

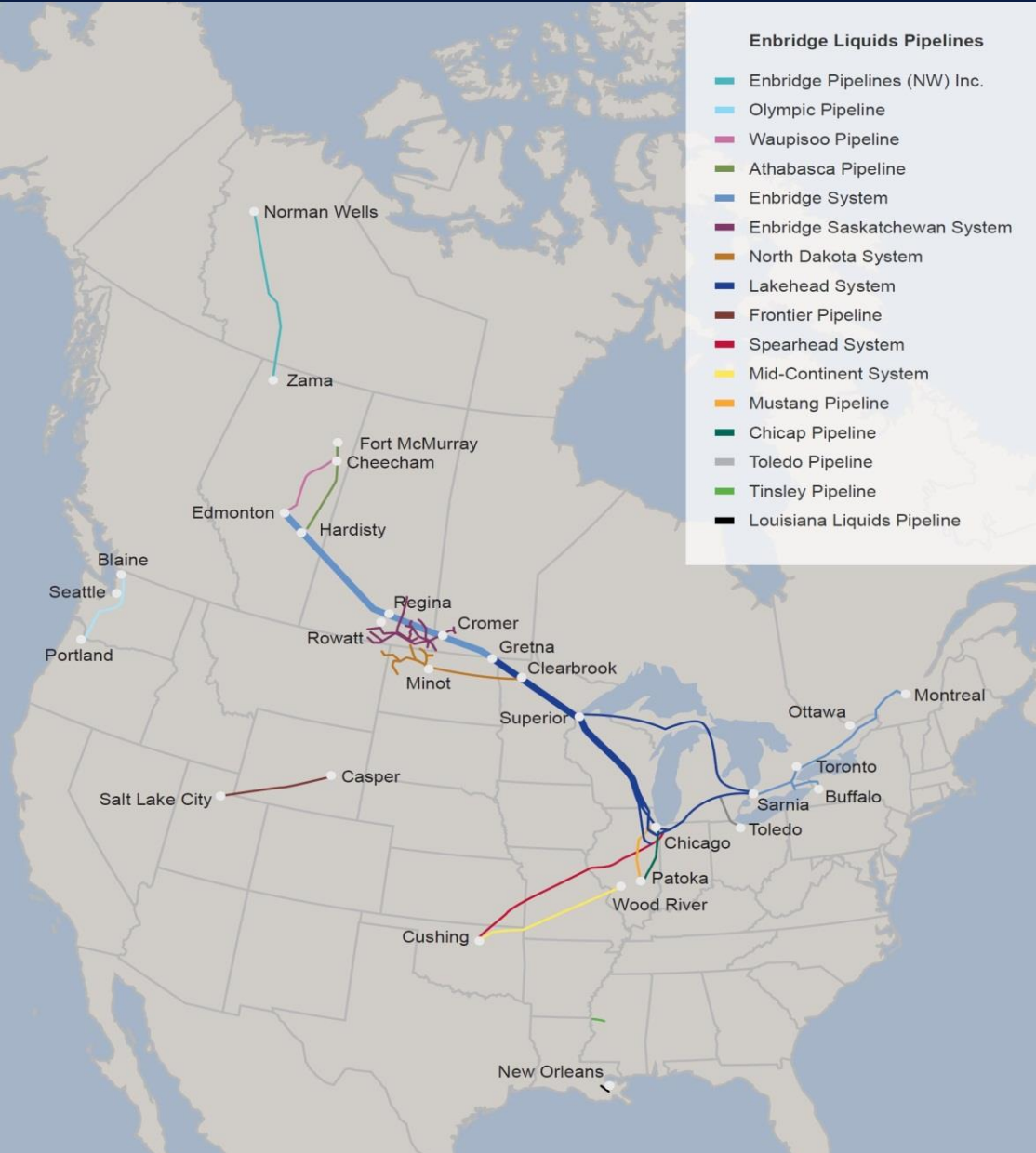


# Leak Detection at Enbridge

Ray Philipenko

Senior Manager, Leak Detection

# Introduction



## Enbridge Liquids Pipeline Energy Transportation Map

- Operates world's longest liquids pipeline and Canada's largest transporter of crude oil
- Operates 15,294 miles of crude pipeline
- Delivers an average of more than 2.2 million BPD of crude oil and liquids



*“We must have unwavering dedication to zero leaks and zero incidents. It must be our goal. Pipeline companies in North America are being held to a standard of ‘perfection’, and it is technology that will help us reach that goal.”*

*Steve Wuori*

*Enbridge Liquids Pipelines*

*International Pipeline Conference*

*September 26, 2012*

# Stakeholder Expectations

## Public

- Zero Incidents

## Regulatory

- Setting Direction

## Technology

- Evolution

## Company

- Apply Best Practice

# Leak Detection Methods Comprehensive Strategy

- Surveillance & Third Party
- Operator Monitoring (SCADA)
- Computational Pipeline Monitoring
- In-line Inspection
- External sensors





## Making our Pipelines safer

- Improve Technology, People, Processes & Procedures



## Internal Systems

- Negative pressure wave
- Inline acoustic sensor

## External Sensors

- Aerial / Remote
- Cables
- Cameras
- Oil on water
- Tank
- ?

## System Integrity



- Wireless sensor system for floating roof tanks



- Wide area machine-to-machine connectivity



- High pressure internal pipeline replacement



- Video analytics and pipeline leak detection



- High Fidelity acoustic sensing





- Targeted Continuous Improvement
- System testing and assessment
- Improvements to Process and Procedures
- Comprehensive Training
- Evolving Standards and Guidelines
- Proactive initiatives – Research & assessment
- Overlapping Systems and Methods for Defense in Depth





Fit for Purpose  
solutions

Faster and more  
reliable

Cost Effective;  
value add

