

Zoning as a Response to Hydraulic Fracturing: A Comparison of New York and Pennsylvania



**Research Project for the degree of Masters of Science in Applied
Geospatial Sciences with an Emphasis in
Custom Geography, Planning and Recreation
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Purpose of the Study

Problem Statement

The purpose of this study was to find out whether zoning is an appropriate response to hydraulic fracturing by comparing the situations and circumstances that exist in New York and Pennsylvania.

If the states are regulating hydraulic *why* should local governments?

Do they have the reasons and the authority?



Methodology

* The methodology is a qualitative comparison of two case studies.

--- A variety of information and data sources were used to address the research problem. (connect behavior to an action and to find patterns)

* The conceptual framework applied to this research is Regulatory Theory.

--- Regulatory Theory was used to formulate the problem and validated the findings.

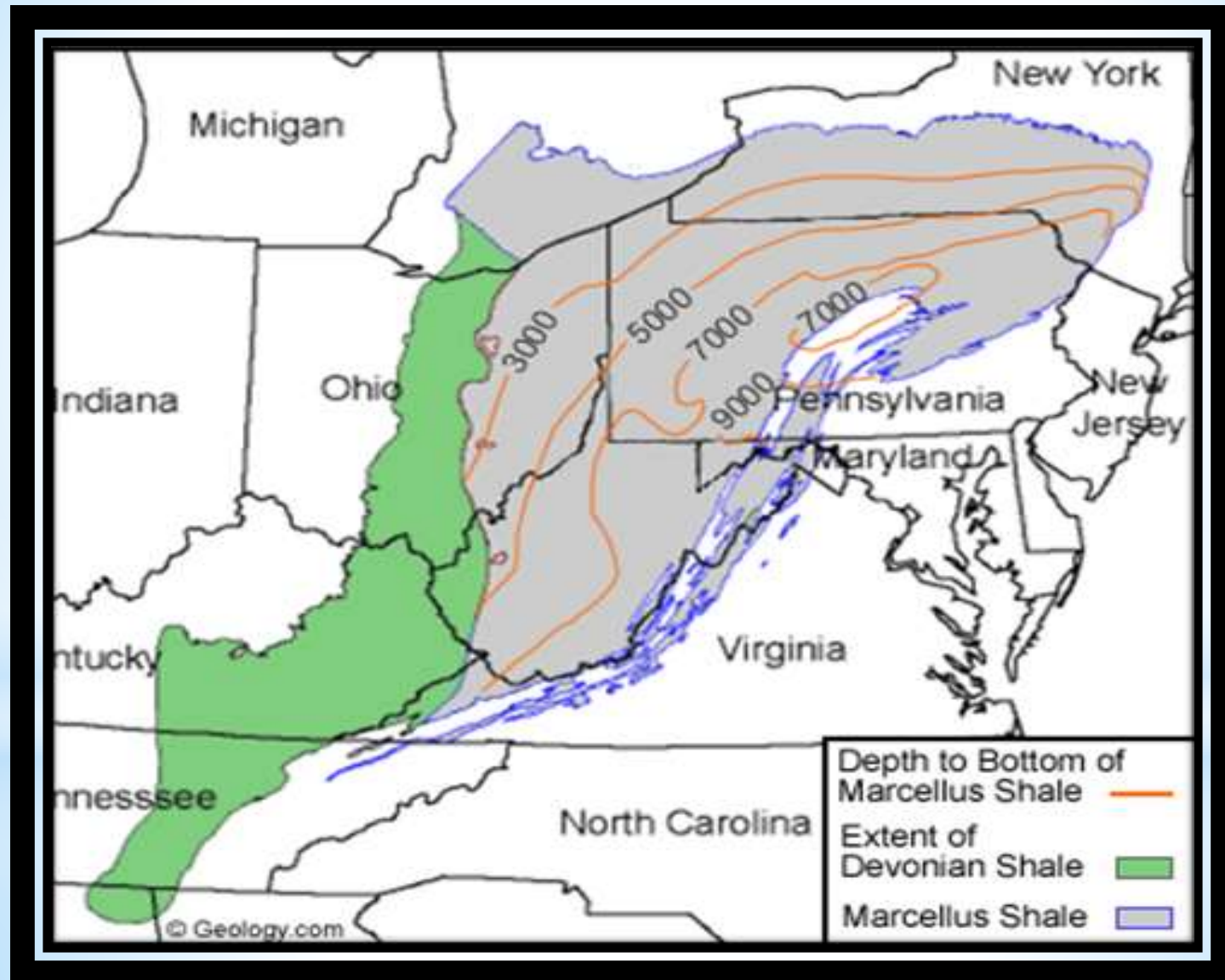
(as per recommendation of Dr. Lew)

