

**TOWN OF ULYSSES
RESOLUTION NO _____ OF 2011**

RESOLUTION ADOPTING LOCAL LAW NO. ____ OF 2011, CLARIFYING THAT NATURAL GAS AND/OR PETROLEUM EXPLORATION; EXTRACTION; SUPPORT ACTIVITIES; AND THE STORAGE, TRANSFER, TREATMENT OR DISPOSAL OF NATURAL GAS AND/OR PETROLEUM EXPLORATION AND PRODUCTION WASTES IS PROHIBITED IN THE TOWN OF ULYSSES

WHEREAS, the Town has the authority to adopt the Local Law referred to above (hereafter “the Local Law”) pursuant to Article 9, §1 of the New York State Constitution and §10 of the New York State Municipal Home Rule Law; and

WHEREAS, the New York Court of Appeals has held that a town “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 powers to prevent damage to the rights of others and to promote the interests of the community as a whole” [*Gernatt Asphalt Products, Inc. v. Town of Sardinia*, 87 N.Y.2d 668, 642 N.Y.S.2d 164 (1996) .]; and

WHEREAS, the power to regulate land use through the zoning powers is expressly delegated to towns in the New York State Statute of Local Governments § 10(6) and New York State Town Law §261; and

WHEREAS the Local Law is not directed at the regulatory scheme for the operation of natural gas wells under the Oil, Gas & Solution Mining Law of New York State. This Local Law addresses land use and nuisance concerns and the protection of the health, safety and welfare of the people of the Town of Ulysses and the enhancement of its physical environment and is intended to only incidentally impact the state law set forth in New York State Environmental Conservation Law Article 23; and

WHEREAS, pursuant to page 1 of Article 1 of the Ulysses Zoning Law of 2007, the purpose of the Zoning Law of the Town of Ulysses is, in part, to promote the health, safety, and general welfare of the community, to lessen congestion in the streets, to secure safety from fire, panic and other dangers, to provide adequate light and air, to prevent overuse of land, to avoid undue concentration of population, to facilitate the adequate provision of transportation, water, sewerage, parks and to restrict and regulate the size of buildings and other structures, the percentage of lots that may be occupied, the size of yards, the density of population, and the use of buildings, structures and land for trade, industry, residence or other purposes in order to preserve, foster and enhance the native beauty and rural character of one of the most picturesque and charming communities in the Finger Lakes region of New York State and further states “Ulysses is a community well known for its fine vistas of farmland, hills and Cayuga Lake”; and

WHEREAS, Town of Ulysses Zoning Law provides that “the regulations, restrictions and boundaries set forth in this Zoning Law may be amended, supplemented, changed or repealed by the Town Board pursuant to local law.” (Town of Ulysses Zoning Law, Article II/Section 2.11); and

WHEREAS, the Zoning Law of the Town of Ulysses, Section 2.1, provides in part: “Any use not specifically set forth as a permitted use in any zoning district shall be expressly prohibited in that zone. A

use specifically set forth as a permitted use in one zoning district shall not be permitted in another zoning district unless it is specifically set forth as a permitted use in such district.”; and

WHEREAS, the exploration for natural gas and/or petroleum; the extraction of natural gas and/or petroleum; and the storage, transfer, treatment or disposal of natural gas and/or petroleum exploration and production wastes is not specifically set forth as a permitted use in any zoning district and is therefore prohibited in the Town of Ulysses; and

WHEREAS, the definition of “Extractive Industry” in the Zoning Law, read together with the Standards for the Extractive Industry in section 17.11, clearly apply to removal of minerals such as sand, gravel and clay. The Standards refer to removal of more than five hundred tons or three hundred and fifty cubic yards, whichever is less, or a mineral from the earth, which is a measurement for sand, gravel and clay, not the extraction of gas and oil. This amendment to the Zoning Law removes any possibly ambiguity in the term “Extractive Industry”; and

