

# EXECUTIVE SUMMARY

## TOMPKINS COUNTY COMMUNITY IMPACT ASSESSMENT HIGH VOLUME HYDRAULIC FRACTURING



This Community Impact Assessment Executive Summary was prepared by GREENPLAN, Inc. under contract with the Tompkins County Council of Governments (TCCOG) and incorporates work done by TCCOG's Gas Drilling Task Force. The study was funded by TCCOG, Tompkins County Area Development (TCAD), and the Park Foundation.

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INTRODUCTION

The Tompkins County Council of Governments (TCCOG) has commissioned this Community Impact Assessment to help its member communities prepare for the possible exploitation of natural gas using hydraulic fracturing combined with horizontal drilling (HVHF). TCCOG established a Gas Drilling Task Force (GDTF) that seeks to network municipalities within the County to manage the large amount of information surrounding gas drilling using HVHF. GDTF has been exploring ways for municipalities to exert local control over drilling activities that affect the health, safety and well-being of County residents.

INTRODUCTION

This Executive Summary is intended to provide an introduction to the full Community Impact Assessment. The full document, available on the [GDTF website](#), provides reliable and factual information for communities in Tompkins County so they are better prepared for the potential environmental and economic impacts of hydraulic fracturing for the natural gas that underlies the region. This Executive Summary is provided in electronic form for downloading and distribution. The electronic form of the full Community Impact Assessment document contains hyperlinks to the studies and reports that were used in its development so readers can view the source documents. Readers are encouraged to review the full Community Impact Assessment to obtain a complete picture of the potential impacts and economic consequences of HVHF.



*Cover graphic source: Tompkins County Water Resources from the GIS Portal  
 Photograph above shows the Marcellus Shale where it emerges at the surface near  
 Marcellus, NY*

## Community Impact Assessment: High Volume Hydraulic Fracturing

Natural gas, buried deep below Tompkins County for millions of years in the Marcellus and Utica shales, is now recoverable due to new drilling technologies. More than 50 gas companies have expressed an interest in exploiting the gas due to the demand for this finite fossil fuel and, consequently, the economic benefits that accrue to the industry, landowners and others. By 2009, at least 2,673 gas leases had been filed in the Tompkins County Clerk's office affecting 39 percent of the County's land area.

The new drilling technology combines high volume hydraulic fracturing of bedrock using horizontally drilled wells (HVHF) into a relatively thin shale layer. The technology is quite different from vertical gas drilling technology. Large quantities of chemicals, water and sand are required for HVHF. The State estimates as much as 7.8 million gallons of water and 167 tons of chemicals are needed to hydraulically fracture each horizontal well. About one-third of this mixture returns to the surface, bringing with it the chemicals used along with additional contaminants that lie buried deep in the shale. Large volumes of heavy truck traffic are required to transport the water, chemicals, sand, equipment and wastewater for each well.

The GDTF estimated that, in the absence of local interventions, there could be as many as 2,100 wells developed in the County over the next 10 years. If this occurs, it will bring jobs, tax revenues, retail sales and service demands, and gas royalties for landowners who lease their land. It will also bring an irreversible industrialization of the landscapes of the County and region, together with the environmental and community impacts of such industrialization.

Gas drilling has been likened to a gold rush and it has the potential to transform a large area of Upstate New York from a predominantly rural-agricultural region to an industrialized region. New York State expects to receive tens of thou

sands of gas well permit applications in the Marcellus Shale alone over the next 30 years. With the State estimating that each well could have an expected life of 30 years, tapping the Marcellus Shale means at least a 60 year commitment to this new industry. Utica Shales are buried even deeper than the Marcellus Shale so gas development, once established, could be prevalent for generations to come.

