

# Gas Industry Forum

## **Panel Discussion Natural Gas Technology Policy – A Look Forward**

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# Natural Gas and the U.S. Economy

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- **U.S. has the highest per-capita and total energy consumption in the world**
- **Energy consumption remains linked to GDP growth**
- **U.S. gas consumption is 25% of nation's energy demand**
- **Environmental concerns will continue to drive increased gas demand**

# Technology Challenges

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## **Unconventional onshore gas E&P**

- **Ultra-deep offshore gas E&P**
- **Gas quality (incl. LNG interchangeability)**
- **Gasification of solid fuels**
- **Aging pipeline infrastructure integrity & safety**
- **Physical security of gas infrastructure**
- **Improved efficiency of natural gas utilization**

# Collaborative R&D Challenges

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- **Inter-fuel competition and reduced vertical integration in the gas industry create major impediments to implementing collaborative R&D Programs**
- **Impending loss of per-decatherm surcharge eliminates largest source of technology development funding for the gas industry**
- **Benefit/cost multipliers for R&D investment remain attractive**

# Future Technology Development

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- **Replacement of the GTI-FERC financing mechanism**
- **Increased cooperation/collaboration between government and industry R&D efforts**
  - **U.S. DOE (FE and EERE)**
  - **U.S. DOT (Office of Pipeline Safety)**
  - **U.S. Minerals Management Service**

# Specific Research Opportunities

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- **Pipeline integrity**
  - ✓ Advanced magnetic flux leakage sensors for mechanical damage
  - ✓ High pressure liner for in-situ pipe rehabilitation and repair
- **NDE sensors & delivery vehicles for unpiggable lines**
  - ✓ Remote field eddy current
  - ✓ Gas coupled ultrasonic
  - ✓ Electromagnetic acoustic transducer
  - ✓ Long-range robots & delivery vehicles
- **Pipeline right-of-way management**
  - ✓ Acoustic third party damage detection
  - ✓ Satellite R-O-W monitoring
- **Pipeline Direct Assessment**
  - ✓ Micro-excavation techniques for fast, low cost access to buried pipes
  - ✓ Miniature sensors to remotely measure corrosion, wall thickness, coating condition