

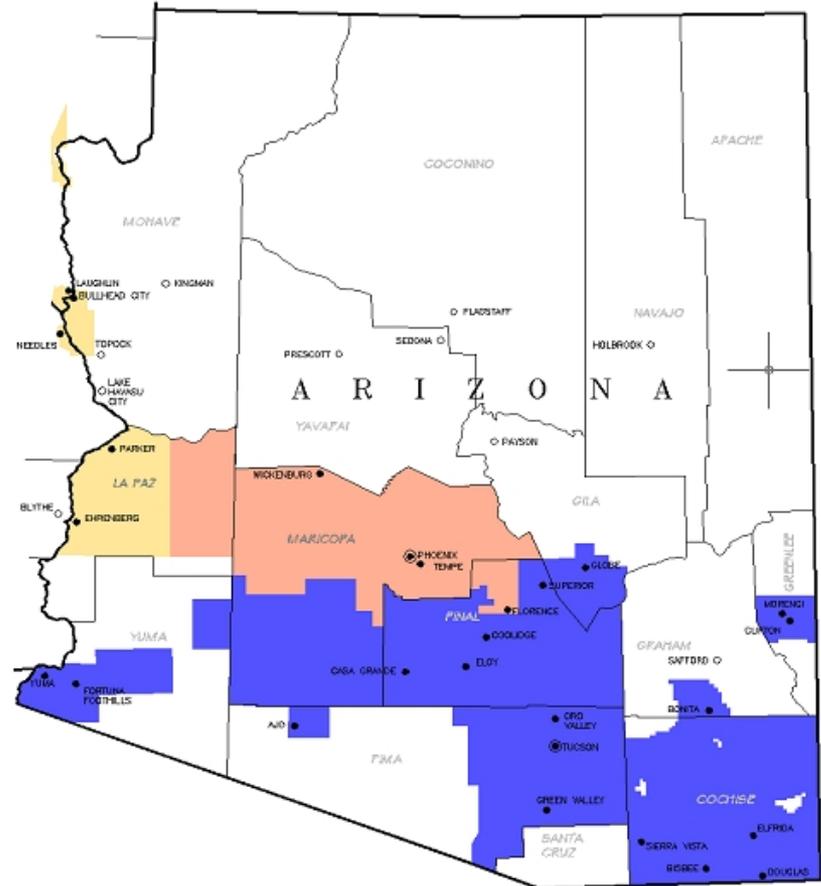
Southwest Gas Corporation Pipeline Safety



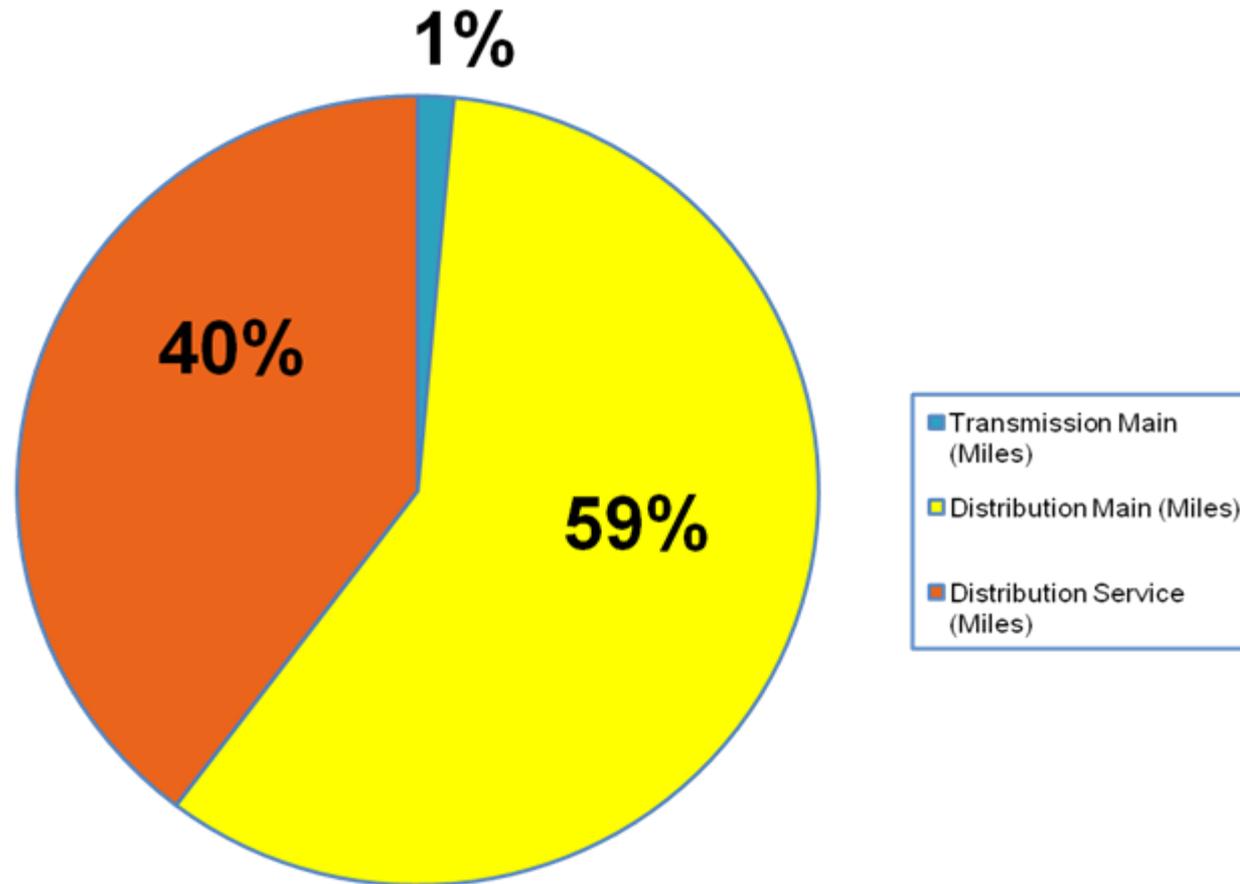
Jerry Schmitz, P.E.
Vice President/Engineering