The Community Impact Assessment has been prepared as a guide for local decision-makers within Tompkins County's 16 municipalities, as well as for residents and business interests. Its overriding goal is to provide objective and factual information on HVHF. The consensus seems to be that development of a natural gas industry in the Marcellus region presents economic opportunities for some, but the negative economic impacts on others are not well understood. The State has acknowledged that there will be negative economic impacts to local government and some local businesses in the Department of Environmental Conservation's (DEC) latest environmental impact statement, referred to as the Revised dSGEIS. Many of the economists who have studied the impact of gas development on the economy have reached similar conclusions. But to date, no one has quantified those costs.

More research efforts on this critical issue are needed by those with real world gas industry economics experience, especially those who have a disinterested role to play, so that residents and local officials can gain a fuller understanding of employment impacts, training needs, and opportunity costs, among many other areas of the economy. The full Community Impact Assessment, available in PDF form [here](#), provides in-depth details on a wide variety of topics affecting local government, communities and the environment. The next section will present a summary of the economic, community and environmental impacts of HVHF.

Economic Impacts	Community Impacts	Environmental Impacts
<ul style="list-style-type: none"> <li>✓ Short-term construction, trucking, retail and service jobs</li> <li>✓ Long-term maintenance jobs created for well production</li> <li>✓ Some of the new jobs created will pay higher than similar local jobs</li> <li>✓ New York State DEC estimates that Statewide, total direct HVHF construction employment could eventually exceed 4,400 full-time equivalent (FTE) workers and could generate indirect employment in other sectors of the economy exceeding 7,200 FTE workers under the low development scenario</li> <li>✓ The State failed to analyze job losses associated with declines in other industries, such as agriculture and tourism</li> <li>✓ Some businesses, like restaurants and hotels, will benefit</li> <li>✓ Ad valorem taxes based on the income stream from each well would be paid to local governments</li> <li>✓ Demands for local goods and services will increase and providers of such goods and services will benefit</li> <li>✓ Some existing residents and businesses will be affected by inflationary and employment pressures</li> <li>✓ Local rents may increase, potentially displacing local residents</li> <li>✓ Mixed impacts are expected on the value of leased and un-leased land, compulsorily integrated land, and real estate throughout the community</li> <li>✓ Potential disruption to the availability of mortgage financing for leased properties and adjoining properties</li> <li>✓ Future economic development potential, not based on natural gas, may be inhibited on or near wells and pipelines due to their presence</li> </ul>	<ul style="list-style-type: none"> <li>✓ NY State has acknowledged but not quantified the costs of HVHF to local government</li> <li>✓ Increased cost of services, especially for road and bridge construction and maintenance are expected</li> <li>✓ Increased need for police and emergency first responders</li> <li>✓ Rapid population influx creating higher service needs as specialized gas rig workers arrive from other gas regions</li> <li>✓ Increases in social problems such as crime and demands for “man camps” housing temporary out-of-state workers</li> <li>✓ Demands for recreation, health and welfare, housing and solid waste management will increase</li> <li>✓ Demands for additional classroom space will increase</li> <li>✓ Demands for rooms in hotels and motels for more than 30 days may squeeze out tourists and college student’s families</li> <li>✓ Permanent resident exclusion in hotels/motels may mean less tax revenues to support local tourism activities</li> <li>✓ Increased demands for local government administrative needs and equipment</li> <li>✓ Potential for loss in population and smaller increases in real personal income after gas drilling ends</li> <li>✓ Potential explosions, fires, spills, releases and accidents, involving natural gas and hazardous substances may shake public confidence in their own safety and well being and yet, the State did not complete a Health Impact Assessment</li> <li>✓ Both acute and chronic spills and accidents will strain volunteer and paid professional emergency services workers</li> </ul>	<ul style="list-style-type: none"> <li>✓ The heavy industrial characteristics of gas drilling and production are incompatible with the County Comprehensive Plan and with the comprehensive plans and zoning regulations of the four municipalities studied</li> <li>✓ Community character will be adversely affected by the visual unsightliness of new gas infrastructure and heavy industrial nuisances like noise, lighting, odors, high volume heavy truck traffic, compromised health and safety due to accidents, spills as well as air and water pollution</li> <li>✓ Tourist attractions, such as State and local parks, wineries, farms, and scenic landscapes may be impaired by heavy industry</li> <li>✓ GDTF estimated 1,848 acres in the County could be directly transformed from its existing use to gas drilling and production for 60 years or more</li> <li>✓ An estimated 480 acres of farmland could be directly lost due to new gas well development; additional organic and other farms will be indirectly affected</li> <li>✓ Soil erosion and sedimentation of local surface waters will occur due to grading and vegetation removal for gas well development as well as access roads, compressor stations, staging areas and pipelines</li> <li>✓ Potential seismic activity near gas wells; earthquakes have now been attributed to HVHF</li> <li>✓ Groundwater quality may be diminished by contaminants originating from drilling activities as well as spills and accidents with as many as 42 incidents of groundwater contamination projected in Tompkins County</li> <li>✓ Demands for HVHF water supply in 10 years in Tompkins County could equal the total volume of Honeoye Lake, the 10th largest Finger Lake</li> </ul>

