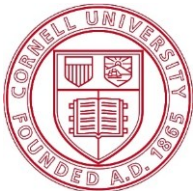


Risks to Communities

What Do We Know? Where are the Knowledge Gaps?

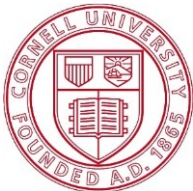
National Research Council
Workshop on Shale Gas Development Risks
May 30-31st 2013 - Washington, DC

Susan Christopherson
Cornell University
smc23@cornell.edu



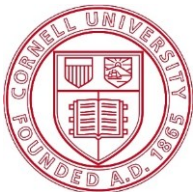
What is the State of Our Knowledge?

- ✓ The actual and perceived risks of shale gas development extend beyond the well site.
- ✓ Studies of resource extraction in rural communities indicate poor outcomes in the absence of intervention and mitigation of negative effects.
- ✓ Cross shale-play knowledge of community risks is limited but because of place-based differences, case studies are valuable.
- ✓ Risks include corrosive divisions in small communities, driven by uneven distribution of costs and benefits.
- ✓ Risks are cumulative, causing community and individual stress.



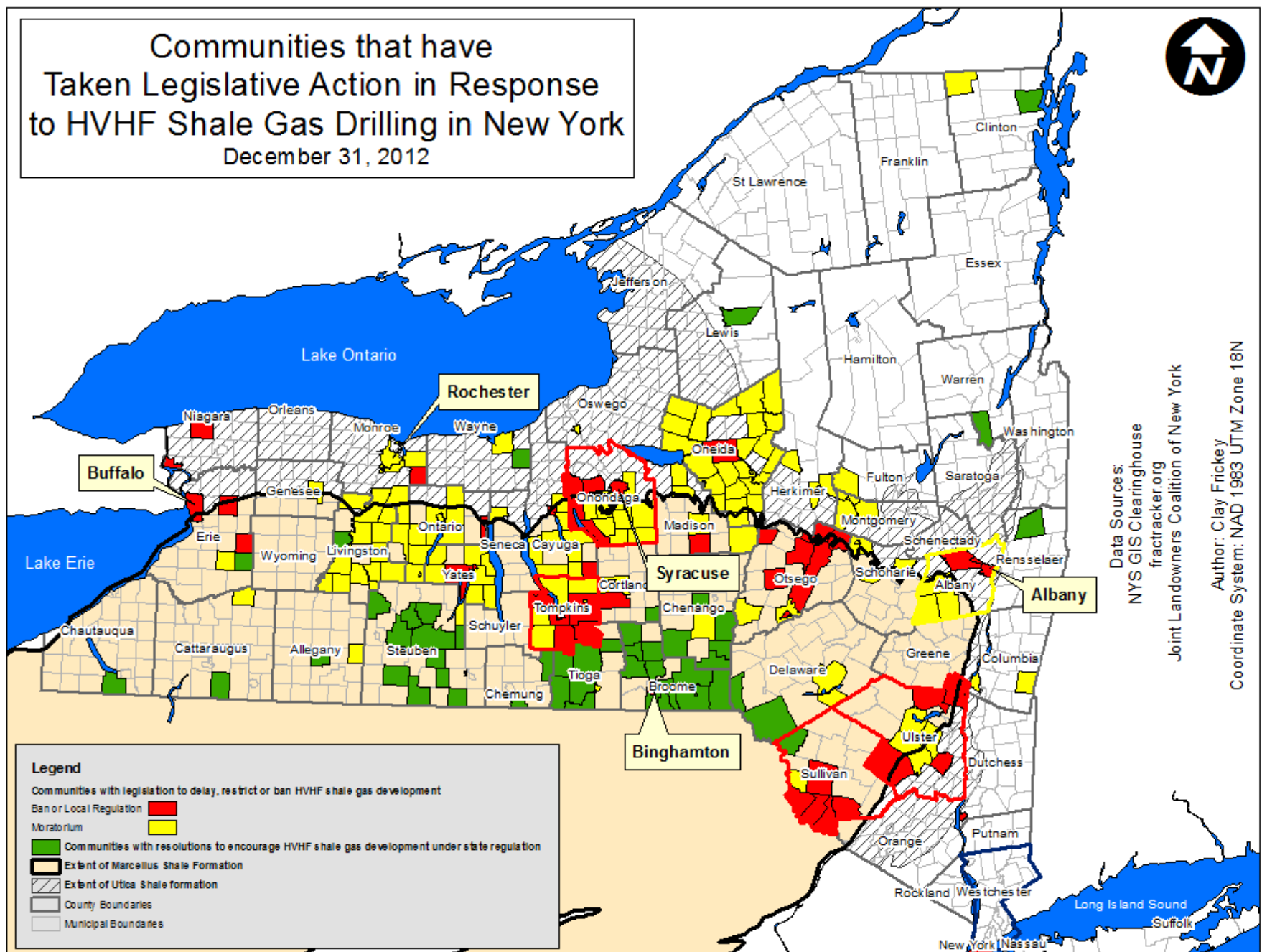
Areas of Risk Uncertainty in Socio-Economic Arenas

- ✓ Questions related to distribution of risks, costs, and benefits, including land ownership and mineral rights ownership.
- ✓ Questions concerning where jobs are created and whether jobs in local industries, such as tourism and agriculture, are “crowded out”.
- ✓ Questions concerning short-term and long-term public costs (roads, emergency services, public safety, administration and monitoring, health care).
- ✓ Risks connected to loss of control over local land use and state override of need for a “social license” to develop resources.



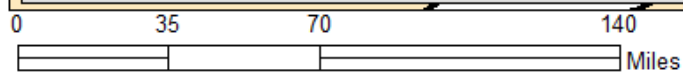
Communities that have Taken Legislative Action in Response to HVHF Shale Gas Drilling in New York

December 31, 2012



Legend

- Communities with legislation to delay, restrict or ban HVHF shale gas development
 - Ban or Local Regulation (Red)
 - Moratorium (Yellow)
- Communities with resolutions to encourage HVHF shale gas development under state regulation (Green)
- Extent of Marcellus Shale Formation (Hatched pattern)
- Extent of Utica Shale formation (Diagonal line pattern)
- County Boundaries (Thin grey line)
- Municipal Boundaries (Thick grey line)



Data Sources:
 NYS GIS Clearinghouse
fractracker.org
 Joint Landowners Coalition of New York
 Author: Clay Frickey
 Coordinate System: NAD 1983 UTM Zone 18N

More Attention to the Spatial Dimension

- ✓ We know that context matters: Different geological conditions, government practices, histories, industry experiences may influence how risks are experienced and perceived in 27 states in which extraction occurs. How do we get data on the development cycle and on key risk indicators common to shale plays?
- ✓ Many communities affected by natural gas development are not conventionally “rural”. They are connected to urban centers or suburban. This changes their risk profile.
- ✓ Risks, costs and benefits are not confined to the well site and the immediate location. For example: distance traveled by trucks; spillover effects across local and state jurisdictions, sourcing of inputs, disposal of outputs. Risk assessment should recognize distribution within and across regions.