Scope of the Study

Why compare New York and Pennsylvania in order to find out whether or not zoning is an appropriate response to hydraulic fracturing?

- * Both states are located within the Marcellus Shale basin
- * They share a border with each other and are geographically similar
- * Both are home rule states
- * Pennsylvania is actively hydraulic fracturing while New York is not and therefore Pennsylvania has served as an example to New York on what to expect
- * Both states have underfunded and understaffed regulatory agencies
- * Both are establishing case law

Map of the Marcellus Shale Basin



Regulatory Theory

“It has been suggested that cost-benefit analysis would license environmental, health and safety regulation that violates individuals’ moral rights not to be put at risk of death or physical harm.” (Adler 2009:593).

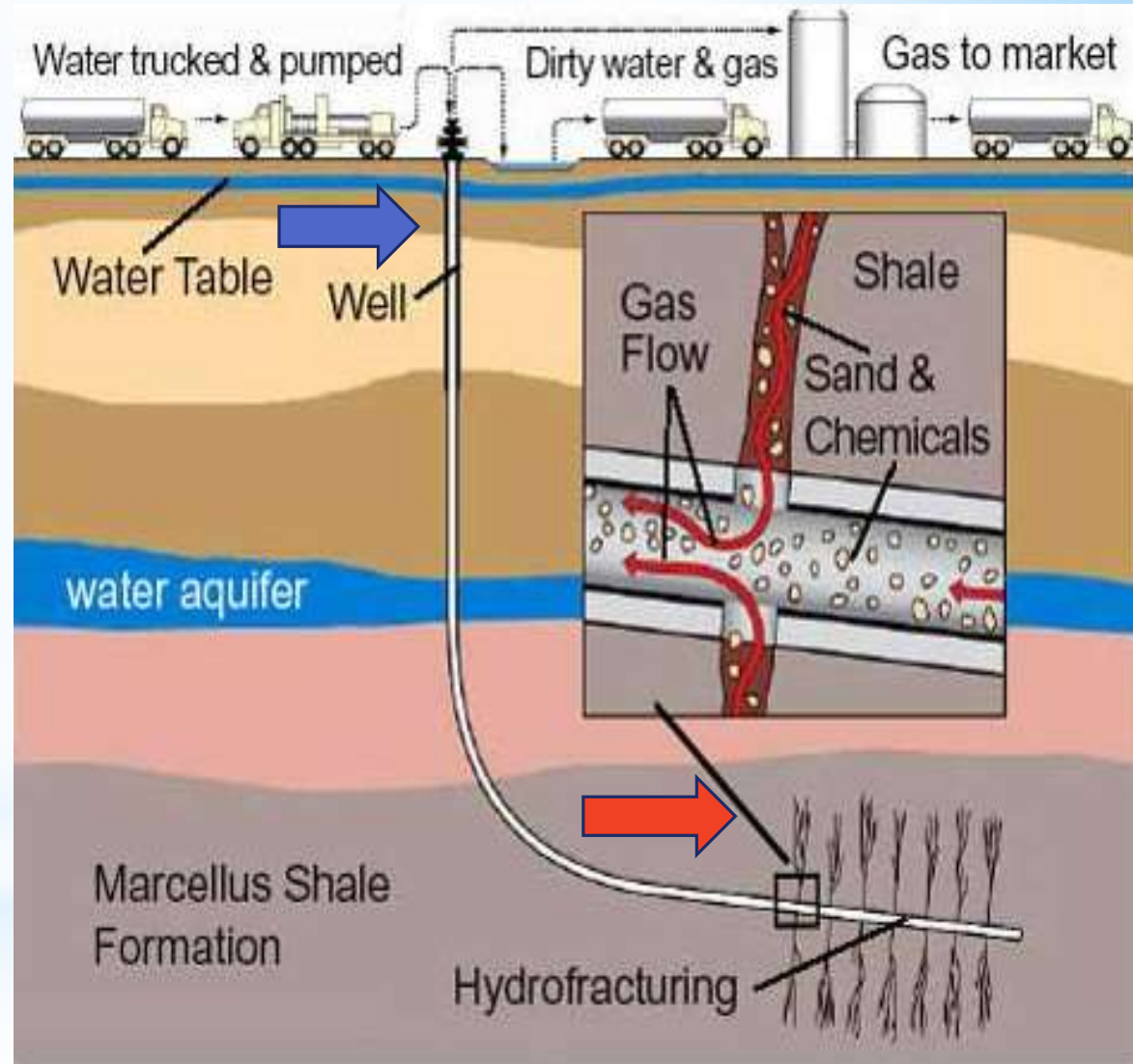
Regulatory Theory was applied to understand the role of zoning as a response to hydraulic fracturing through its lens.