Economic Impacts	Community Impacts	Environmental Impacts
<ul style="list-style-type: none"> <li>✓ The State calculated economic benefits but failed to analyze the economic costs to local, county or State government from HVHF; DOT has termed the transportation impacts on State and local government as “ominous”</li> <li>✓ Competition for certain jobs, such as local truck drivers, may create an imbalance affecting dairy farmers and other local businesses</li> <li>✓ Homeowners who lease their land and suffer property damage, such as well water contamination, structural damage or casualty from a gas explosion, won't have coverage from homeowner's insurance and may have no recourse against the gas company holding the lease</li> <li>✓ Signing bonuses will go to landowners who lease their land to gas companies and later royalties to such landowners, provided wells are eventually drilled and are not "dry holes"</li> </ul>	<ul style="list-style-type: none"> <li>✓ After gas development and production cease, the industrial infrastructure and industrial contaminants left may be a detriment to community redevelopment</li> <li>✓ Regardless of whether a community decides to prohibit gas drilling and production or not, regional impacts will create local impacts and costs</li> <li>✓ Absent local land use controls on gas drilling, well sites could be located anywhere and everywhere in a community with only a few exceptions, such as not within 100 feet of a home, 150 of a school, within a floodplain, or 500 feet of a groundwater well unless the landowner consents</li> <li>✓ Municipalities lacking a comprehensive plan and/or land use controls would be at the mercy of the State to determine where and how many wells are drilled in their community</li> <li>✓ HVHF has the potential to divide communities, pitting neighbor against neighbor - those who find adverse environmental, health, community character and economic impacts paramount against those who believe gaining economic benefits are critical</li> </ul>	<ul style="list-style-type: none"> <li>✓ Surface water quality may be diminished by contaminants originating from drilling activities as well as spills and accidents with as many as 336 leaking wells, 252 citations for serious regulatory violations, and 16,800 tons per year of sediment runoff to waterways</li> <li>✓ There are no approved sewage treatment plants available to treat wastewater generated at well sites</li> <li>✓ Wildlife habitats will be fragmented by well, access road and pipeline construction</li> <li>✓ Some wetlands, especially small unregulated ones, will be lost</li> <li>✓ A variety of air emissions will increase affecting local air quality from drilling rigs, venting and flaring of gas, diesel exhaust, volatile chemicals, fugitive emissions from leaks, and use of dehydrators</li> <li>✓ Significant methane releases will occur, a potent greenhouse gas with global warming affects</li> <li>✓ The Finger Lakes tourism “brand” may be permanently damaged by an industrial landscape</li> <li>✓ Heavy truck trips have been estimated in Tompkins County at an additional 5,040,000 over the next 10 years</li> <li>✓ Noise levels within 2,000 feet of a well will exceed the US EPA and HUD standards for outdoor noise</li> <li>✓ Gas wells can be sited as close as 100 feet from a home and 150 feet from a public building like a school</li> </ul>

## Community Planning and Gas Development Strategies

Local planning and zoning by towns, villages and cities is the foundation for control of land use in New York State. The Town, Village and General City Law and Municipal Home Rule Law all recognize a municipality's right to exercise statutory authority to decide how its land will be used. Some communities in Tompkins County and other counties in the Marcellus and Utica Shale regions, have already taken steps to prohibit gas drilling. As of December of 2011, [at least 70](#) New York cities, towns, villages and counties, seeking to limit HVHF, have taken action. More are proposing to do so or are studying the issues.