Southwest Gas Corporation Arizona Facilities

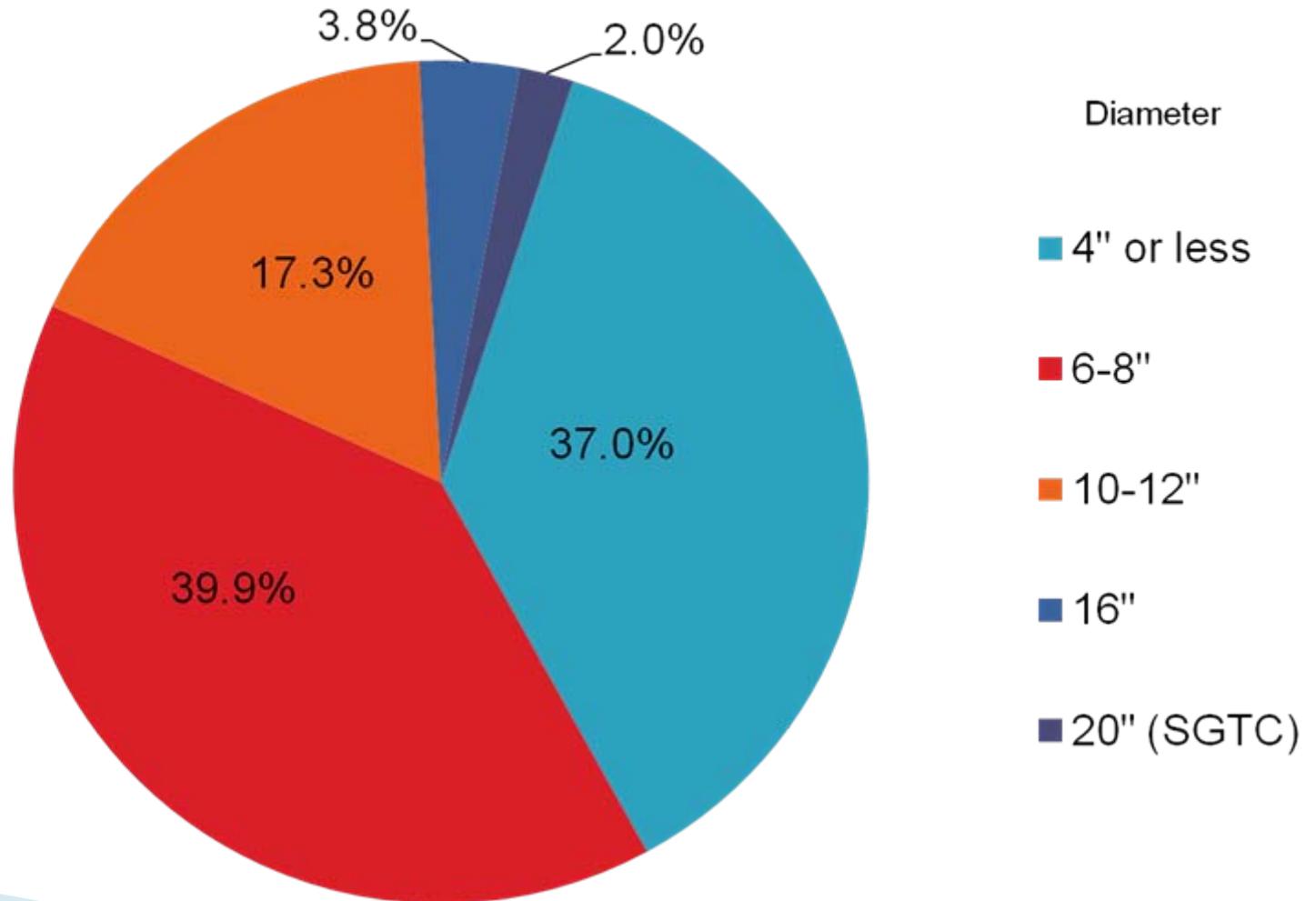
- ▶ Approximately 1 million customers
- ▶ 465 miles gas transmission pipelines
- ▶ 90 miles HCAs
- ▶ 19,000 miles gas distribution main
- ▶ 12,800 miles gas distribution services