What is Regulatory Theory?

- * Expansion of Marxist philosophy on capitalism (state must regulate)
 - * Private sector should not be a part of regulation (crisis, failure)
- * Regulations implemented by legal governmental body
- * Welfarism added to capitalist equation (regulations outcomes also evaluated by their moral consequences)
- * Economism and humanism integration to preserve capitalism and ensure social and environmental protections at the same time

What is Hydraulic Fracturing?

- Unconventional Natural Gas
- 2 to 8 Million Gallons of Water
Over 200 Trucks
- 750 – Chemical Additives
29 Carcinogenic
Trade Secrets Act
- Sand (silica)
- Flow Back Water (40%)
- Produced Water
 - NORMs (Naturally Occurring Radioactive Materials)(Radon)
 - TDS (Total Dissolved Solids - Salts)
 - Hydrocarbons (Methane, Ethane, Propane)(Benzene)
 - Water Contamination (blowouts)
- Air Contamination
 - Methane (from infrastructure, GHG)
 - Respiratory and Neurological Issues downwind





Hydraulic Fracturing's Impacts in Pennsylvania and what New York may experience



Ray Kemble pumps water from a truck into his neighbor's tank in Dimock, Pa.
Image Credit: AP Photo/Matt Rourke

Hydraulic Fracturing's Impacts Cont.



Zoning

What is zoning and what makes it an effective avenue in regulating hydraulic fracturing at the local level?

- * It is a tool used by local governments for land use regulation
- * Creates zones in order to separate incompatible uses for public welfare
- * Zoning ordinances passed to establish land uses for a particular area
- * It is a Legislative act (within its guidelines of the state)
- * States in charge of regulations therefore municipalities can use zoning

What challenges have municipalities in New York and Pennsylvania faced when using their zoning powers to regulate hydraulic fracturing?

