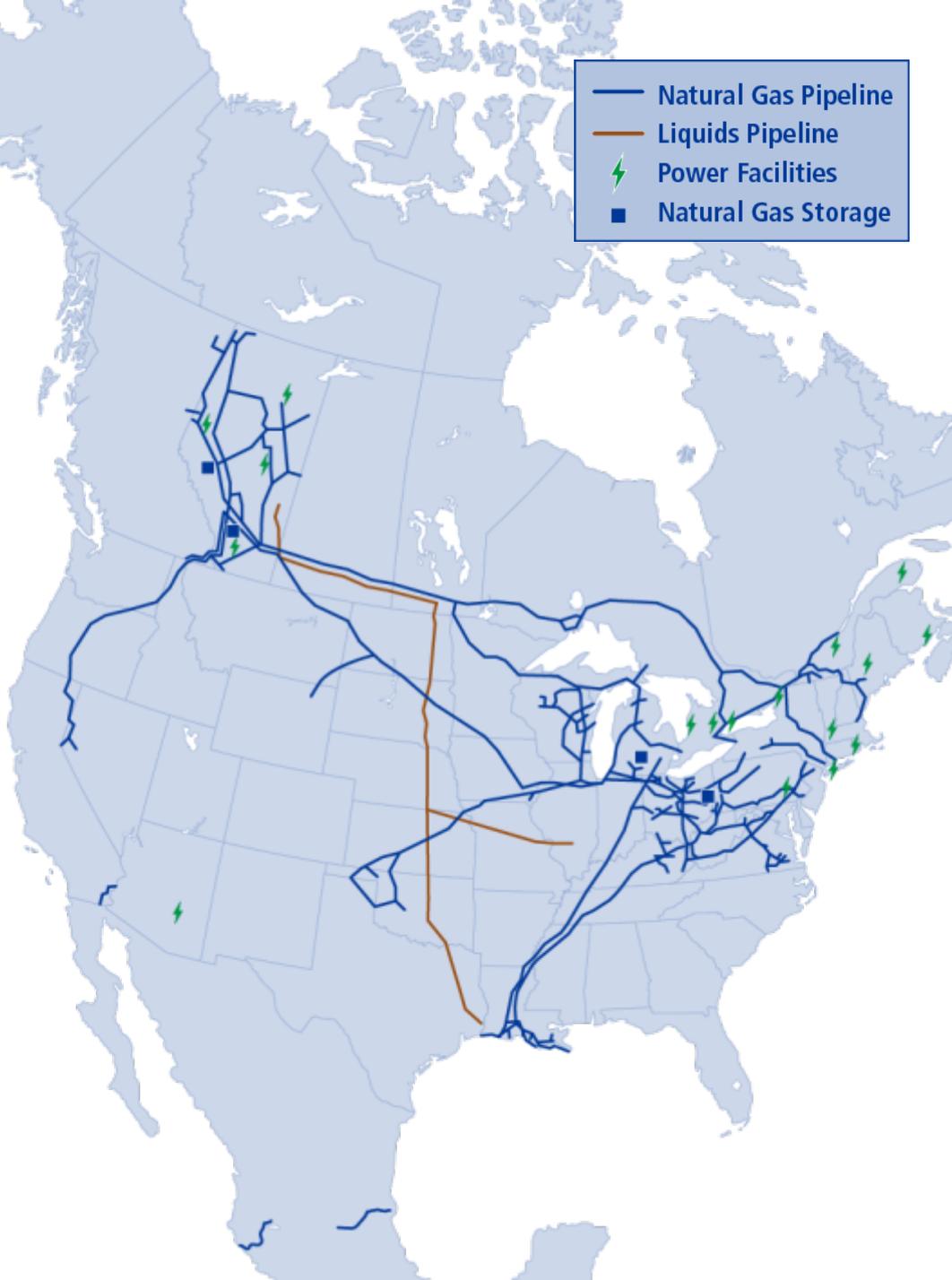




Improving Pipeline Safety Performance

David Chittick, P Eng
Oct 28, 2015

Asset Map



One of North America's Largest Natural Gas Pipeline Networks

- Operating 90,300 kms (56,100 miles) of pipelines
- Transports more than 25 per cent of continental demand

Cross-border Liquids Pipeline System

- Keystone Pipeline System: 4,300 km (2,700 miles), 545,000 bbl/d contracted capacity
- Safely delivered more than 1.3 billion barrels of Canadian oil to U.S. markets since 2010

North America's Largest Natural Gas Storage Operator

- More than 664 Bcf of capacity

Canada's Largest Private Sector Power Generator

- 17 power facilities, 10,500 MW
- Diversified portfolio, including wind, hydro, nuclear, solar and natural gas

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.



