NARDeP
National Agricultural & Rural Development Policy Center
A Regional Rural Development Centers Initiative

POLICY BRIEF
BRIEF 28/AUGUST 2015

WHAT FACTORS DRIVE LOCAL REGULATION OF FRACKING?

By Patrick J. Walsh (National Center for Environmental Economics of the U.S. Environmental Protection Agency), Stephen Bird (Clarkson University), and Martin D. Heintzelman (Clarkson University)

SUMMARY

Fracking is a controversial practice but is thriving in many areas. We combine a comprehensive data set on local bans and moratoria in the state of New York with local-level census data and spatial characteristics to analyze which factors drive local regulation of fracking. Some factors, including location in the Utica shale, proportion of registered Democrats, and education level, increase the probability of restrictions on fracking. Extent of local land development, location in highly productive petroleum areas, and number of extant oil and gas wells, are among factors that have a negative impact on the likelihood of a ban or moratorium.

INTRODUCTION

High volume hydraulic fracturing (HVHF, or fracking), which involves the fracturing of underground shale deposits to capture oil and/or natural gas, is a controversial practice, but one that is thriving in many areas of the United States. Concerns for fracking include local air and water quality, traffic impacts from trucks required to move wastewater and other materials, and social impacts related to a "boomtown" mentality, in addition to others. Alternately, some communities see economic opportunity in fracking, and may use local regulatory control to encourage activity, while perhaps adjusting local regulations to ensure benefits are not detrimental to the area.

Thirty home-rule states (and 9 others with "limited" status) in the U.S. retain the ability for local communities to pass laws beyond the minimums established by their state legislature. The ability of municipalities, townships, and counties to do so allows for improved strategies of local control and creates variation in policy responses to the potential impacts of shale gas drilling in their jurisdictions. This has resulted in a patchwork of local responses to fracking, with some localities banning the practice and others passing resolutions in support of it. Given the amount of public and private interest in regulating and engaging in fracking activities, it is important to explore the factors that explain these local differences.

POLICY BACKGROUND

Our analysis was based in the State of New York, which just recently banned fracking throughout the state in late 2014 (Figure 1). The municipal decisions to create fracking bans and endorsements occurred prior to this, in expectation of extensive fracking activity throughout shale rich areas. Despite the New York focus, it is reasonable to expect that our findings are representative of factors that affect municipal decision-making in all states across the U.S.

In 2008, New York Governor David Patterson issued a moratorium on all new fracking throughout the state while

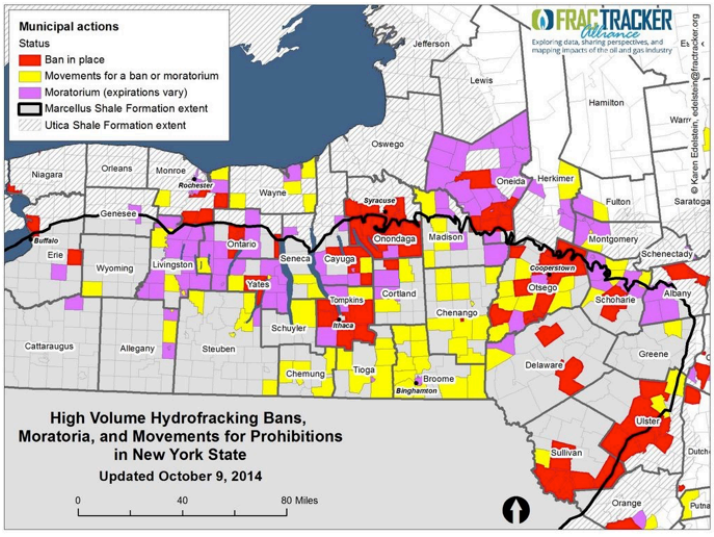

Figure 1. Ban and Moratoria Locations.
Source: Map created by The FracTracker Alliance on FracTracker.org (http://www.fractracker.org/map/us/new-york/).

preparing a new set of regulations (while simultaneously allowing very few small-scale fracking efforts already in existence to continue operating). His actions were a response to concerns for environmental protection and public health, and the need for updated regulations. This process of development of new regulation ultimately took over six years. Governor Cuomo continued the fracking policies of his predecessor and added a requirement for a comprehensive national study on health impacts to help inform the policy process. In December 2014, Governor Cuomo converted the previous moratorium into a permanent ban in what many viewed as a surprise decision. These state-level efforts were proceeding concurrently with local efforts by municipalities to ban or pass moratoria on fracking.