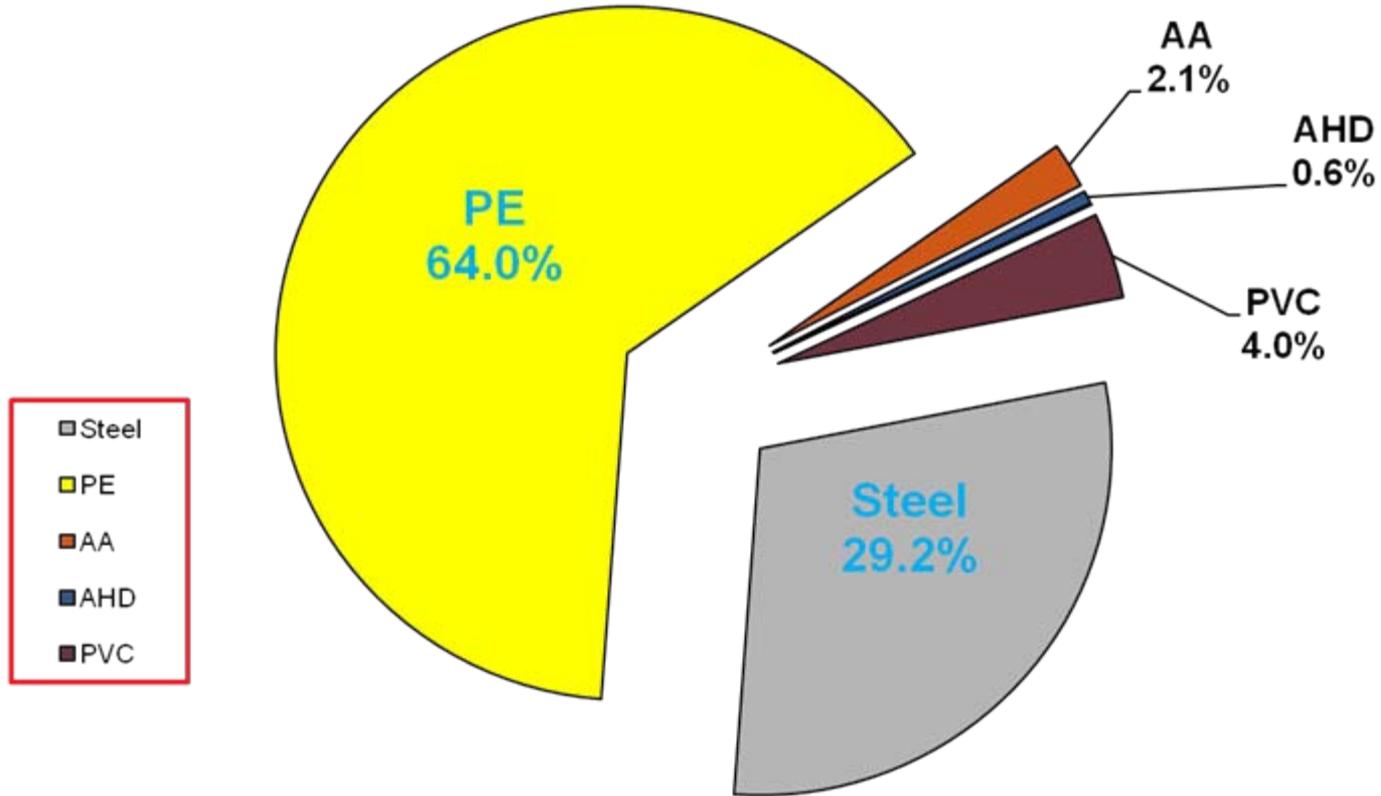
Transmission vs. Distribution



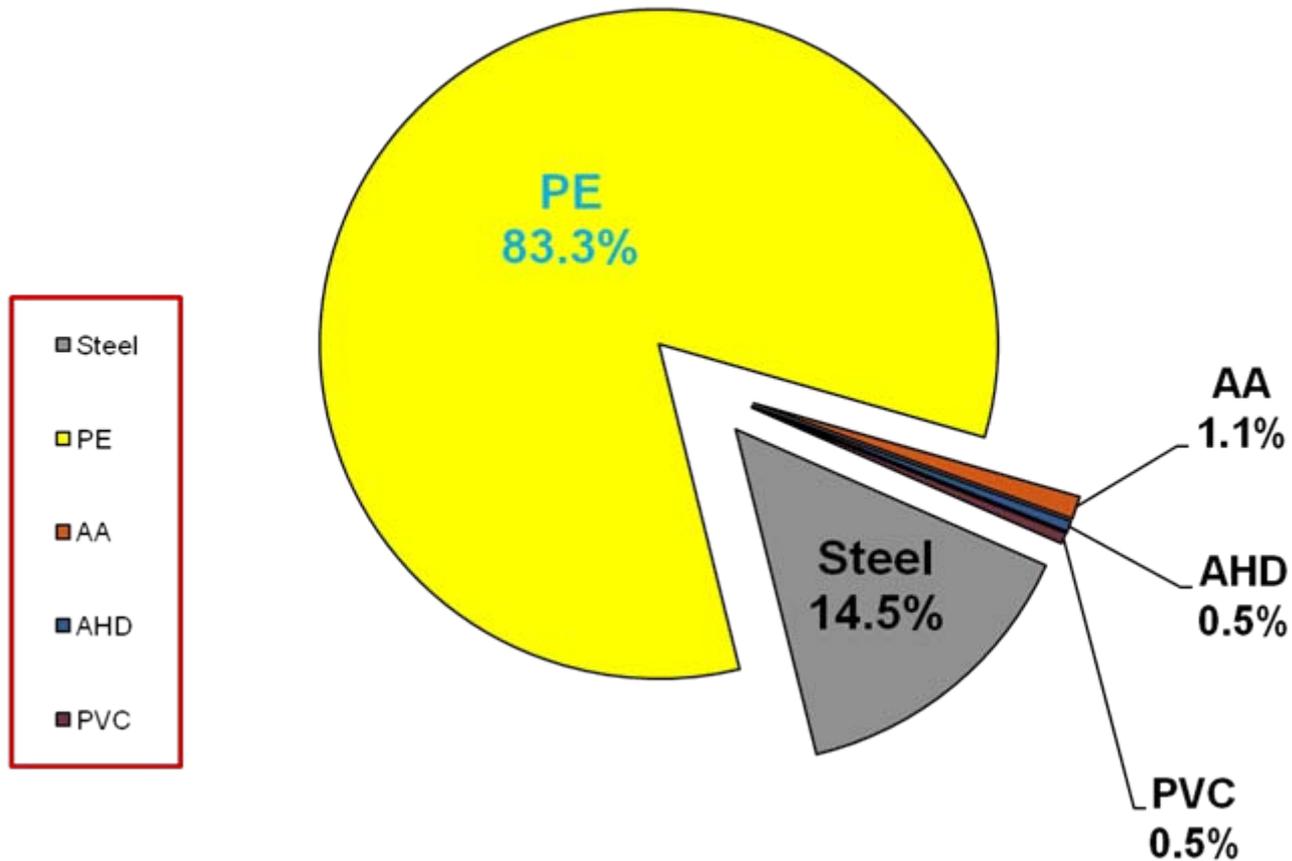
Transmission by Pipe Size



Distribution Mains by Type



Distribution Services by Type



Pipeline Safety

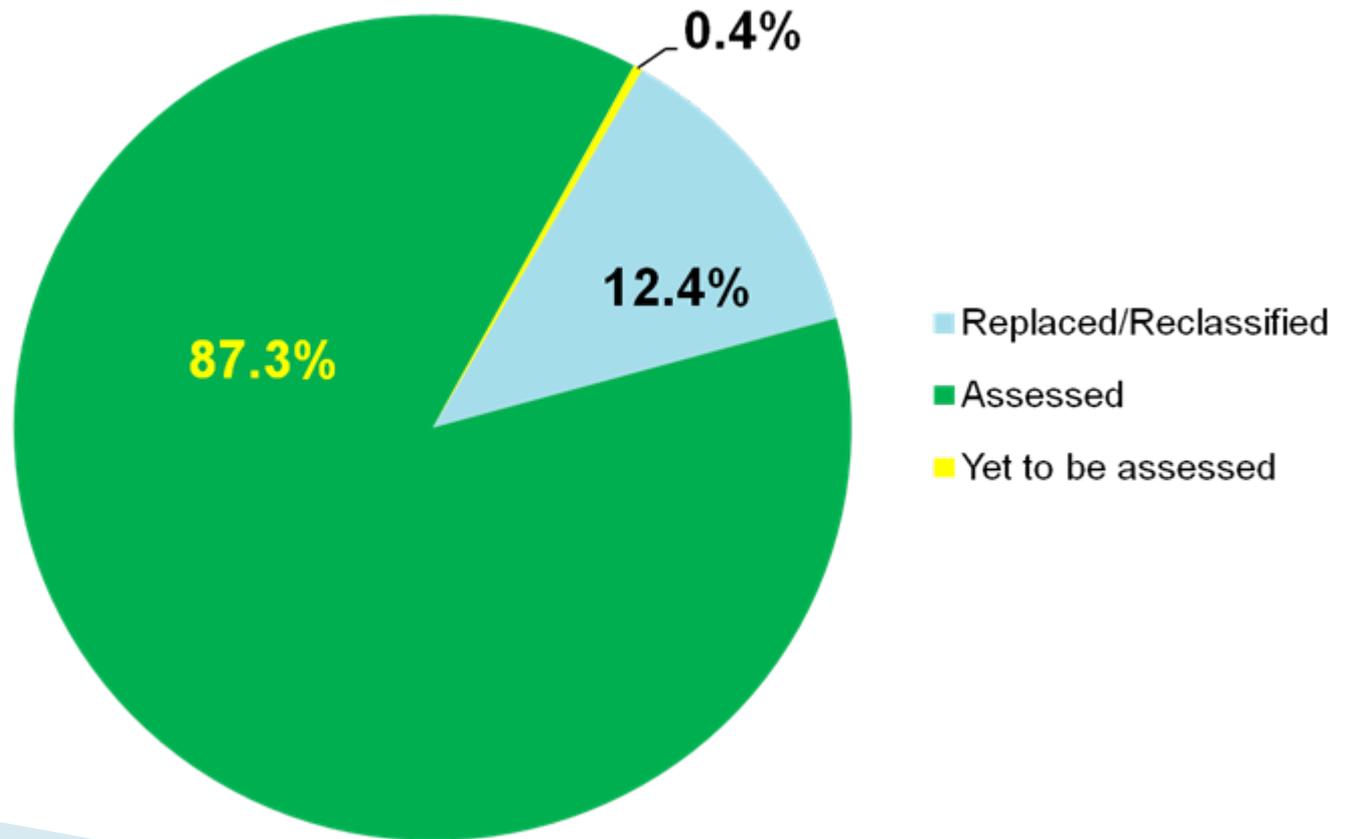
- ▶ Public safety is paramount
 - ▶ Protection of life and property integral to Southwest Gas' practices and procedures
 - ▶ Southwest Gas meets or exceeds federal and state pipeline safety requirements