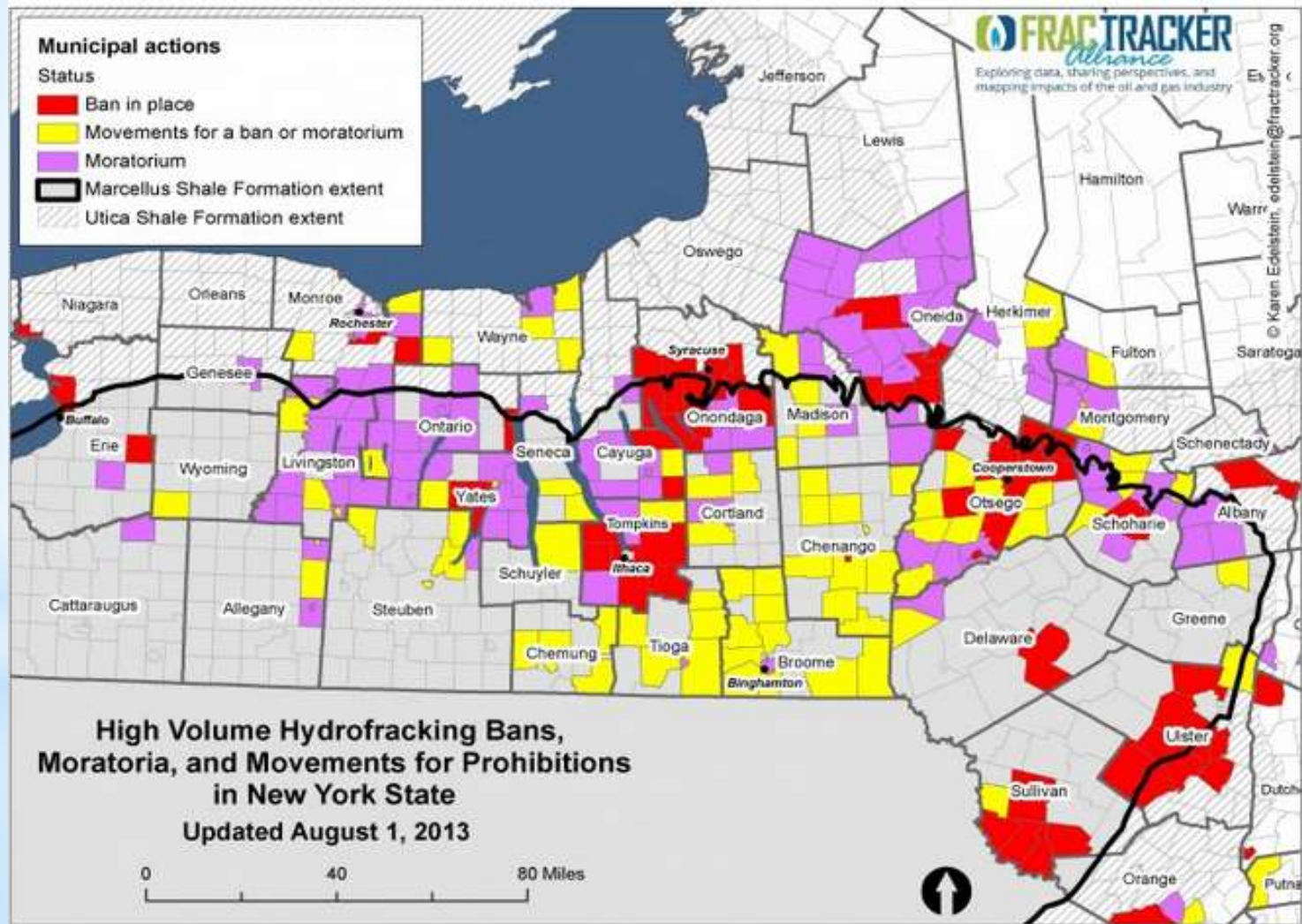
- * Oil and gas companies suing municipalities over preemption

Zoning Cont....