WHEREAS, it is the intent of the Town Board by this amendment to the Town of Ulysses Zoning Law to clarify that natural gas and/or petroleum exploration and extraction and the associated uses of land for heavy industrial uses involved with exploration or extraction of natural gas and/or petroleum have not been and are not permitted uses of land under the Town of Ulysses Zoning Law. In addition, the absence of these activities from the list of permitted uses is a reasonable exercise of the Town’s police powers to prevent damage to the rights of citizens who would otherwise be negatively affected by such uses and to promote the interests of the community as a whole; and

WHEREAS, the Local Law is enacted to protect and promote the health, safety and general welfare of present and future residents of the Town of Ulysses. The Local Law is an exercise of the Town’s police power, its power to prohibit public nuisance and a land use regulation designed to protect the Town and its residents from adverse effects and impacts that would result if natural gas and/or petroleum exploration and extraction and/or the storage, transfer, treatment, application or disposal of natural gas and/or petroleum exploration and production wastes were allowed within the Town. As set forth more fully in the Appendix attached hereto and incorporated herein by reference, there is mounting evidence that widespread negative environmental impacts have resulted from, or are reasonably expected to result from natural gas and/or petroleum exploration, extraction and related operations in other areas of the country, including negative impacts on groundwater quality, surface water quality, air quality, traffic, scenic and natural resources, neighborhood and community character, vegetation and habitats; and

WHEREAS, the Local Law is in conformance with the Town of Ulysses Comprehensive Plan, most recently amended in 2009, as set forth more fully in the Appendix; and

WHEREAS, the Local Law enhances protection of Unique Natural Areas (UNA’s), as set forth more fully in the Appendix; and

WHEREAS, notice of a public hearing on the Local Law was duly advertised in the Ithaca Journal for June 29, 2011 at 7:00 p.m. at the Trumansburg Elementary School Auditorium; and

WHEREAS, said public hearing duly held on said date, time and place and all parties in attendance were permitted an opportunity to speak in favor of or in opposition to the Local Law, or any part thereof; and

WHEREAS, the Town of Ulysses provided an opportunity for members of the public to submit comments in writing in favor of or in opposition to the Local Law, or any part thereof for a period of 21 days from June 14 until July 6, 2011; and

WHEREAS, pursuant to the New York State Environmental Quality Review Act ("SEQRA") and its implementing regulations at 6 NYCRR Part 617, adoption of said Local Law is an Unlisted action for which the Town Board of the Town of Ulysses, acting as lead agency in an environmental review with respect to adoption of the Local Law and utilizing Type I procedures, has on August 10, 2011 made a negative determination of environmental significance, after having reviewed and accepted as adequate the Long Environmental Assessment Form Parts I and II prepared by the Town's Planning staff; and

WHEREAS, the Town Board agrees it is important to make these clarifications to the Town of Ulysses Zoning Law because the exploration for natural gas and/or petroleum, the extraction of natural gas and/or petroleum, and related operations in the Town of Ulysses would pose a significant threat to its residents' health, safety, and general welfare;

NOW, THEREFORE, it is

RESOLVED that the Town Board of the Town of Ulysses hereby adopts said Local Law no. _____ of the Year 2011 to amend the Zoning Law of the Town of Ulysses, a copy of which is attached hereto and made a part of this resolution; and it is further

RESOLVED that the Town Clerk is hereby authorized and directed to file said Local Law with the Secretary of State as required by law.