There are two points of view as to whether local governments can prohibit gas drilling. Some argue that prohibition of gas drilling under a local land use control law like zoning, amounts to regulation of gas drilling. Regulation of gas drilling is preempted by the New York State Environmental Conservation Law. Others point to a prohibition on gas drilling as a legitimate exercise of a municipality's police power, granted to them by the State Legislature through the planning and zoning enabling acts, because zoning allows or prohibits a variety of land uses within a municipality and, if prohibited, does not "regulate" oil and gas operations. Lawsuits have been filed in Tompkins and Otsego counties as of the publication date of this Assessment. Municipalities may not know for several years whether they will be allowed to prohibit gas development activities or control other specific components of gas development.

The Full Community Impact Assessment presents an analysis of the Tompkins County Comprehensive Plan and a summary of the comprehensive plans for the County's two most populated towns and two of the least populated towns, the towns of Ithaca, Dryden,

Ulysses, and Danby. The summary is presented as an example of the types of planning, including environmental impacts and community character issues, that need to be examined on a community-by-community basis.

To adequately assess impacts on a municipality, each community needs to review the full Community Impact Assessment and then document and evaluate their comprehensive plans and zoning regulations. Using readily available information, an assessment can be made about whether HVHF is compatible with a community's goals. Tompkins County has completed an analysis of how municipalities can address planning and zoning issues related to gas drilling. An assessment of municipal tools, provided at the [County's website](#), is the best place to start. This is where a community can go to determine whether HVHF is consistent with each community's unique vision of its future. The County's website includes concrete steps that can be taken for a community to decide how to address gas drilling based upon the limited universe of tools available to municipalities under New York State law.

To get started, here are a number of questions that each community should consider when assessing HVHF:

- ▶ What does the municipal comprehensive plan or zoning law say about how the community wants to grow, protect its resources, enhance its quality of life?
- ▶ If it doesn't have a plan and/or zoning, then what other sources of information on land use issues are available, such as meeting minutes where growth and development are discussed?
- ▶ Does it want industrial development?

- ▶ Does it want to remain rural with clean air and clean water?
- ▶ Does it want to encourage agriculture and forestry or perhaps tourism?
- ▶ Does it want to avoid traffic congestion?
- ▶ Does it want to minimize or avoid changes to its landscapes and scenic areas?
- ▶ Does it want to avoid increasing the costs of providing municipal services?
- ▶ Is it concerned about losing its identity and sense of place if development activities are unregulated or poorly regulated?
- ▶ Is it concerned about any increases in air, light, water and noise pollution, increases in crime, and displacement of residents?
- ▶ Is it concerned about decreases in open space, wetlands, water resources, and wildlife including biodiversity?
- ▶ Will heavy industrialization accelerate the displacement of local residents and businesses affected by HVHF?
- ▶ Will HVHF result in an increased vacancy rate among commercial properties or lead to less of the types of development desired in the community?
- ▶ Will HVHF lead to lower property values for lands in close proximity to such operations?
- ▶ Will HVHF affect the way in which lenders treat mortgages and their continued viability?
- ▶ Will landowners, their insurance, mortgages and home values be affected by the compulsory integration process, when they are forced into a drilling pool after the gas company has control of 60% of a 640 acre spacing unit assigned to a gas well pad?

It is important to understand that shale gas development in the Marcellus region is in its infancy and the scientific understanding of the relatively new technology of HVHF and its effects on communities as well as on humans

and the environment are just beginning to emerge. There is a wealth of information expected to become available as more and more researchers tackle the difficult questions associated with HVHF. The Community Impact Assessment is only a starting point for investigating both the economic benefits and detriments associated with HVHF. It points readers to researchers who are beginning to understand how the complex geology of the Marcellus and Utica shale formations interact with the HVHF process.