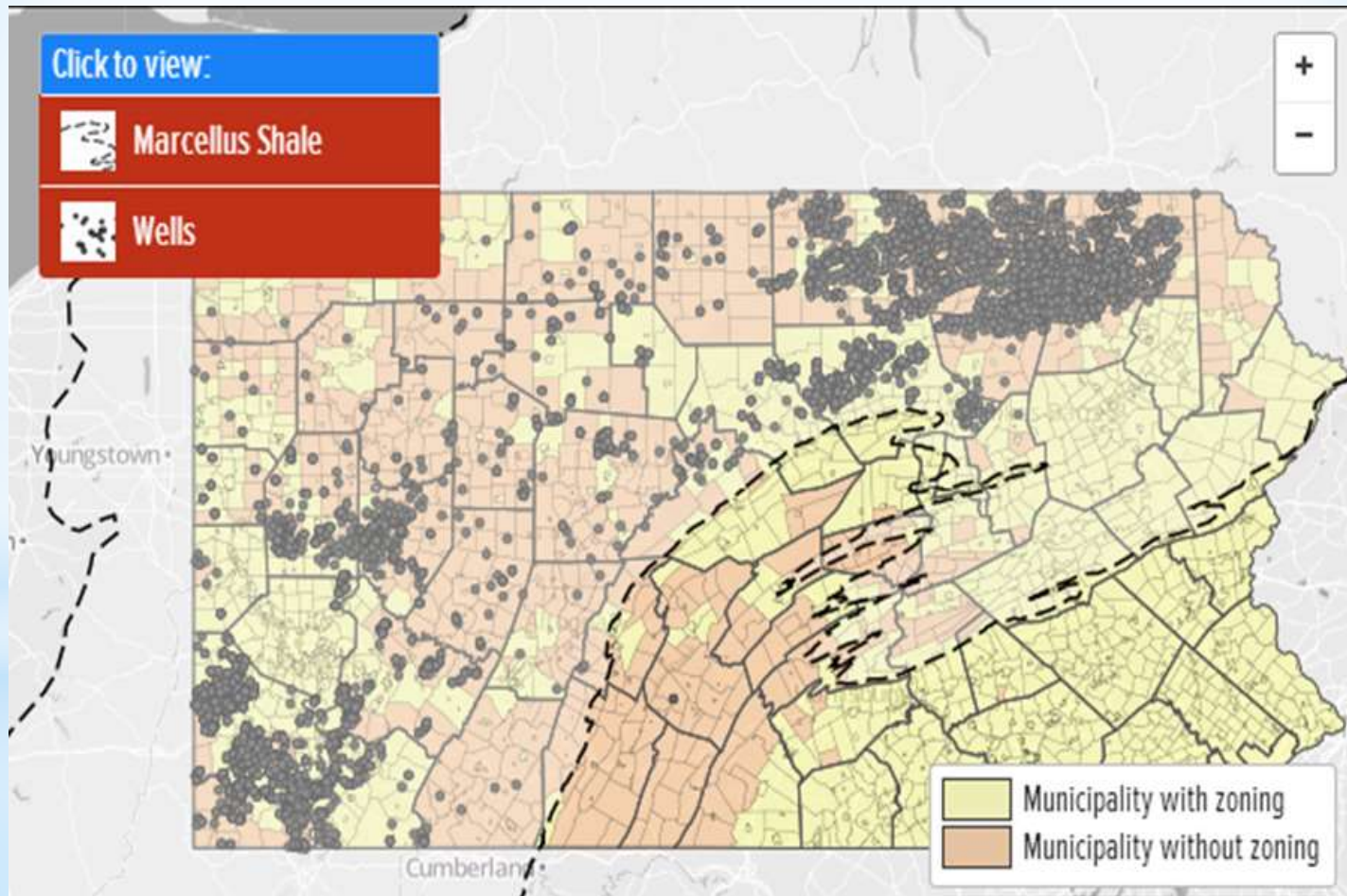
Key rulings from the challenge to local governmental use of zoning in New York and Pennsylvania to control where hydraulic fracturing can take place

- * *New York - Frew Run Gravel v Town of Carroll (1987)*
- * *Pennsylvania - Huntley & Huntley Inc. v Borough of Oakmont (2009)*
- * *Pennsylvania - Robinson Township, et al. v The Commonwealth of Pennsylvania, Pennsylvania Public Utility Commission (Commission) (2013)*

Map of Bans and Moratoria in New York



Map of Wells in Pennsylvania



Conclusions

- *The current regulatory framework is weak
- *There is not enough scientific data to conclude that hydraulic fracturing is safe
- *The trust in the oil and gas industry by local communities is not there
- *Local communities have turned to zoning to protect their health, safety and welfare
- *State courts in both New York and Pennsylvania have upheld zonings home rule powers to decide *where* hydraulic fracturing can take place
- *Zoning is therefore an appropriate reaction to hydraulic fracturing within this context

Conclusion Cont.

Regulatory Theory

- Zoning is Welfarist v Hydraulic fracturing for profit
- Zoning regulation by legal local government authority stabilizes the crisis
- Local governments are creating a change in the way hydraulic fracturing is regulated by initiating an ethical compromise



Thank you

I would like to thank all the members of my committee for helping and supporting me through this challenging but rewarding process. A special thanks to my advisor Dr. Lew who made this possible.