APPENDIX TO RESOLUTION NO. ____ OF 2011

The Town Board of the Town of Ulysses hereby makes and adopts the following findings:

1. **The Local Law is in accordance with the 2009 Comprehensive Plan of the Town of Ulysses (hereafter “the Comprehensive Plan”) for reasons including, but not limited to, the following:**
 - a. The Vision Statement set forth in the Comprehensive Plan articulates what aspects of the Town are most important to residents, and reflects the quality of life and character desired by the residents. The Vision Statement reads: *“Ulysses is a rural community in the Finger Lakes region that takes great pride in its agricultural heritage and community character, natural resources, and small-town atmosphere. Significant community features, including our farms and lakeshore, make Ulysses a desirable location for residents and visitors alike. We will continue to celebrate and protect our unique resources by promoting efforts that support agricultural sustainability, open space conservation, a balanced approach to economic development, and revitalization of village and hamlet centers. We will strive to effectively balance future growth with the consideration of key community assets through proactive planning in a manner that benefits all residents, both today and in the future.”* Town of Ulysses Comprehensive Plan, p. 17.
 - b. The introduction of the 2009 Comprehensive Plan states: *“. . . The Town has retained its rural, small-town character even as growth has begun to transform other agricultural communities around the City of Ithaca. [...] The wrong type and scale of future development could lead to the loss of existing agricultural businesses, changes to the character of rural roadways as they see increased traffic, and the loss of open space and scenic views....”* (Comprehensive Plan, Introduction, p. 3).
 - c. The Comprehensive Plan specifies as an action step that “the Future Land Use Plan [should be used] to guide officials’ decision-making as it relates to future development.” (Comprehensive Plan, Action Step #2.1.A, p. 22).
 - d. Policy Area #1 of the 2009 Comprehensive Plan titled *Environment and Natural Resources* states: *“The Town of Ulysses is defined by a rich diversity of natural features and open spaces. The abundance of fields, woodlands, wetlands, gorges, and lakeshore contribute greatly to the quality of life here, and serve as important habitat for plants and wildlife. Residents have expressed a strong desire to preserve the quality of these natural features and resources. To do so, the Town will strive to employ sound development practices, proper zoning guidelines, and community stewardship to reduce or eliminate the degradation of these valuable resources.”* (Comprehensive Plan, p. 19).
 - e. Policy Area #2 of the Comprehensive Plan entitled *Sustainable Land Use and Development* states: *“Sustainable growth and development shall be encouraged through the implementation of sound land use planning principles. The rural landscape is an important attribute of the community; the preservation of the landscape must be balanced*

by thoughtful residential and commercial growth that is focused around targeted development nodes. The Town will support development patterns that conserve its unique natural resources, reduce energy consumption, and strive to enhance land values within the Town.” (Comprehensive Plan, p. 22).

- f. Policy Area #3 of the 2009 Comprehensive Plan titled *Local Economy* states: “... *We shall promote a diversified economy that builds on established local industries, including agricultural production, tourism, and small-business development. [...]*”(Comprehensive Plan, p. 27).
- g. Policy Area #4 of the Comprehensive Plan titled *Community Services* states: “*Community programming seeks to provide safe, healthy, and enjoyable ways for residents of the Town to enjoy natural, cultural, and historic resources, which contribute to the overall landscape of the Town. We shall seek to identify and provide appropriate opportunities for all age groups to actively participate in the local community. Municipal and public services shall be provided in a planned and orderly fashion that seeks to enhance the rural character of Ulysses.*” (Comprehensive Plan, p. 29).
- h. Policy Area #5 of the Comprehensive Plan entitled *Community Identity* states: “*Town residents are proud of the established community identity of Ulysses as a desirable place to live and recreate in the Finger Lakes region. We recognize that the Town of Ulysses and the Village of Trumansburg offer unique opportunities for small business owners, residents, and visitors. The Town seeks to honor its agricultural heritage and rural settlement patterns and celebrate its natural beauty and resources.*” (Comprehensive Plan, p. 33).
- i. The Comprehensive Plan includes as an Objective that the Town should “*provide a high quality of life for all residents through proactive planning that supports the goals of the local community, complements the existing rural character of the Town, and protects the value of natural and environmental resources.*” (Comprehensive Plan, Objective #2.1, p. 22).
- j. The Comprehensive Plan includes as an Objective that the Town should “*protect existing water resources and maintain water quality*” (Comprehensive Plan, Objective #1.2, p. 20), and to further that Objective, the Comprehensive Plan specifies as an Action step that the Town “*identify and enact measures to protect the quantity and quality of groundwater for Town residents, including the protection of open space and prohibiting over-withdrawal of groundwater resources, and limiting potential negative impacts associated with septic systems, agricultural practices and commercial containments.*” (Comprehensive Plan, Action Step #1.2.G, p. 20).
- k. The Comprehensive Plan includes as an Objective that the Town should “protect existing air resources and maintain the air quality for the health and safety of Town residents” (Comprehensive Plan, Objective #1.3, Action Step C., p. 21).
- l. The Comprehensive Plan includes as an Objective that the Town should “*preserve and protect the Town’s rural characteristics and agricultural lands*” (Comprehensive Plan,