It is a challenge to explain the factors which may influence local policy-making on any issue. Local policies in one community may influence policies in nearby communities as well as influencing and being influenced by policies at state or even federal levels. Additionally, local economic conditions often drive the conversation around fracking. Fracking proponents point to new jobs and the potential economic development benefits, while those opposed express concern about the potentially transitory nature of extractive industries. Prevailing political opinions and experience with similar industries will also drive community thinking on this issue.

FINDINGS

Using state-of-the-art statistical techniques, we assessed data from every municipal jurisdiction in New York State. First, there is a substantial amount of geographical clustering in this kind of local policy adoption (as illustrated in Figure 2), meaning that towns and villages are impacting each other's' policy choices.

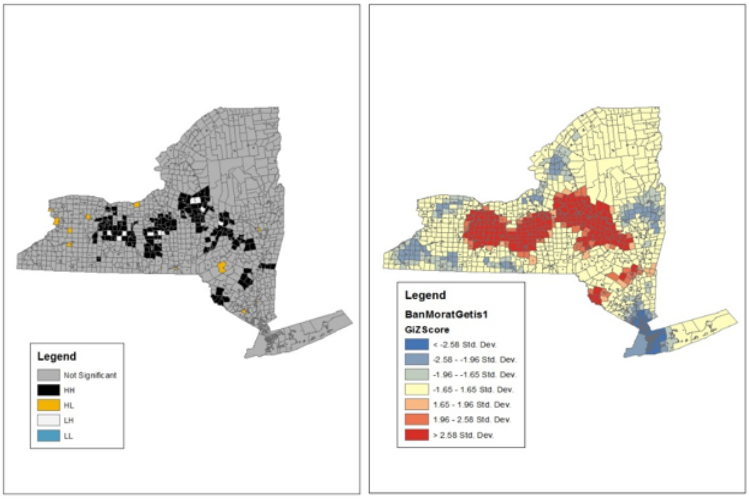

Figure 2. Geographic Clustering and "hot spots" for fracking bans in New York State. Local Moran's I Test (left, significant clustering of bans in black) and Getis-Ord Gi* Hotspot Test (Significant clustering of bans in red).

This kind of process is well known in the public policy literature and is thought to represent mechanisms for diffusion and policy learning; i.e. the geographic spreading of effective policy and the process by which people or institutions learn from others near them.

Second, our regression results indicate that communities in "prime" counties expected to be most productive for shale gas are significantly less likely to pass a policy restricting fracking, as expected. Non-prime areas that are still above the Marcellus and Utica deposits are more likely to pass a ban or moratoria, as the potential economic benefits are smaller, but perceived negative impacts of fracking are still just as salient. Areas with higher numbers of extant conventional oil and gas wells are also significantly less likely to pass anti-fracking policies. Residents in those areas may already be used to local drilling operations.

Any area that is not likely to have fracking activity is generally less likely to try to pass a fracking ban. Areas with more development, more wetlands, and location in priority watersheds are significantly less likely to pass bans or moratoria on fracking. These areas are much less apt to be the focus of fracking activity, and thus see less reason to take a local stand on the issues. Similarly, incorporated villages are also less likely to pass bans or moratoria as compared to towns or more rural areas, as it is much less probable that fracking activities will occur in developed areas.

Political orientation certainly affects municipal decision-making. Not surprisingly, areas with more registered Democrats relative to Republicans are more likely to pass local fracking bans or moratoria. Ideological differences toward energy and the environment are relatively well-documented. Republican voters are, by-and-large, more likely to support pro-drilling policies while Democrats are more likely to prioritize environmental issues.

Other economic factors matter as well. We find no significant impact from measured unemployment rates, but do find that communities with lower levels of educational attainment are less likely to pass bans or moratoria while communities with higher income are more likely to pass such policies. These results highlight some of the economic tradeoffs associated with fracking activities and support literature that suggests environmental issues become more important as income rises.

POLICY IMPLICATIONS

Given our results on income and education, it is likely that less educated communities may be more prone to absorb potential negative impacts from fracking. This has potential implications for environmental justice, as communities with fewer economic development opportunities take on this potential disamenity in an attempt to improve economically. To the extent that communities are not fully informed about the potential impacts of fracking, our research suggests that more should be done to improve information availability and transparency, especially for communities with limited resources.