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Process to Identify, Evaluate and Measure Risks to Pipelines

- ▶ Integrity Management
 - Risk-based process
 - Gather and evaluate pipeline information
 - Prioritize and implement actions based on that information to maintain the safety and integrity of pipelines
 - Measure effectiveness with performance metrics
 - Integrity management is the most effective process for maintaining and improving the safety and reliability of gas transmission and distribution pipelines

Transmission Integrity Management Status

Baseline HCAs in Q3 2011
Total BAP Mileage: 70.4

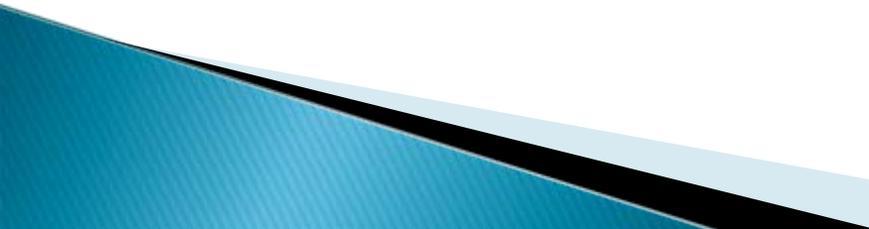


Distribution Integrity Management Program (DIMP)

- ▶ 25 years of experience
- ▶ In 2000, a formal evaluation and assessment process was implemented to address all distribution pipelines
 - This process evolves with annual review and revisions
- ▶ Southwest Gas' DIMP Plan was updated in July in response to the new federal regulations