Technology Opportunities

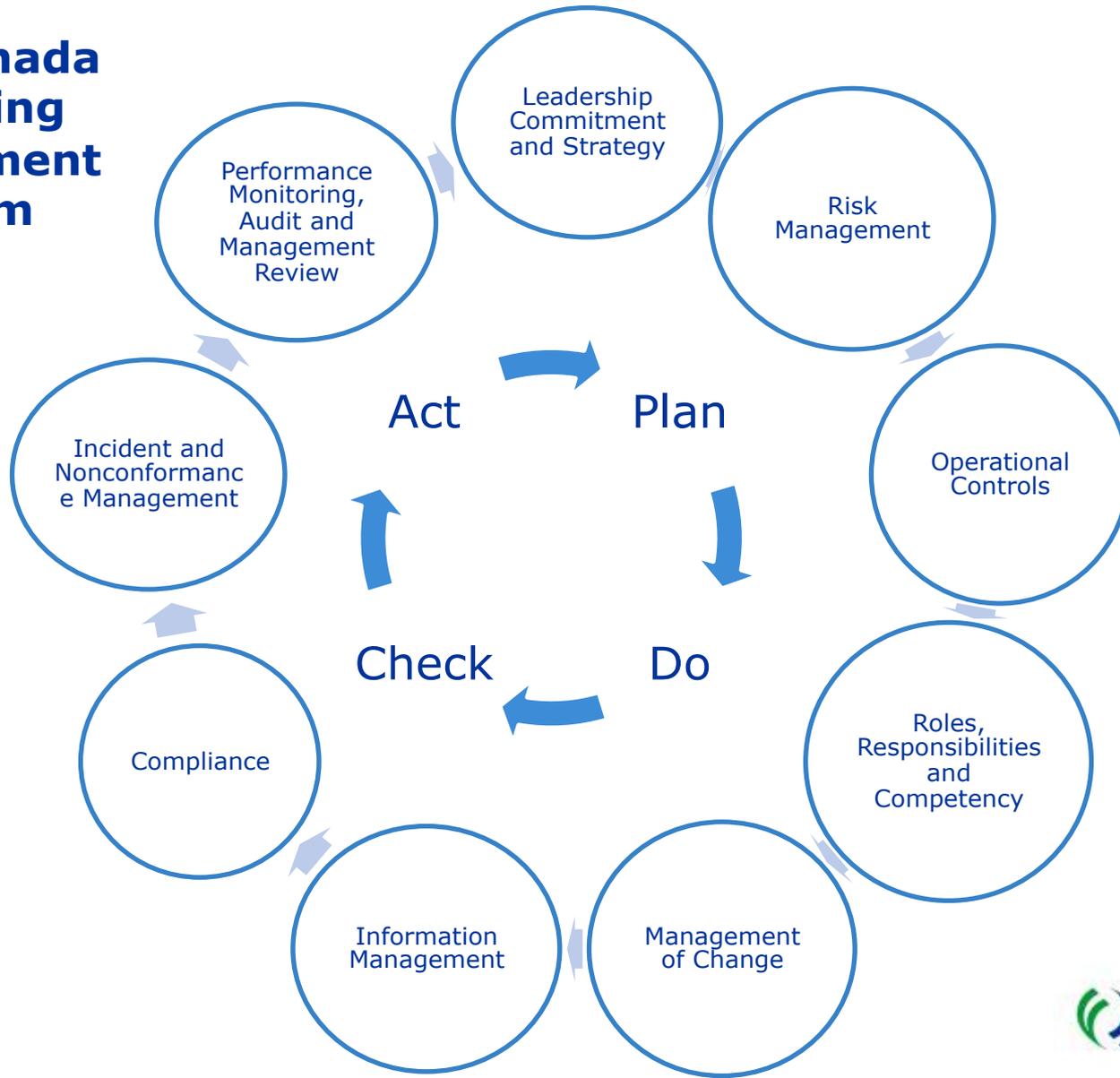


- ILI technologies
- Non – piggable pipelines
- Data management
- Risk Models
- Analytics
- Engineering Critical Assessment for MAOP reverification
- Identification of pipe properties
- RoW monitoring technologies

Management Systems



TransCanada Operating Management System



Safety Culture



Safety Culture is described as the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands.

