The Role of Technology: Enhancing gas supply chain resilience

Second IEF Industry Advisory Committee Workshop

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The disrupters

**DECARBONIZATION**
Smaller, decentralized systems

**DECENTRALIZATION**
Larger array of energy sources

**DIGITALIZATION**
Price $\Rightarrow$ environnement

Gas and electricity grids are connected, storage becomes key

- Gas and electricity grids
- Storage becomes key

New alternatives emerge

- Electrolyser
  - Water $\rightarrow$ Oxygen ($O_2$)
  - Electricity $\rightarrow$ Hydrogen ($H_2$)
- Fuel Cell
  - Heat

Digital: clients want control, optimization and data security

- CH₄, Methane
- C₂H₅OH, Ethanol
Improving Shale Gas Well Productivity
Hydraulic Fracturing Test Site

Ground Truth: Through-Fracture Cores

- Field-based HF research program
- Public-private partnership with gov’t, industry and academia providing technical and financial support
- $25+ million of new HF research “piggy backing” on 11 new horizontal wells over 400 fracture treatments, over $100 million in background data
- Advanced diagnostics including SRV core through, multi horizon pressure monitoring, and proppant quantification
- Potential to reduce the number of wells required to develop west Texas resources by thousands
A Powerful Team

Sponsors and Participants
Natural gas supply reliability – a strong case

- Natural gas delivery systems are cost-effective, safe and reliable
- How reliable?
- Do customers and stakeholders understand and value system reliability?
- Can reliability be leveraged as a positioning strategy?
Electric and Natural Gas Energy Distribution Reliability Case Study

Example annual results for major California electric utility (SCE) and North American gas utility (over 15 billion customer hours/year)

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New tools improve gas pipeline reliability and safety