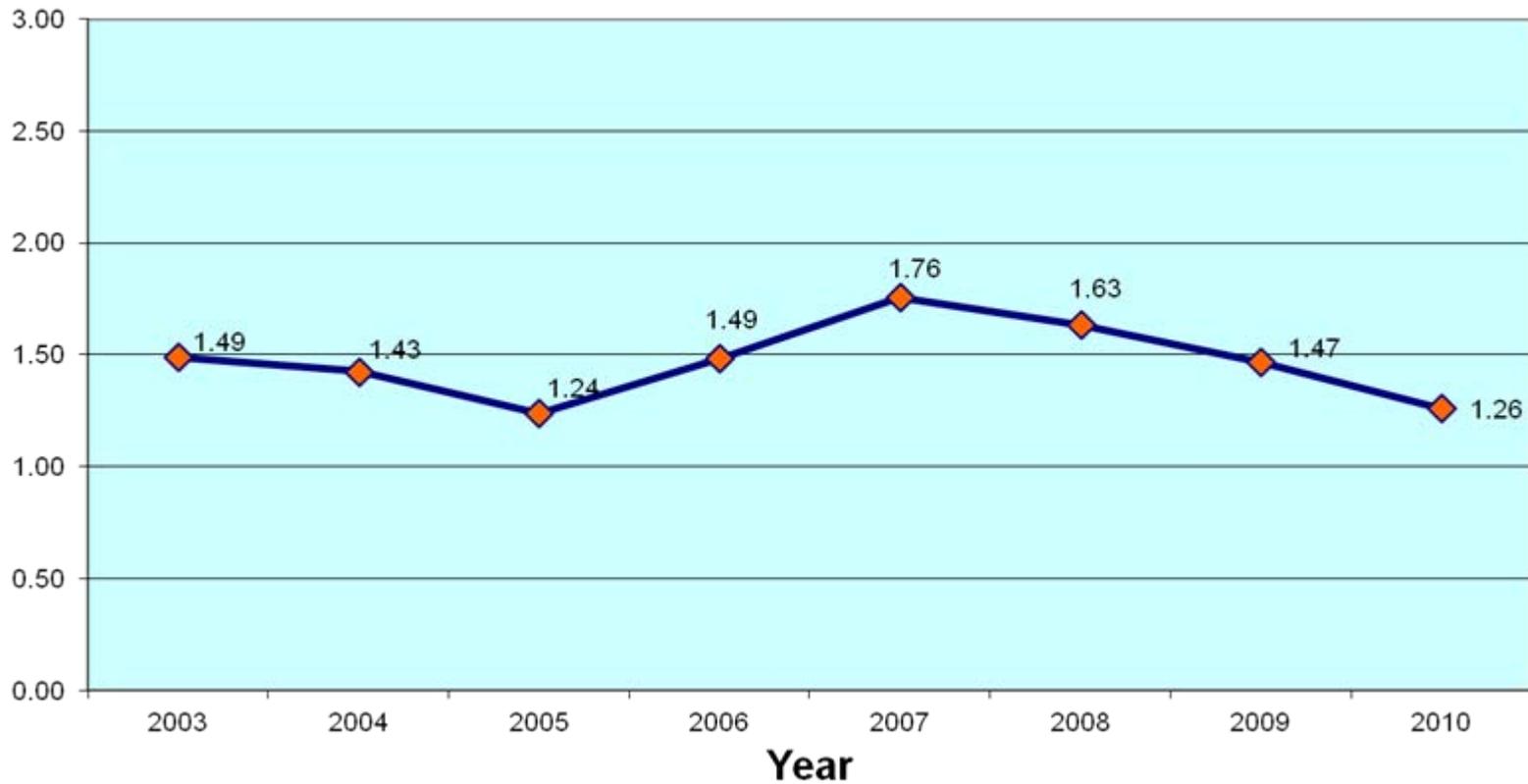


Steps Taken to Mitigate Risks Above and Beyond Code Requirements

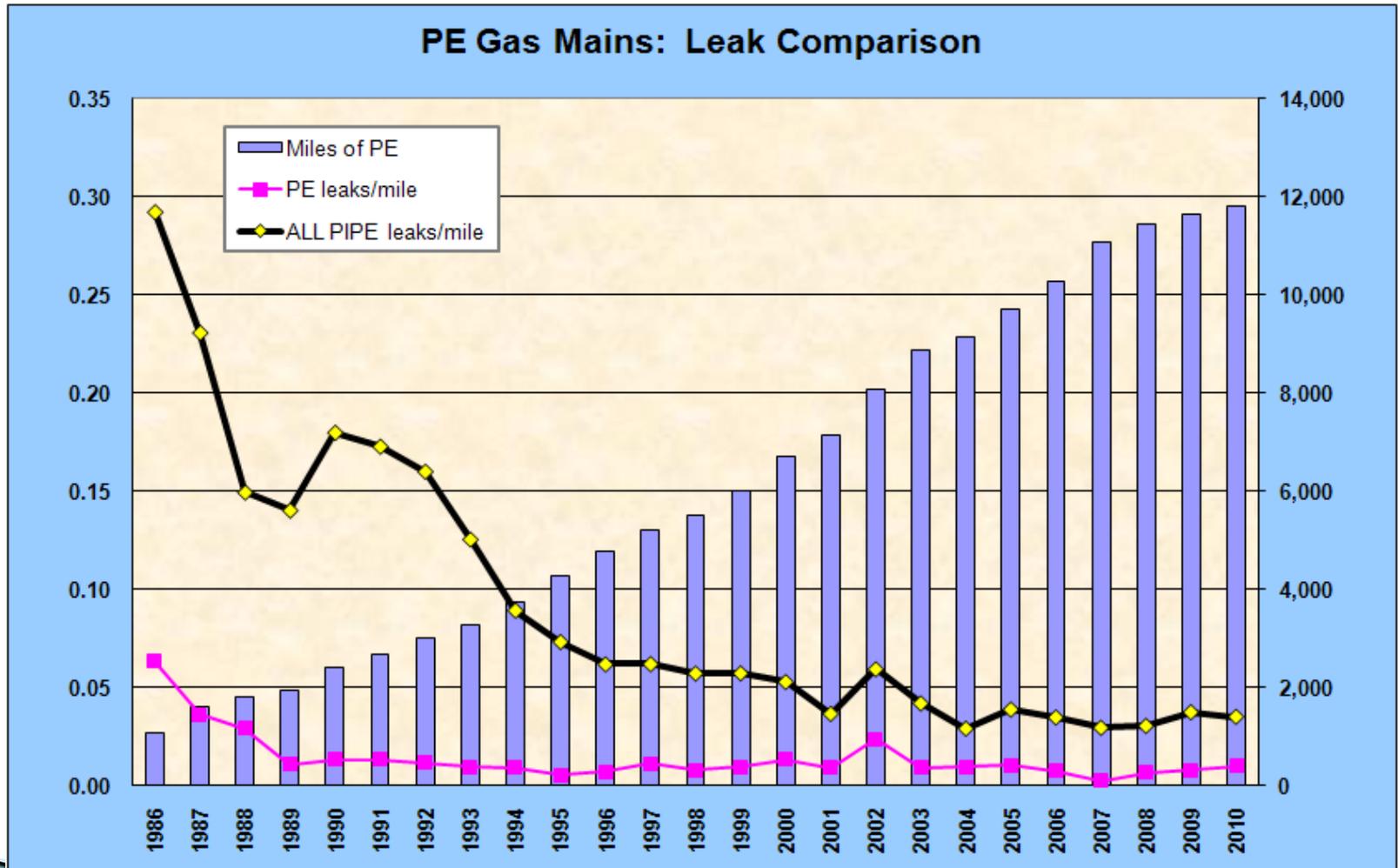
- ▶ Emergency Response Training Facility
 - ▶ High Pressure Standby Procedure for Damage Prevention
 - ▶ Odor Complaint Viewer for Dispatchers
 - ▶ GPS Tracking of Vehicles for Emergency Response
 - ▶ Operator Qualification for New Construction and Emergency Response
 - ▶ Incident Management System (IMS) Training for Field Employees
 - ▶ Formal DIMP Program Ten Years before the Regulation
 - ▶ Excess Flow Valves on Branch Services
 - ▶ Contractor Quality Installation Program
 - ▶ Quality Management Meeting with PHMSA
 - ▶ Formal Root Cause Analysis for Certain Events
 - ▶ Quarterly Meetings with ACC Pipeline Safety Staff
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Benefits of Integrity Management Excavation Damage