Key elements of a strong safety culture

- Leadership is clearly committed to safety;
- Employees feel personally responsible for safety;
- The organization practices continuous learning;

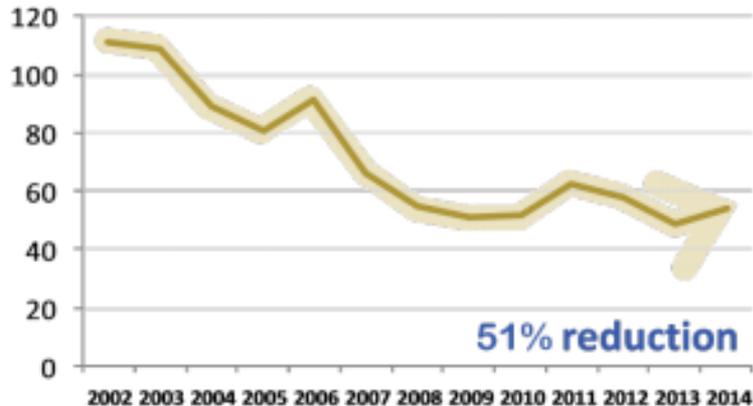
NEB Safety Forum

“When there is a strong safety culture, leadership focuses on safety as much as the bottom line, and employees have the confidence that they will be backed up from the very top of the organization if they stop or delay a project over safety concerns.”

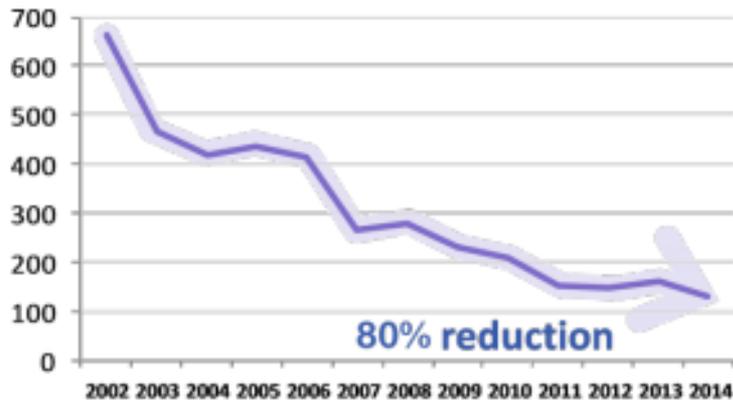
Pipeline Safety Performance Is Improving