A great deal of additional research is needed to clear up the often conflicting information that is available, so that researchers, medical professionals, economists, engineers, planners, and scientists can reach a consensus on what the ultimate economic and environmental impacts will be on Tompkins County and the region. Here are a few questions to keep in mind as you review the Assessment and begin the process of planning for the coming exploitation of natural gas using HVHF in New York State:

1. What are the potential economic impacts on existing industries such as wineries, tourism, and education (Cornell University, Ithaca College and Tompkins-Cortland Community College), particularly the long-term consequences and cumulative impacts of gas industrialization?
2. What are the economic impacts on agriculture, including the dairy industry (because it relies heavily on trucking) as well as the emerging organic farming and grape industries?
3. What is the potential for short term labor shortages, as low income residents are pushed out of the region by higher paid gas workers?

4. Will there be potential increases in other wage rates with corresponding effects on existing businesses?
5. What are the full costs of road and bridge construction, improvement, and repair and how will they be paid for, as already questioned by the NY State Department of Transportation?
6. Will the added costs of emergency services such as police, fire, and other emergency responders as a result of increased traffic, construction, production activities as well as accidents, spills, and other emergencies be paid for by the additional ad valorem taxes collected by local governments?
7. What will be the added costs for public water supply systems if additional filtration is required?
8. Will there be long term impacts on the regional economy if it is replaced with a boom-bust economy based upon a non-renewable resource?
9. What are the potential long-term costs for providing education, housing, health care, recreation, and solid waste management to serve the added population as a result of in-migration?
10. Will the types of growth and development envisioned by communities, through their comprehensive plans and zoning regulations, be inhibited or thwarted by gas development activities, thereby preventing realization of such plans?

## Municipal Actions

Whether or not HVHF becomes established in Tompkins County, it is likely that it will in other Southern Tier counties based upon gas industry and State projections. Indeed, there is already anecdotal evidence that existing gas drilling in northern Pennsylvania counties is affecting Tompkins County. Reports, such as increased air traffic at Ithaca Tompkins Regional Airport and increased demands for local truck drivers, constitute non-scientific observations but they do provide an early indication that the impacts of gas drilling will extend well beyond municipal borders.

The next section has been designed to address land use issues generally because gas drilling activities, regardless of their location, can cause pressures for other growth and development in all communities throughout the region that can only be effectively addressed through zoning and intermunicipal cooperation. The many ways in which a municipality can address HVHF have been summarized below:

Municipal Action	Discussion	Further Resources
Comprehensive Plans	<ul style="list-style-type: none"> <li>▶ Review the plan, if there is a written one, to identify whether industrial activities were contemplated; prepare a comprehensive plan if there is not an adopted one</li> <li>▶ Involve the public in plan preparation or amendment</li> <li>▶ Ensure the plan reflects residents' vision for the future</li> <li>▶ Conduct natural and cultural resource mapping so that important community features are identified for protection and enhancement</li> <li>▶ Incorporate County Comprehensive Plan principles into municipal plans</li> </ul>	<p><a href="#">Tompkins County Planning Department's Planning Tools</a></p> <p><a href="#">NY Department of State Local Government Services</a></p> <p><a href="#">American Planning Association</a></p> <p><a href="#">Groundwater Resource Mapping</a></p> <p><a href="#">Environmental Resource Mapper</a></p>
Zoning Regulations	<ul style="list-style-type: none"> <li>▶ Review zoning districts and uses to determine ultimate build-out of the community if there are zoning regulations</li> <li>▶ Engage the County Planning Department to determine if zoning is warranted and to get help</li> <li>▶ Consider using the services of a professional planner to draft zoning</li> <li>▶ Review the regulations for issues such as access, signage, landscaping, noise, lighting, building placement, natural and cultural resource protection (see Site Plan Regulations below)</li> <li>▶ Require site plan review for driveway permits to gas pad areas to minimize impacts to neighbors</li> <li>▶ Review special use permit requirements and establish standards for individual uses</li> <li>▶ Review the zoning and subdivision regulations to determine if design standards or guidelines have been developed to illustrate the types of development and neighborhoods that are desired</li> </ul>	<p><a href="#">Center for Rural Massachusetts Manual of Build-Out Analysis</a></p> <p><a href="#">NY Department of State Zoning Publications</a></p> <p><a href="#">NY Planning Federation Model Ordinances</a></p> <p><a href="#">Tompkins County Vital Communities Toolbox</a></p>

