Fact-Based Regulation for Environmental Protection in Shale Gas Resource Development

An Initiative of the Energy Institute
The University of Texas at Austin

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Why Shale Gas?
Why Regulation?
Why “Fact Based”

• Shale gas increasingly important as energy source worldwide – now 1/3 of gas resource in U.S.

• Concerns for environmental effects (hydraulic fracturing) must be addressed with effective controls.

• Some of the claims about shale gas effects attributed to hydraulic fracturing may be overstated, not based on good science, or related to processes other than hydraulic fracturing
UT Energy Institute Initiative Goals

• Provide an objective assessment of environmental issues through self-funded study

• Promote policies and regulations that are grounded in science

• Achieve effective communication leading to fact-based regulation and policies
Focus of the Energy Institute Initiative

• Marcellus Shale (Northeast U.S.)
• Barnett Shale (Texas)
• Haynesville Shale (Louisiana)
Environmental Issues Being Addressed

• Water Quality Impacts – majority of effort
• Seismic Impacts
• Air Quality Impacts
The University of Texas at Austin:
Campus-wide Participation

- Jackson School of Geosciences
- UT Bureau of Economic Geology
- UT and University of Tulsa Law Schools
- UT School of Communication
- Environmental Defense Fund, Texas Office
Investigation Team

• Leadership
  – Charles G Groat
    • EI Associate Director
  – Thomas W Grimshaw
    • EI Research Fellow

• Primary Contributors
  – Ian Duncan
    • UT Bureau of Economic Geology
  – Matt Eastin
    • UT School of Communications
  – Suzanne Pierce
    • Jackson School of Geosciences
  – Hannah Wiseman
    • University of Tulsa School of Law
Who Will Benefit?

• Energy regulators and policymakers
• Government elected officials and agency heads
• Private sector energy executives and planners
• Non-governmental organizations (NGOs)
• The public
Scope and Methods

1. Review technical literature on shale gas impacts
2. Review current regulations and records of violations
3. Review claims in media
4. Conduct interviews of selected policymakers and regulatory authorities
5. Evaluate results of review geographically (Informatics)
6. Develop guidance for fact-based policy and regulation development
7. Communicate results and guidance to promote fact-based regulations
Review Claims in Media

Phase 1. Media Content Analysis
- National and local media
- Based on keyword selection and searches
- Three shale areas: Barnett, Marcellus, Haynesville
- Compare media content with research publications

Phase 2. Community Assessment
- Barnett Shale area, Texas
- Online survey method
- Assessment of local resident knowledge
- Also, general attitudes and information sources
Scientific Literature

• Identify scientific papers and presentations on shale gas environmental issues
  – Cornell - methane emissions
  – Duke – methane in groundwater

• Review the papers for data integrity and analytical rigor

• Assess role of science in examining claims and underpinning regulations
Review Regulations and Violations

• Regulation Review & Documentation
  Describe applicable state and federal regulations
  Identify those designed specifically to apply to hydraulic fracturing

• Shale Gas Environmental Enforcement, 2008-11
  – What specifically have violations been – what was the problem?
  – Relate to conventional natural gas operations
Shale Gas Environmental Enforcement

• All operational phases
  – Access road and well pad construction
  – Drilling and casing (well construction)
  – Perforating and hydraulic fracturing (development)
  – Disposing of flowback and produced water
  – Production
Informatics: Topical Network Analysis

• Input Sources
  – Media Content Analysis (keyword search)
  – Reports from Technical Literature Review
  – ISI Web of Knowledge
  – Catalog of US Government Publications

• Common Format for Inputs

• Output Media
  – Thesaurus
  – Digital library
  – Topical maps

• Information Hub
Informatics Analysis Flowchart

Keywords

Set of Texts

Network Analysis

Common Format

Thesaurus Analytics

Digital Library

Topical Maps

Media Files

Interviews

Engagement Materials

Timeline

HUB
Schedule

- Project Plan preparation    4/14
- Kickoff meeting            4/18
- Press release              5/9
- Status meeting/telecon     6/2
- Preliminary reports        8/26
- Report feedback, coordination 9/15
- Draft white papers         10/17
- Draft final report         12/19
- Release final report       1/2012
Anticipated Products

• Effective communication of facts to governments and the public
• Policy and regulatory alternatives in concise document for energy regulators and policymakers
• Subsequent briefings of policymakers (e.g., members of Congress and staff) and state regulators