveillance

References: ASME B31.8s Integrity Characteristics of Vintage Pipelines, INGAA, 2005

Summary

- Our goal is ZERO incidents
- Our Performance has Been Continually Improving
- INGAA, INGAA Foundation, and its members are committed to continuous improvement
- Risk assessment review is underway
  - We are cognizant of Public opinion
  - We welcome input from and will work cooperatively with all Stakeholders
  - We want to focus on real, value-adding improvements to safety
- Thank you !