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Objective #2.6, p. 26), and to further that Objective, the Comprehensive Plan specifies as an Action step that the Town “. . . develop specific strategies for protecting and maintaining high quality agricultural lands for agricultural uses, and for preserving the rural landscape.” (Comprehensive Plan, Action Step #2.6.A, p. 26).

- m. The Comprehensive Plan includes as an Objective that the Town should “*diversify the local economy and promote economic growth by supporting and promoting tourism-based opportunities*” (Comprehensive Plan, Objective 3.2, p. 28), and to further that Objective, the Comprehensive Plan specifies as Action steps that the Town should: “*Encourage small tourism-based businesses within the Town...[and] promote tourism in the Town and develop partnerships for future tourism-based initiatives.*” (Comprehensive Plan, Action Steps 3.2.A, 3.2.B, p. 28).
- n. The Future Land Use Plan described in the Comprehensive Plan is intended to represent and demonstrate how the community believes the Town should look in the future (Comprehensive Plan, p. 27). The Future Land Use Plan does not contemplate as permitted uses high-impact industrial uses such as those used in exploration and extraction of natural gas and petroleum.
- o. Survey results in the Town of Ulysses Comprehensive Plan show that residents of the Town rated as “very important” the following community characteristics: 71.8% conservation, 69% protection of open space, 62.9% clean lake water, and 66.6% protection of groundwater. Allowing oil or gas extraction industries into the Town of Ulysses contradicts these desirable qualities and goes against the wishes of its residents (Comprehensive Plan, Summary of Community Survey Results 5.a. pg. 74).
- p. The protection of residents, neighborhoods, and the natural environment constitutes the highest and best use of the police and land use powers that the Town possesses. Such land use powers are an important and necessary tool in implementing the goals of a municipal Comprehensive Plan.

2. **Unique natural areas (UNA’s)**

- a. In its 1990 inventory and 2000 revision thereof, the Tompkins County Environmental Management Council identified 10 areas in the Town of Ulysses that are designated Unique Natural Areas (UNA) that harbor rare or endangered flora and fauna, unique geologic features or contain excellent examples of ecosystems or biotic communities.
- b. The Town of Ulysses officially acknowledged the value and need to protect its approximately 1,540 acres of Unique Natural Areas (UNAs) by passing a resolution on January 12, 2010 officially accepting the designation of UNAs as outlined by the Tompkins County Environmental Management Council as shown on the map dated 1999 (seen at <http://www.tompkins-co.org/gis/maps/pdfs/UNACountyWide-E.pdf>).
- c. Designation of a Unique Natural Area in and of itself does not afford any tangible protections of the area.

- d. The Town of Ulysses Planning Board and Town Board are in the process of defining and adopting amendments to the Town Zoning Law that would protect a significant portion of the Town in environmentally sensitive areas adjacent to Cayuga Lake by designating a Conservation Zone and Lake Shore Zone.

