Social License to Operate: Standards, Validation, Collaboration

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April 4, 2013
Who we are:

- **EQT production**: 5.2 Tcfe proved res.
- **EQT midstream**: 12,000 pipeline miles
- **Equitable Gas**: 275,000 customers
- **3.5 MM acres**
IEA: Golden Rules for a Golden Age of Gas

- Measure, disclose and engage
- Watch where you drill
- Isolate wells and prevent leaks
- Treat water responsibly
- Eliminate venting, minimize flaring and other emissions
- Be ready to think big
- Ensure a consistently high level of environmental performance

Source: Golden Rules for a Golden Age of Gas (IEA, 2012)
…for industry to increase their best practices process for field engineering and environmental control activities by adopting the objective of **continuous improvement**, validated by measurement and disclosure of key operating metrics.

Best practices involves the **entire range of shale gas operations**.

…understand the **importance of involving non-industry stakeholders**.
Center for Sustainable Shale Development
Groundwater Protection Standards

- Zero discharge of wastewater until CSSD adopts a standard for treating wastewater.
- Wastewater recycling – > 90%.
- Closed loop containment of drilling fluids, eliminating the use of pits.
- Use of double-lined impoundments equipped with leak detection.
- Establishment of a predrill Area of Review, including subsurface geology and corresponding risk analysis.
- Groundwater monitoring– pre and post operations.
- Casing and cement standards that ensure complete isolation from groundwater.
- Public disclosure of well stimulation fluids.
- Well pad design that minimizes risk of contamination to water sources.
- Spill response and public notification plans.
- Removal of free hydrocarbons from flowback and produced water before storage.
- “Green Completions” – Capture of pipeline-quality gas, with certain exceptions.
  - Gas not captured must be flared; not vented.
- Flaring requirements – 98% destruction efficiency and a prohibition on pit flaring.
- Emissions standards for:
  - diesel drilling rig engines and fracturing pump engines
  - compressor engines
  - on-road truck engines
- Control of VOC emissions from storage vessels (> 95% reduction).
- Standards for reciprocating compressors and pneumatic controllers.
Center for Sustainable Shale Development
Founding Members

- Chevron
- Clean Air Task Force
- CONSOL Energy
- Environmental Defense Fund
- EQT Corporation
- Group Against Smog and Pollution (GASP)
- Heinz Endowments
- Citizens for Pennsylvania’s Future (PennFuture)
- Pennsylvania Environmental Council
- Shell
- William Penn Foundation
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