Municipal Action	Discussion	Further Resources
Site Plan Regulations	<ul style="list-style-type: none"> <li>▶ Site plan regulations address development issues such as compatibility with surroundings, pedestrian and vehicle access, economic impacts, site density, plans and elevations of structures, signs, landscaping, fencing, buffers, and utilities</li> <li>▶ Such regulations can also address impacts on air, water, and noise, visual compatibility, geology, topography, soil characteristics, vegetation, wildlife, drainage, erosion, wetlands, flood hazards, among other reasonable site issues</li> </ul>	<p><a href="#">NY Department of State Site Development Review</a></p>
Local Laws	<ul style="list-style-type: none"> <li>▶ New York State Municipal Home Rule Law (MHRL) allows a community to enact local laws for "protection and enhancement of its physical and visual environment."</li> <li>▶ Communities have used this State law to enact wetlands regulations, watercourse and water body protection regulations, hillsides and steep slopes protection regulations, protection of wildlife habitat, groundwater, game and game birds, scenic areas, fish, flood control, soil conservation, reforestation, timber harvesting and tree preservation, and stormwater regulations.</li> <li>▶ Local laws have also been used to establish critical environmental areas as overlay districts as well as natural resource and open space protection districts (just like residential or commercial districts) under zoning.</li> </ul>	<p><a href="#">New York Rural Water Association</a></p> <p><a href="#">Town of Colonie Watercourse Protection Law</a></p> <p><a href="#">Pace University School of Law</a></p> <p><a href="#">Environmental Law Reporter Open Space Protection Techniques</a></p>
Historic Resources	<ul style="list-style-type: none"> <li>▶ New York State General Municipal Law allows a community to enact a landmark preservation law under section 96-a of Article 5-K.</li> <li>▶ Zoning and Site Plan regulations can also address issues of aesthetics and cultural resources generally.</li> </ul>	<p><a href="#">NY State Department of State</a></p>
Other Local Controls	<ul style="list-style-type: none"> <li>▶ Consider adopting local light, noise and air quality regulations</li> <li>▶ Require that landmen (representatives of drilling companies) register before operating in a community so that residents can identify individuals who are soliciting the use of land.</li> </ul>	<p><a href="#">Noise Pollution Clearinghouse</a></p> <p><a href="#">NY Planning Federation Diesel Idling Guide</a></p>
Critical Environmental Areas	<ul style="list-style-type: none"> <li>▶ Designate natural and cultural resources as Critical Environmental Areas (CEA) under the New York State Environmental Quality Review Act (SEQR).</li> <li>▶ Legislative boards, planning boards and zoning boards can all designate CEA's, which then require an additional level of environmental assessment in accordance with SEQR. Inform DEC of all locally designated CEA's.</li> </ul>	<p><a href="#">DEC's SEQR Handbook</a></p> <p><a href="#">Town of Ithaca CEA</a></p>