3. State and Federal Regulation and Oversight; concerns include but are not limited to:

- a. Federal EPA expressed serious reservations about the scope, accuracy and viability of the 2009 draft sGEIS, the New York State document that will guide regulation of natural gas extraction
(www.toxicstargeting.com/sites/default/files/Marcellus_dSGEIS_Comment_Letter_plus_Enclosure.pdf).
- b. The EPA is currently studying the association of high volume, slick water hydraulic fracturing with water contamination in a national effort not expected to culminate until 2012.
- c. The United States House of Representatives Committee on Energy and Commerce released a report in April 2011 titled *Chemicals Used in Hydraulic Fracturing* which states, “Yet questions about the safety of hydraulic fracturing persist, which are compounded by the secrecy surrounding the chemicals used in hydraulic fracturing fluids.”
- d. Studies or analyses of both the long-term and cumulative impacts of high volume slick water hydraulic fracturing (*HVSWHF*) operations on a community’s water, air, health and economy have not been completed, and no analysis of these type of impacts are included by the DEC in the Preliminary Revised Draft SGEIS (July 2011).
- e. A report authored by University of Oneonta Professor Ronald Bishop and others in November 2009 for former Congressman Michael Arcuri, states that “proceeding with any new projects to extract methane from unconventional reservoirs by current practices in New York State is highly likely to degrade air, surface water and ground-water quality, to harm humans, and to negatively impact aquatic and forest ecosystems. Mitigation measures can partially reduce, but not eliminate, the anticipated harm.”
(<http://www.sustainableotsego.org/Risk%20Assessment%20Natural%20Gas%20Extraction-1.htm>).

A summary and analyses of the U.S. data and record of experiences with shale gas and oil extraction included in a recent study by the European Union indicates that these technologies have had a significant impact on health and the environment. (Impacts of Shale Gas and Shale Oil Extraction on the Environment and on Human Health, European Parliament 2011.
<http://www.europarl.europa.eu/activities/committees/studies/download.do?language=fr&file=41771>)

4. General concerns related to drilling for natural gas on the health, safety and welfare of the Town of Ulysses and its residents include but are not limited to:

- a. Drilling for natural gas by its very nature has the potential to produce a combination of negative impacts upon the environment and people living in or in proximity to drilling operations. Many of these are unavoidable, due to the large land occupation and density of well drilling required and the relatively high risk of accidents. Such negative community

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impacts may include, without limitation, traffic, noise, vibrations, fumes, damage to roadways, degradation of water quality, degradation of air quality, decreased availability of affordable housing, increased demand on emergency services, increased costs to residents, damage to and loss of agricultural lands and soils, damage to and loss of open space, natural areas, and scenic views, decreased recreational opportunities, and damage to the tourism industry.

- b. Natural gas exploration or extraction or the storage, transfer, treatment, application to land or roadways, or disposal of natural gas exploration and production wastes occurring within the Town is likely to endanger the health, safety and welfare of Town residents through the deposit of toxins and radioactive substances into the air, soil, water, environment, and the bodies of residents within the Town. Irreparable harm to the Town's drinking water supplies may occur. Methane contamination of groundwater in severe cases can result in safety hazards such as explosions in residences and businesses using well water. Town and residents property could be damaged by the corrosive nature of these wastes.
- c. Air, soil, and water contamination may occur during the different stages of natural gas exploration and extraction operations and the storage, transfer, treatment or disposal of natural gas exploration and production wastes, and such contamination could have adverse impacts on plant, human and animal health and environmental quality. Such impacts, many already documented in other areas, will directly affect the quality of life and livelihoods of residents of the Town of Ulysses.

