

# Natural Gas Pipeline

3-27-12 Public Event  
Improving Pipeline Leak Detection  
Effectiveness

Panel 4  
Natural Gas Leak Detection System  
Capabilities and Research

# Natural Gas Pipeline

- Focus Today Mainly on Transmission
  - Leveraging issues
    - Rupture vs leak remote identification
    - Internal vs external detection
  - More likely to have SCADA computer
  - Gas rupture can put more hydrocarbon tonnage into a neighborhood!
  - Remote rupture detection much harder than it looks!
- Distribution much different

# Internal Monitoring Systems

- Compressibility makes identifying via control center challenging
- Unreliable approaches
  - Mass balance
  - Pressure drop
  - Rate of pressure drop (maybe)
- More reliable approaches
  - Major flow change quicker possible indicator
  - More likely a combination of indicators
    - Complex transmission systems much more challenging
- High probability to overload/distract control center
  - More false alarms = operator overload!
  - Computer logic working for operator or other way around?
  - Field confirmation of possible rupture usually required



# External Monitoring Systems

- Types of technical approaches
  - Sound/frequency
  - Hydrocarbon detection
  - Various promising fiber optic approaches
- Challenges
  - Limited pipeline length field application
  - Signal to noise filtering ratio can be problematic
    - Too many false alarms
  - Shielding by pipeline
- Most likely to be used in highly sensitive areas

# Aerial Leak Monitoring

- For both transmission and distribution system leak monitoring
  - Field application now for several years
  - Usually laser technology via plane/helicopter/vehicle
  - Covers a lot of ground quickly
  - Periodic measurement - not real time
  - Key is in the analysis / presentation software
  - Leaks aren't always pipeline related