

Hydraulic Fracturing, Pennsylvania, USA

Last Updated:

December 4, 2018

1 Static Analysis - Collective action

The common pool resource appropriated in Pennsylvania is natural gas which is located in underground tight shale formations. Here, natural gas is treated as a common pool resource for both individuals and state entities have access to this resource as well as the right to lease mineral rights to developers. The primary concern of this resource is governance, there is an under appropriation of local government power as well as coordination concerns.

1.1 The Commons Dilemma

The commons dilemma dominating natural gas rich areas in Pennsylvania is the under appropriation of power granted to local governments. State preemption and the nature of natural gas policies within the Appalachian region have limited the ways that local communities can regulate hydraulic fracturing. Power withheld from local governments by the state legislature limits methods for coping with socio-economic and environmental externalities experienced at the local level. Seen as creatures of the state, municipalities are constrained from engaging with this industry. Impacts can be divided into environmental and socio-economic considerations. Environmental impacts include: water overuse, as the process of fracking is extremely water intensive; fracking chemical and wastewater disposal problems; drinking water contamination, and methane gas leaks from the drilling process. Socio-economic impacts include uncontrolled population growth, inconsistent tax revenue complicating long-term planning strategies, limited and ill-fit job-availability for local workers, changes in the availability of low-income housing, increased crime, and infrastructure strain. Additionally, there are concerns regarding coordination. The state legislature collects rent from hydraulic fracturing companies and redistributes as it sees fit. Local governments receive a portion of this money, which is collected to offset socio-economic and environmental impacts. Local governments were briefly consulted during the crafting of these regulations, but their insights were not heavily considered.

1.2 Biophysical Context (IAD)

Natural Infrastructure The natural infrastructure of the system includes natural gas formations found in tight, underground shale deposits of the Marcellus and Utica shale plays.

Hard Infrastructure The hard human made private infrastructure required by fracturing operations is the equipment used by companies to extract underground gas. Wells are drilled to tap into the underground reserves both vertically and horizontally into underground rock formations reaching up to 2 miles long; a cement casing is formed in the well

to prevent ground water contamination. Public infrastructure, including roads to access to drilling sites and wells.

1.3 Attributes of the Community (IAD)

Social Infrastructure. Varying levels of education and wealth better equip some groups to exercise their agency within the system. Wealthier, more educated pockets of individuals are more likely to express concern over health or environmental impacts. This coupled with their increased political influence, wealthier and more educated individuals are better able to challenge the placement and safety of hydraulic fracturing wells. While those falling into a lower socio-economic class, typically having less social mobility and access to information and are ill equipped to challenge or influence local government decisions regarding well placement and safety. Lower income communities are more vulnerable; they may require hydraulic fracturing as an economic stimulus, disregarding the environmental and human health damages and lack of direct financial gains.

Human Infrastructure. Local and state governments collect tax or rent from hydraulic fracturing companies based on the location and time of use of wells.

1.4 Rules in Use (IAD)

Position rules

The federal government does not regulate fracking related procedures or waste disposal. The state government have the ability to regulate operations and has explicitly limited power of municipal governments.

Boundary Rules

Local rules on fracturing operations are restricted by the governing state. Oil and gasoline companies are able to obtain a permit through the Pennsylvania Department of Environmental Protection. A permit must be obtained prior to drilling or operating a well and be for appropriately zoned land.

Aggregation Rules

Citizens within the jurisdiction elect the local and state legislature.

Information Rules

Many elected local officials do not have the knowledge or power to effectively participate in the policy formation process.

Payoff Rules

The state department of environmental protection may revoke company permits if they do not follow the states established environmental protection laws and/or if they do not pay appropriate permitting fees.

1.5 Summary

The vast increase in production of natural gas has revitalized numerous impoverished communities throughout the past decade. However, volatile gasoline prices that once increased demand for natural gas are now relieving that pressure on the resource, leaving communities once dependent on this economic driver at a standstill. Local governments throughout Pennsylvania are restricted by the Oil and Gas Act with what they are able to collect financially from hydraulic fracturing operations, as well as what they are able to accomplish with

collected revenue. Communities with large amounts of social capital are better equipped to challenge the location of wells, leaving lower socio-economic communities absorb the risk of nearby wells.

2 Case Contributors

- Emma Laurens, Arizona State University