5. Risks to water include but are not limited to:

- a. The hydraulic fracturing process used in natural gas extraction is exempt from the federal Safe Drinking Water Act which would otherwise offer some protection to drinking water sources. Further, chemicals used in the hydraulic fracturing process are not yet required to be of public record due to trade secret protection, making it difficult to impossible to evaluate risks that might be associated with this process.
- b. The Town of Ulysses is committed to protecting the quality of its water resources including the approximately 38 acres of wetlands designated by the New York State Department of Environmental Conservation and its approximately 580 acres of federally designated wetlands based on the National Wetlands Inventory, 1,060,483 feet of streams, 2,437 acres of Cayuga Lake and 40,327 feet of shoreline along Cayuga Lake.
- c. The United States Geological Survey map titled *Unconsolidated Aquifers of Tompkins County* shows that a large portion of the northwest section of the Town of Ulysses is underlain by the Taughannock Creek Valley aquifer which is a confined aquifer characterized by sand and gravel and susceptible to contamination from drilling for natural gas.
- d. All residents of Town of Ulysses depend on the purity of lake or groundwater for their primary drinking water source, either from private wells (the majority of households), the Trumansburg Village municipal water well located just outside the Town, directly from Cayuga Lake, or indirectly from Cayuga Lake through the Southern Cayuga Lake Inter-

municipal Water Commission via a municipal water system. A report based on a 2009 survey of Town of Ulysses residents emphasizes the fragile nature and limited capacity of the groundwater sources for private wells in many areas of the Town.
(http://www.ulysses.ny.us/tou-water_needs_report.pdf).

- e. Protection of the Town of Ulysses water sources from potential contamination is an important goal of the Town of Ulysses.
- f. Surface spills and underground migration of liquid wastes that originate from the exploration, drilling and extraction of natural gas (whether onsite or during the transportation of these products to treatment and/or disposal facilities) can occur, and such products may come into contact with and contaminate and pollute groundwater and/or soil. Experience from states in which hydraulic fracturing is active indicates that contamination of drinking water and streams is not uncommon whether it be due to poorly constructed well casings, cracked well casings, surface spills, leaking containment ponds, migration of contamination through abandoned wells, or for other undocumented or unexplained reasons (Fractured Communities: Case Studies of the Environmental Impacts of Industrial Gas Drilling, Michaels et al. 2010. <http://riverkeeper.org/Fractured-Communities-FINAL-September-2010.pdf>).
- g. Water contamination has been documented in a peer reviewed paper in the Proceedings of the National Academy of Sciences by Dr, Stephen Osborn and others from Duke University titled *Methane Contamination of Drinking Water Accompanying Gas-Well Drilling and Hydraulic Fracturing* which looked at 68 water wells across Pennsylvania. The research showed levels of methane with the chemical profile of shale-gas in groundwater were 17 times higher on average in water wells located within a kilometer of active hydraulic fracturing than water wells where there was no hydraulic fracturing, and were very often above the federal safety standard for explosions (Proceedings of the National Academy of Sciences, 2011. www.pnas.org/cgi/doi/10.1073/pnas.1100682108)
- h. The presence of methane gas in water wells demonstrates the likelihood of other gaseous pollutants associated with natural gas development, such as radon. While no studies are yet available on other such gases as yet, radon is a radioactive substance that is well documented to pose significant health risks, including cancer.
- i. State University of New York at Buffalo researchers led by Tracy Bank reported that the Marcellus Shale is naturally enriched in uranium and has enhanced solubility and mobility due to water-rock interactions over millions of years and hence produced water secondary to the fracking process contains unacceptably high levels of radioactivity (http://gsa.confex.com/gsa/2010AM/finalprogram/abstract_181465.htm; <http://www.buffalo.edu/news/11885>).
- j. An analysis on wastewater from the gas and oil industry treated at a brine treatment facility in Pennsylvania by Dr. Conrad Volz and others from the Center for Healthy Environments and Communities at the University of Pittsburgh shows levels of barium, strontium, bromide, benzene, 2-butoxyethanol and other contaminants in the effluent entering a local creek well in excess of EPA standards for protection of human health and aquatic life. The report cites concern for those who drink the water from municipal authorities downstream as well as those who recreate in the area and are exposed to chemicals emanating from the

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creek either through skin absorption, inhalation of volatile compounds, or ingestion of fish taken from the creek (http://www.marcellus-shale.us/pdf/Wastewater_Josephine_3-25-11.pdf).

