Potential Natural Gas Development in the Marcellus Shale: A Land Grant Partnership

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Roadmap...

• The Drilling:
  – Requires Hydro-fracturing to allow gas to travel in rock
  – Takes longer, requires more people, more resources

• The Context:
  – Regional socioeconomic malaise
  – Weak governance structure
  – High levels of uncertainty
  – A “natural experiment” in attitudes and governance
    • Moratorium in NYS, pending SGEIS review
    • Drilling proceeding in PA since 2003; rapid recent expansion:
      – 2008: 195
      – 2009: 768
      – 2010: 1386 (3314 additional permitted)

• The Problem:
  – Demand for outreach exceeds research knowledge
A Cornell/Penn State Partnership Opportunity

• Shared cross-border concerns for research and outreach
• Coordination/comparison: *what’s the same and what’s different?*
• My focus on research: “a natural experiment”
• Joint funding:
  – Cornell: Atkinson Center for Sustainable Future, Federal Formula (Hatch and M. Stennis)
  – Penn State: CAS seed grants, Appalachian Regional Commission

Two Research Projects (so far)

• Community leader interviews
• Household mail survey
Leader interviews

• **Goals:** understand local leaders’ perceptions of impacts of natural gas development; compare perceptions across stages of Marcellus Shale development and previous history

• Four counties
  – Two with higher levels of Marcellus Shale development (Washington, Bradford, PA)
  – Two with little/no current development (Lycoming PA, Steuben NY)

• Interviewees (71): elected officials, local human and social service agencies, industry, local business owners, landowner coalitions, environmental activists, etc.

Interview Themes

• Variable awareness, not linked to actual pace of development

• Unquestioned acceptance of economic benefits

• Awareness of impacts
  – *Does* link to development status
  – Starts with environment
  – Expands to economic (the costs of the boom)
    • (inequality, inflation, housing affordability, competition)
  – Social impacts
    • Community character, social interaction disruption, traffic, noise, safety
    • Harder to articulate: “subjective and selfish?”
Multi State Landowner Survey

- Do leader beliefs and attitudes correspond to residents?
- Oct 2009 – March 2010 Mail survey
- Random sample 6,000 households in 29 counties (8 in NY; 21 in PA)
- 35% response rate
- Focus areas: compare NY/PA on...
  - Knowledge
  - Trust
  - Perceived impacts
  - Support/opposition

Knowledge is low and doesn’t differ...
% knowing “none or very little”

- Jobs and job-training opportunities
- Government regulations relating to drilling
- Impact on local government
- Legal Implications of leasing mineral rights
- Drilling procedures and practices
- Implications for water quality and quantity
- Environmental impacts
- Social impacts of natural gas well development
- Economic impacts of the natural gas industry

[Bar chart showing comparison between NY and PA for different topics]
% expressing “a great deal of” trust in...

% believing “will get **better**” with Marcellus Drilling
% believing “will get worse” with Marcellus Drilling

![Bar chart showing percentage of respondents believe various aspects will get worse with Marcellus Drilling, with categories including overall cost of living, job training opportunities, cultural events, recreation opportunities, drinking water, neighborhood/friendliness, quality of natural environment, freedom from crime/violence, roads and streets, availability of affordable housing, quality of health care, quality of public schools, availability of good jobs, and overall quality of life.]

Beliefs about Marcellus drilling.... % agree

![Bar chart showing beliefs about Marcellus drilling, with categories including only a few people will benefit, negative aspects can be fixed, worry about catastrophic accident, will create long lasting environmental problems, industry will provide employment/keep children in, development makes me optimistic about the future, benefits outweigh costs, know enough about impacts to move forward, negative impacts can be prevented, should be encouraged to decrease reliance on, and should be encouraged to increase reliance on.]

Beliefs about Marcellus drilling.... % agree
Implications:
Where do these differences come from?

- PA more willing to accept, given equal recognition of impacts
- Multivariate analysis: differences not attributable to differences in socio-economic status
- State culture/context
  - PA more pro-development, pro private property rights, longer history of economic decline?
- Historical legacy of extractive industry?
- Recent experience reduces concern?
  - (“NY residents are fearful, paranoid?”)
Next Steps in Collaboration

- Cumulative impact assessment (CIA)
  - Without CIA, effects of single action examined in isolation
  - CIA looks at combined effects of multiple changes
    - E.g., multiple Marcellus wells
    - OR wells in combination with other change
  - A major shortcoming identified in SGEIS
  - Jacquet PhD research: gas and wind
  - Research and outreach has struggled: building expertise in CIA a major challenge

“But I don’t work in the Marcellus Region”...?

- Utica Shale has similar or greater potential for development
- Not fully evaluated
- Many similar issues?
- Opportunity to apply lessons from Marcellus?