ECONOMIC & COMMUNITY IMPACTS OF GAS SHALE IN PENNSYLVANIA

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A Few Background Concepts

- Scale of this is BIG
  - Second largest natural gas field in the world (USGS)
  - Hundreds of thousands of acres
  - ~$1 trillion recoverable gas in PA
    (PA economy is $355 billion as measured by earnings)
  - ~$1 to 2 million ‘landowner’ share per well
    (80 acre spacing)

- Resource-based economic development; when it’s gone, it’s gone

- Local impact- multiplier effects if keep dollars local

- Lots of uncertainty
Percent Change in Population, 2000-2007

Location of Marcellus Shale

Source: Alter et al., Pennsylvania Road to Growth,” Penn State 2009
WHAT AFFECTS ECONOMIC IMPACTS?
1. Timing, Scale & Pace Drive Impacts

Three Phases of Natural Gas Development

Development Phase (Short Lived/Labor Intensive)
- Well-pad and Access Road Construction
- Local collection pipeline Construction
- Drilling of the Well
- Fracturing of the Well
- Reclaiming some Disturbance

Production Phase (Long lived/Small & Steady Labor Force)
- Trucking Water and condensate from Well Site
- Monitoring Production
- Occasional Well Work-Overs (partially re-drill/re-frac)

Reclamation Phase
- Dismantle and Reclaim well-sites

Source: Jacquet
Assumes 30 year active life per well
2,500 wells drilled/year pace. Labor requirements based upon MSETC per well workforce estimates

Source: Kelsey, 2011
2. Spatial Nature of Development

Gas development is more than just wells

• Multiple well pads – *intense activity, but short run until well is drilled*

• Multiple supporting locations – *intense activity, lasts until all wells in area are completed*

• Multiple specialized companies & workers. Massive coordination task.

• Changing transportation patterns

• Communication
Spatial activity

- “Long Run” facilities
  - Staging areas
  - Worker housing
  - Office areas
  - Pipe, sand and other storage
  - Maintenance facilities
  - Compressor stations
  - Water withdrawal sites
  - Water treatment
  - Etc.

- “Short run” facilities
  - Well pads

Simple Example
Opportunities and Challenges

ECONOMIC & WORKFORCE ISSUES
Pennsylvania’s Economic Experience through 3/2012

- Lots of hype – and political argument
- Lots and lots of activity at local level
- Secondary data show more hiring, lower unemployment, higher average wages in Marcellus counties
- Impacts are across all sectors
- Higher state tax collections (sales tax, income tax)
- Higher state gov’t costs (though no estimate)
- Little change in local government tax collections
- Higher local government costs
Business Activity Impacts

• Drilling each Marcellus well requires:
  – About 420 individuals
  – Across 150 different occupations
  – 13.1 full time direct jobs for first well on a pad
  – 9.65-9.85 full time direct jobs for each subsequent well on a pad

• Once drilled:
  – Every 100 dry gas wells generate 19 long-term full-time jobs,
  – Every 100 high-BTU gas wells generate 39 long-term full-time jobs

Penn State Extension

Natural Gas Workforce Requirements By Category

- General Office: 20%
- Gen. Labor: 20%
- Heavy Equipment: 17%
- CDL: 10%
- Semi-Skilled Tech.: 6%
- Landmen/Realty: 5%
- Supervisors: 5%
- Inspectors: 1%
- Engineers: 3%
- X-Ray: 1%
- Welders: 3%
- Timber Logging: 1%
- Cartog/GIS: 1%
- Lawyers: 4%
- Paralegal: 1%
- Geologists: 3%

Source: MSETC Workforce Needs Assessment 2010  http://www.pct.edu/msetc/
Opportunities and Challenges

COMMUNITY IMPACTS
Significant Community Issues

Demographics
- Population change
  - Housing needs
  - Schools
  - Other infrastructure
- Population composition & diversity
- Youth migration?

Family
- Child care implications
- Intergenerational relationships/equity
- Family well-being
- Health, substance abuse, etc
Significant Community Issues

Local infrastructure
• Roads
• Highway safety
• Housing
• Sewerage & water
• Police
• Emergency services
• Schools
• Human services
Traffic Changes – *Bradford County*

5-Year Daily Average vs. 2010 Daily Average

Source: PennDOT Engineering District 3-0
Traffic Changes – Bradford County

5-Year Daily Average vs. 2010 Daily Average

Source: PennDOT Engineering District 3-0
Significant Community Issues

Community & Social

• Social service demands
• Social equity
• Haves & have-nots
• Newcomers & old timers
• Year ‘round residents & seasonal residents
• Social cohesion & community identity
• Diversity and potential conflict
• Local power structure
• Social problems
Significant Community Issues

Local Government
- Impact on services & revenues
- Quality of life, environment, community, health & safety
- Local control (tools? Ability to use?)
- Local capacity for being proactive (much less responding)
- Coordination between governments

State & Local Policy
- Local versus state control (versus no control)
- Regulation, incentives, investment, subsidies, taxation
- Monitoring & oversight
- Influence of gas dollars on the political process?
Implications

• Focus needs to be on future AFTER the boom, not just the present

• Focus needs to be on development in its entirety, not just well sites

• Lots of uncertainty, especially about communities and families