- k. Experience in Pennsylvania where hydraulic fracturing is allowed shows produced water and flowback fluid disposal techniques and regulations at the State level are inadequate or non-existent and that standard waste water treatment techniques are not effective when treating these toxic fluids (February 27, March 2, March 4, 2011 articles and supporting documentation by Ian Urbina, http://www.nytimes.com/interactive/us/DRILLING_DOWN_SERIES.html; Letter from U.S. EPA Region 3 Regional Director Shawn Garvin to PA Department of Environmental Protection, March 7, 2011).
- l. Roughly 1,150 acres in the Town of Ulysses are highly erodible slopes greater than 15 degrees leading to the gorges and streams that feed Lake Cayuga. These slopes are susceptible to stormwater runoff problems if drilling for natural gas were allowed on these lands.

6. Risks to air quality include but are not limited to:

- a. Significant venting and leakage of natural gas to the atmosphere occurs during shale gas development (summarized in Howarth et al. 2010, *Climatic Change Letters*, doi 10.1007/s10584-011-0061-5, which relied on 2010 EPA and GAO reports).
- b. A variety of air pollutants are included in the gaseous releases associated with several point sources in gas drilling process and with leakage from storage and transmission infrastructures. Pollutants include benzene, formaldehyde, and other aromatic hydrocarbons and hydrogen sulfide, carbon disulfide and other sulfur gases in addition to radon. Development of the Barnett Shale gas in Texas has led to high levels of air pollution, including benzene concentrations of up to 15,000 ppb in air. These concentrations are high enough to cause acute toxicity (Texas Commission on Environmental Quality 2010. http://www.tceq.state.tx.us/assets/public/implementation/barnett_shale/2010.01.27-BarnettShaleMonitoringReport.pdf; Town of Dish, Texas 2009. http://www.townofdish.com/objects/DISH_-_final_report_revised.pdf; Impacts of Shale Gas and Shale Oil Extraction on the Environment and on Human Health, European Parliament 2011. <http://www.europarl.europa.eu/activities/committees/studies/download.do?language=fr&file=41771>).
- c. In the Marcellus Shale region, only limited air quality monitoring has occurred to date, and the highest concentrations of benzene found are far lower than those found in Texas for the Barnett Shale, only 758 ppb (Pennsylvania Department of Environmental Protection 2010. Southwestern Pennsylvania Marcellus Shale Short-Term Ambient Air Sampling Report. http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/docs/Marcellus_SW_11-01-10.pdf). Still, exposure to levels of chemicals such as benzene at these lower levels can pose a significant cancer risk. A recent peer-reviewed study suggests a strong link between low-level chronic benzene exposure and risk of leukemia (Talbot et al. 2011. Risk of leukemia as a result of community exposure to gasoline vapors: A follow-up study. *Environmental Research* 111: 597-602).
- d. Emissions from internal combustion engines, primarily using diesel fuel, are a significant and damaging source of air pollution associated with extraction of natural gas and

petroleum, as these processes rely heavily on such engines for many aspects of the overall process (such well drilling and fracing and a high frequency of heavy truck trips to and from the sites). A study in 2009 by Dr. A. Armendariz of Southern Methodist University (now Director for EPA Region 6) found high levels of smog-forming compounds (nitrogen oxides and volatile organic compounds, or VOC's) in air associated with oil and gas production in the Barnett Shale region of Texas, in addition to greenhouse gases and air-borne toxic chemicals (www.edf.org/documents/9235_Barnett_Shale_Report.pdf). VOC's react in the atmosphere to produce fine particulate matter and ground-level ozone, both of which are known to cause lung damage and a variety of respiratory conditions including asthma, chronic bronchitis, and can lead to premature death (<http://www.citizensforhealthydevelopment.org/home/harmful-effects-of-diesel-exhaust-1>).