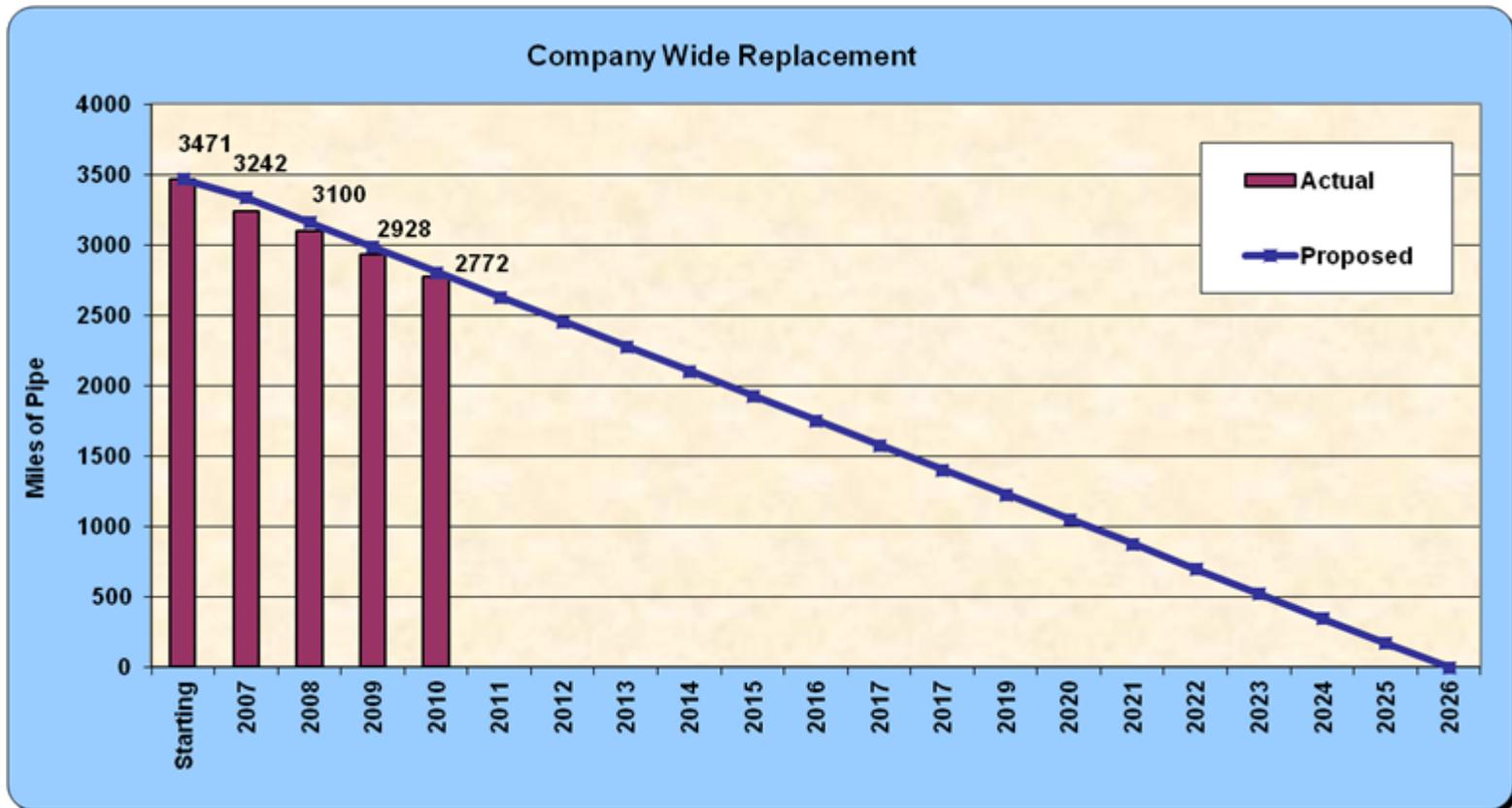
Damages per 1,000 Line Locates



Benefits of Integrity Management Distribution Leaks



Benefits of Integrity Management Early Vintage Plastic Pipe



NTSB Recommendations from the San Bruno Incident

- ▶ Automatic Shut-Off Valves and Remote Control Valves
 - ▶ Maximum Allowable Operating Pressure Validation (Remove Grandfather Clause)
 - ▶ TRIMP Improvements / Develop and Use Meaningful Metrics
 - ▶ Public Awareness Programs/Emergency Responders
 - ▶ “Piggability” and Pigging of Pipelines
 - ▶ R&D for SCADA and In-Line Inspection
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Southwest Gas Additional Actions Since the San Bruno and Allentown Incidents

- ▶ Created Task Group to Evaluate ASV/RCV Installations
 - ▶ MAOP Records Projects
 - ▶ Updated TRIMP Policies and Procedures
 - ▶ Updated Public Awareness Program
 - ▶ Expansion of Liaison Activities
 - ▶ Created Task Group to Evaluate Pigging Opportunities
 - ▶ Hosted Explorer II Field Trial
 - ▶ New DIMP Plan
 - ▶ Early Vintage Plastic Pipe
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SUMMARY

- ▶ Public safety is paramount
 - 24/7 constant and never ending
 - ▶ Protection of life and property woven into practices and procedures
 - ▶ Integrity management is the most effective process for maintaining and improving the safety and reliability of gas transmission and distribution pipelines
 - ▶ Continually evaluate practices to make sure they meet or exceed federal and state requirements
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