Municipal Action	Discussion	Further Resources
Emergency Responders	Ensure that local emergency responders are informed of the exact contents of fracking fluids at well sites and transport routes so that proper treatment can be provided in the event of spills or contamination incidents.	
Mobile Homes	Zoning is the most common method of regulating mobile homes. For communities that lack zoning, a free-standing regulation or local law can be enacted.	<a href="#">NY State Department of State</a>
Stormwater Management	The State DEC encourages municipalities to enact local regulations for management of stormwater. The State of New York recommends that every community, whether or not it is regulated under the state/federal stormwater program, to adopt a Stormwater Management Local Law.	<a href="#">NY State Department of Environmental Conservation</a>
Roads	<ul style="list-style-type: none"> <li>▶ Plan, post, and enforce truck routes that minimize high-volume truck traffic</li> <li>▶ Devise Road Use Agreements (RUAs) or state-level fees that support road maintenance while drilling or production activity is underway</li> <li>▶ Anticipate “haul routes” to and from drilling sites based leased parcel and permit location information, and infrastructure</li> <li>▶ Undertake a comprehensive traffic impact study and document baseline roads by video/ photographs of pre-development road conditions</li> <li>▶ Estimate road damage costs using AASHTO standards for equivalent single axle loads (ESALs)</li> <li>▶ Consider adopting restrictions on hours of operation on local roads for heavy industrial uses</li> <li>▶ Establish inter-municipal agreements to ensure consistent policies for mitigating heavy industry operations on roadways connecting neighboring municipalities</li> <li>▶ Require pre-use roads assessments performed by a licensed Civil Engineer, paid for by any company expecting to heavily use local roads and infrastructure</li> <li>▶ Then enact a road use law, where haulers (all heavy trucks) exceeding a certain weight are required to pay for a permit for their activities</li> <li>▶ Establish “financial undertaking agreements” (i.e., cash bond, escrow, or letter of credit) sufficient to cover the real cost of damages to local roads including infrastructure (e.g., drainage, culverts, bridges)</li> </ul>	<p><a href="#">Cornell Local Roads Program</a></p> <p><a href="#">Yates County Roads Preservation and Use Program</a></p> 

Municipal Action	Discussion	Further Resources
Pipelines	<ul style="list-style-type: none"> <li>▶ Require permits and inspections by the highway superintendent for road openings for pipelines to ensure alternative arrangements for the period during which the road is closed, alternative traffic circulation or by-pass routes, the listing of responsible parties for the road closing and restoration, and specifying the quality of the replacement roadway to be provided upon completion of construction</li> <li>▶ Co-locate pipelines in road rights-of-way to minimize impacts of additional land disturbances</li> <li>▶ Encourage companies to share pipelines to avoid duplication and decrease impacts while offering economies of scale</li> </ul>	<p><a href="#">Field Safety Guide</a></p> <p><a href="#">Tompkins County Information</a></p>
Community Services	<ul style="list-style-type: none"> <li>▶ Create a community “task force” to act as a clearinghouse of information on HVHF</li> <li>▶ Identify “what is normal” for local communities, so that increases in demand for local government services can be noticed quickly</li> <li>▶ Identify capacities and “problem thresholds” for local government services and for private services like EMT’s</li> <li>▶ Identify jurisdiction and authority over issues of concern</li> <li>▶ Create a list of telephone numbers and email addresses for management and emergency contacts in the event of an incident at or near a drill site or established gas well</li> <li>▶ Connect with gas companies to identify ways to mitigate problems</li> <li>▶ Monitor gas well development (i.e. drill rig numbers and locations, well locations, permit trends, and production trends) using GIS mapping</li> <li>▶ Identify likely growth scenarios and monitor commercial, industrial, and residential development trends</li> <li>▶ Plan for the new growth and how it will be paid for (new fees and bond resolutions)</li> <li>▶ Continue to plan for projects, facilities, and services that will remain after gas-related growth has subsided or reversed</li> <li>▶ Plan and implement central water and wastewater systems in existing centers and priority growth areas and balance such development opportunities with open space, farmland and forestry protection strategies in rural areas</li> </ul>	<p><a href="#">DEC Oil and Gas Database</a></p> <p><a href="#">Tompkins County GIS Portal</a></p> <p><a href="#">Cornell Natural Gas Resource Center</a></p> <p><a href="#">Mineral Resources Environmental Notice Bulletin</a></p> <p><a href="#">Catskill Citizens for Safe Energy</a></p>