In the case of fracking, the last two years have seen the emergence of some limited transparency mechanisms. These include fracfocus, a voluntary industry led website and group that tracks specific information about drilling sites (www.fracfocus.org). We have also seen the emergence of independent organizations such as fractracker that attempt to bring greater transparency and to make resources available for the general public (www.fractracker.org). Regional leaseholder and landowner groups have also emerged in some places. These advocacy groups share best practices on leases and negotiations to protect landowner rights, while still advocating for fracking generally. While all of these approaches can offer useful information, additional data could ensure that communities have access to appropriate resources for informed decisions. There is a role for State or federal agencies to provide beneficial information for residents and municipal areas that are addressing fracking

States can contribute to transparency and public education as well. They can provide up-to-date databases on the internet of environmental problems caused by specific drilling operators and/or problematic leaseholders (in the same way that New York City provides public "grades" from health inspections at restaurants). By assisting local communities with this sort of additional information, community stakeholders can much more effectively address the concerns of fracking activity in their area. Multiple states now require the disclosure of chemicals used in fracking activities, which should help identify potential negative externalities.

Our research also illuminates the debate over the allowance of home rule or local control within states. Some states do not allow municipalities to enact bans or exercise home rule decisions. The advantage of this restriction is that it provides a single consistent regulatory context for the industry and municipalities. It reduces the need for municipalities to expend resources and human capital on the development of complicated regulatory policy. For instance, the development of complex regulations and zoning for trucking, water extraction, noise, or other fracking impacts can be difficult for fiscally taxed towns and villages. The obvious disadvantage to disallowing home rule is the loss of local control and decision-making. Further, home rule allows for additional policy experimentation, and the spread of successful regulatory legislation. In the same way that our research shows the concentration (and presumably influence and sharing) of fracking bans, one could reasonably expect the spread of best practices for regulatory policy to occur as well.

Local control is an important factor in fracking, and many energy and natural resource issues. Our analysis is the beginning of a set of research that can help us understand the determinants of local intervention in energy extraction activities, and the ramifications of these determinants for policy.

ACKNOWLEDGEMENTS

This research was made possible by support from the Fredric C. Menz Endowment for Environmental Economics at Clarkson University and the National Agricultural and Rural Development Policy Center (www.nardep.info). We gratefully acknowledge the research assistance of Nicole Besancon in building our data set. We also thank participants in the 2014 Northeastern Agricultural and Resource Economics Association workshop on nonconventional oil and gas energy, two anonymous referees, and Corey Lang for helpful comments on this research. The views expressed in this brief reflect those of the authors, and should not be interpreted as reflecting the views of the U.S. EPA.

The National Agricultural & Rural Development Policy Center (NARDeP) is organized by the Regional Rural Development Centers to provide information about the increasingly contentious and complex agricultural and rural development U.S. policy issues.

The Center is funded by the USDA National Institute of Food and Agriculture (NIFA) under a competitive grant (Number 2012-70002-19385), and engages land-grant universities as well as national organizations, agencies, and experts to develop and deliver timely policy-relevant information around signature areas identified by our Advisory Boards.

Current signature areas are:

- Energy and the Environment
- Food Systems Development
- Self-Employment and Entrepreneurship

In addition, the Center supports research that cuts across policy issues related to the farm and agricultural sectors; the environment; rural families; households and economies; and consumers, food, and nutrition.

NARDeP's continuing objectives are to:

- Provide timely and cutting-edge research on current and emerging public policy priorities and regulations in a quantitative format
- Contribute to the development of theoretical and research methods
- Create and disseminate new datasets from secondary and our other sources to policymakers, analysts, and other interested individuals
- Serve as a clearinghouse for technology diffusion and educational resources and to disseminate impartial information web-based training and other publications
- Help to train the next generation of policy analysts

Visit us on the web nardep.info

The POLICY BRIEFS are published by the National Agricultural & Rural Development Policy Center (NARDeP) after a blind peer review process. NARDeP was formed by the Regional Rural Development Centers in response to the increasingly contentious and complex agricultural and rural development policy issues facing the U.S. NARDeP is funded by USDA National Institute of Food and Agriculture (NIFA) under a competitive grant (Number 2012-70002-19385), and works with the land-grant college and university system and other national organizations, agencies, and experts to develop and deliver timely policy-relevant information. NARDeP is an affirmative action/equal opportunity employer. For information about NARDeP, visit the website: nardep.info.

RRDC
Regional Rural Development Centers