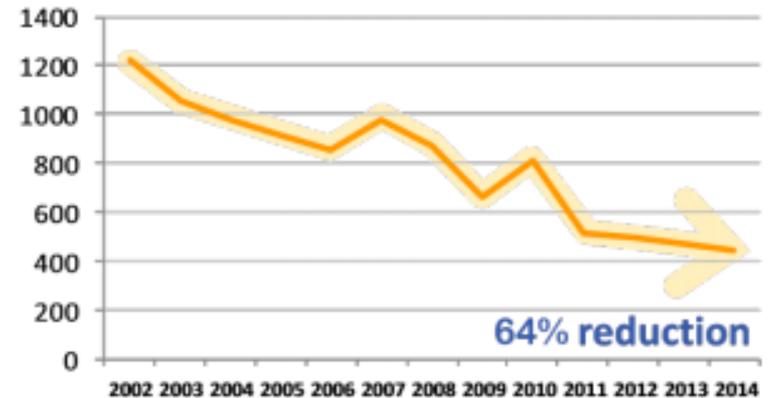
Excavation Damage Leaks



Material & Weld Leaks



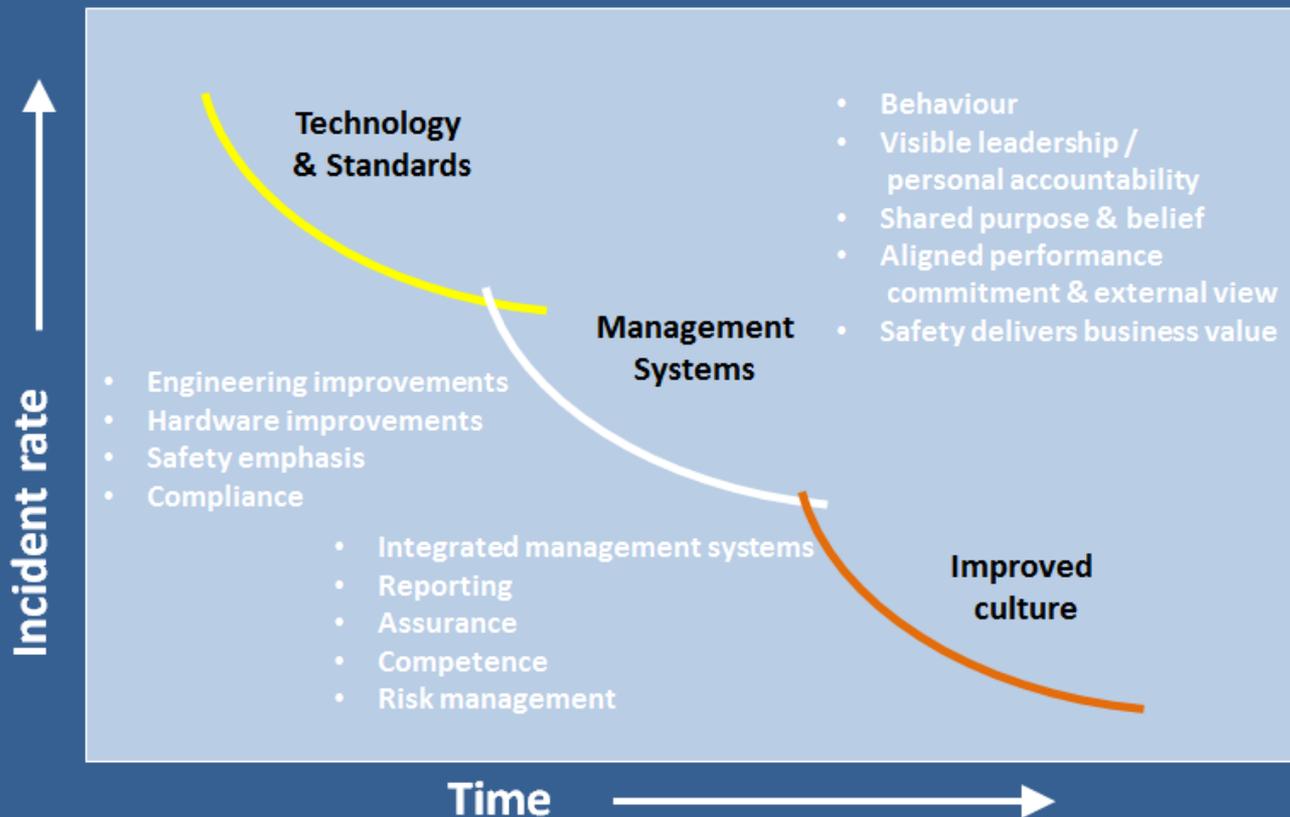
Corrosion Leaks



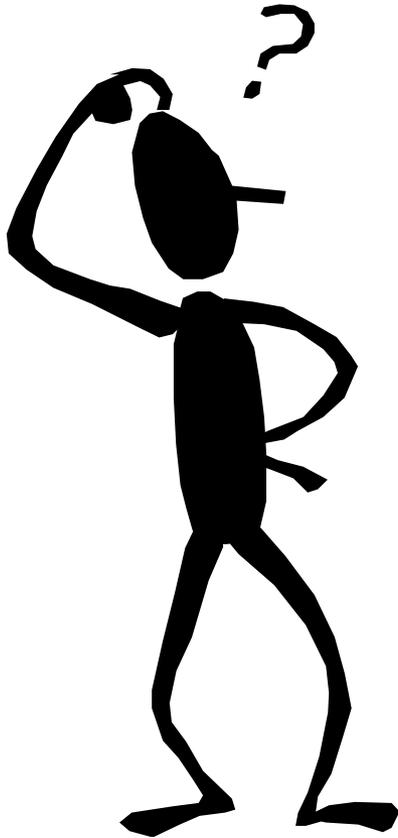
Improving Safety Performance – closing the gap



Safety Performance – Plateau Effect



Questions?



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