Municipal Action	Discussion	Further Resources
Training	<ul style="list-style-type: none"> <li>▶ Train emergency management responders on blow-out prevention, gas flaring procedures and layout of flow lines</li> <li>▶ Encourage residents to sign up for NY Alert notifications of chemical spills or gas fires</li> <li>▶ Encourage Tompkins Cortland Community College to establish training curricula for long term gas production and monitoring jobs so these permanent jobs go to local residents rather than “out-of-towners”</li> <li>▶ Ensure local assessors are properly trained on the valuation and assessment of gas producing property</li> </ul>	<p><a href="#">NY Alert</a></p> <p><a href="#">TC3's Adult Learning Center</a></p> <p><a href="#">NY State Office of Real Property Tax Services</a></p>
Intermunicipal	<ul style="list-style-type: none"> <li>▶ Consult with the County’s Soil and Water Conservation District and existing water users to determine best locations for water withdrawals</li> <li>▶ Explore options for sharing services, protecting resources on a regional basis, and treating significant land use issues similarly regardless of location</li> <li>▶ Take advantage of the Tompkins County Council of Governments to help make connections to neighbors and to tap into a regional forum for addressing intermunicipal issues</li> <li>▶ Resolve jurisdictional disputes and help coordinate permitting processes through joint meetings with local, county, state and federal representatives</li> </ul>	<p><a href="#">Tompkins County SWCD</a></p> <p><a href="#">Tompkins County Council of Governments</a></p> <p><a href="#">NY State Department of State</a></p> <p><a href="#">Pace University Land Use Law Center</a></p>
Energy Use	<ul style="list-style-type: none"> <li>▶ Reduce energy consumption through comprehensive planning and community design that incorporates strategies for both mobile and non-mobile energy efficiency</li> <li>▶ Adopt smart growth development strategies</li> <li>▶ Streamline community alternative energy use such as wind and solar systems</li> <li>▶ Encourage programs aimed at reducing individual energy consumption</li> <li>▶ Ensure that local land-use standards proactively encourage the installation of renewable energy technologies</li> </ul>	<p><a href="#">American Planning Association</a></p> <p><a href="#">Rocky Mountain Institute</a></p> <p><a href="#">Smart Growth America</a></p> <p><a href="#">Environmental Protection Agency</a></p> <p><a href="#">US Green Building Council</a></p> <p><a href="#">Cornell Green Choices</a></p>

## Conclusions

New York State's Laws have long recognized the essential role that cities, towns and villages play in the regulation of land use within their borders. For more than 75 years under the State's planning and zoning enabling acts, municipalities have been developing ways to address issues of growth, development, and protection of the public health and welfare. The State Court of Appeals addressed the issue of municipal land use control and resource extraction in a 1996 case, where it stated that *"A municipality is not obligated to permit the exploitation of any and all natural resources within the town as a permitted use, if limiting that use is a reasonable exercise of its police power to prevent damage to the rights of others and to promote the interests of the community as a whole."* New York State's Executive, Legislative and Judicial branches all have various means for addressing changes in land use, especially when trends emerge that affect the lives and livelihood of State residents. Ultimately, it will be up to the citizens of Tompkins County and their elected representatives to inform State government officials of their opinions on gas drilling and HVHF.

The issues addressed in this Executive Summary are not a substitute for a close examination of the full Community Impact Assessment. Gas drilling using HVHF is an enormously complex and potentially dangerous process, the likes of which have never been seen in most rural communities of Upstate New York. HVHF, if permitted in New York State, will have mixed economic repercussions and profound impacts on the environment, land use and community character. Based on the DEC's environmental and regulatory review process to date, including the Revised dSGEIS and the proposed High Volume Hydraulic Fracturing Regulations, it appears that local governments will not be able to rely on the State to adequately mitigate the adverse impacts of HVHF. Local governments need to understand and effectively use the various tools that are available to them to protect their community's infrastructure, land use patterns, natural and cultural resources, and community character. Local governments, residents and businesses also need to express their thoughts and opinions, to the DEC and to their State elected officials, about the regulation or prohibition of gas development.