CO₂ Transportation via Pipeline

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Overall Message

- $\text{CO}_2$ pipelines are:
  - Well-established
  - Safe
    - Accident history is on par with other hazardous liquids pipelines
- Existing regulatory environment is satisfactory
- Pipeline operators know the hazards and manage their assets accordingly
Background

• PHMSA
  – Hazardous materials transportation regulator
  – Extensive experience managing the risks of CO₂ in each of its physical states
  – Assures operators manage risk appropriately.

• Hazardous Materials Transportation Laws pertaining to CO₂
  – 49 USC. 5101 et seq. and 49 USC 60101 et seq.
  – HazMat implementing regulations in 49 CFR Parts 171-180
  – Pipeline implementing regulations in 49 CFR Parts 190-199

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Regulatory Authority?

• Why does Part 195 apply to CO$_2$?
  – Properties and characteristics
    • Can cause rapid suffocation
    • May cause nervous system damage, frostbite, dizziness and drowsiness
    • Self-contained breathing apparatus and protective clothing may be required by rescue workers
PHMSA’s Pipeline Safety Program

- Oversight shared with authorized state programs
- Other Federal and State agencies jointly make siting and permitting decisions
- 3,468 miles of CO$_2$ transmission pipelines
- Regional pipeline safety offices
  - # and staffing
What do Regulations Include?

• The hazardous liquid pipeline regulations include requirements for:
  – Pipeline design
  – Construction
  – Mapping
  – Operation and maintenance
  – Qualification of personnel
  – Incident reporting
  – Emergency response
  – Integrity Management
CO$_2$ Pipeline Infrastructure

- 2007 Annual Reports
  - 3,468 miles
  - ~ 50 billion barrel-miles
  - Midwestern corridor

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Age of Regulated Assets

Safe, reliable, and environmentally sound operation of the Nation's pipeline transportation system.
Failure Causes: 2004-07

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PEG

• PHMSA established new division
  – We will be looking at CO₂ as well as other pipelines using better data
  – This will provide improved information on risks to enable decisions on:
    • regulations, inspection program and enforcement
Key Entities and Path Forward

- Federal Government—DOE, DOI, DOT and EPA
- States
- NASFM—First responders
- Pipeline siting models
  - CO₂, oil, gas or hybrid?
  - DOT assistance through CATS

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Thank you

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Abbreviations

• USC—United States Codes
• CFR—Code of Federal Regulations
• DOE—Department of Energy
• DOI—Department of Interior
• DOT—Department of Transportation
• EPA—Environmental Protection Agency
• NASFM—National Association of State Fire Marshals
• PEG—Program & Performance Evaluation Group
• CATS—Community Assistance & Technical Services