7. Health risks include but are not limited to:

- a. The health risks associated with the development of natural gas from shale formations has received very little study. Two recent reviews highlight the potential for major health risks and urge precaution. (M. Finkel and A. Law 2011. The rush to drill for natural gas: A public health precautionary tale. *American Journal of Public Health*. Published on line in advance of print on March 17, 2011. doi 10.2105/AJPH.2010.300089; B. Schwartz and C. Parker. 2011. Public health concerns of shale gas production, pgs. 11-15 in Will Natural Gas Fuel America in the 21st Century? <http://postcarbon.org/naturalgas>)
- b. Mounting evidence and analyses of hydraulic fracturing for gas extraction since its inception in the U.S. indicates a variety of environmental and health impacts are associated with this industry. (Impacts of Shale Gas and Shale Oil Extraction on the Environment and on Human Health, European Parliament 2011. <http://www.europarl.europa.eu/activities/committees/studies/download.do?language=fr&file=41771>)
- c. Concerns over the potential harm to human health from natural gas drilling and the lack of scientifically established cause and effect relationships have led the Medical Society of the State of New York and several County medical societies throughout New York State, including Tompkins County to call for a statewide moratorium on natural gas extraction using high volume hydraulic fracturing until valid information is available to evaluate the potential effects on human health and the environment. (<http://gdacc.wordpress.com/2010/12/10/new-york-state-medical-societies-call-for-moratorium/>)
- d. The process of high volume slick water hydraulic fracturing has been linked to chronic diseases such as respiratory ailments, neurologic impairments and the high likelihood that exposure to fracking chemicals many of which are highly toxic can cause cancer. (http://earthworksaction.org/oil_and_gas.cfm
http://www.huffingtonpost.com/2011/03/08/wyoming-ait-pollution-gas-drilling_n_833027.html,
<http://www.circleofblue.org/waternews/2010/world/north-america/epa-launches-national-study-of-hydraulic-fracturing/>).

8. Community impact findings include but are not limited to:

- a. Agriculture and tourism are particularly important activities to promote and sustain in the Town of Ulysses, according to the 2009 Comprehensive Plan and nearly completed Town

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of Ulysses Agriculture and Farmland Protection Plan. A study by the Southern Tier Central Regional Planning & Development Board indicates that activities associated with gas drilling “will change the pristine and rural character of the region to a gritty and industrial one” and that such shift in local land use could substantially damage the future of the tourism and agriculture industries. Information from other states where drilling is occurring indicates potentially serious economic consequences for agriculture & tourism. (<http://www.stcplanning.org/>).

- b. Based on the experience of municipalities in Pennsylvania currently in the midst of the active drilling region, traffic and truck traffic has increased significantly resulting in an increase in accidents, traffic violations, traffic congestion and a need for increased police patrols.
- c. According to preliminary results of an economic study conducted by Susan Christopherson at Cornell University (http://www.greenchoices.cornell.edu/downloads/development/marcellus/Marcellus_Prelim_Results.pdf):
 - i. An average of 890-1,340 truck trips per well site cause a high potential for road degradation. Without clear direction from the New York State Legislature, taxpayers from the Town of Ulysses and Tompkins County are likely to be financially responsible for resulting road repair.
 - ii. Bradford County, Pennsylvania saw an increase in demand on health, educational, administrative, emergency response, and environmental monitoring services and an increase in public safety costs.
 - iii. Annual production from a shale gas well declines by about 50 percent in the first year, leaving royalty revenues to drop and does not constitute a long-term strategy for economic development in rural areas.
 - iv. While gas drilling regions in Pennsylvania do show job gains, a vast number of high paying jobs are not within the state and the long-term economic gain is often not positive at the pace and scale of development seen in Pennsylvania.
 - v. A rapid increase in activity can be expected once permitting begins based on experience from Pennsylvania, where 71 permits were granted in 2007 compared with 1,984 in 2009, which qualifies the pace of development as a boom and subject to bust.
- d. According to County Commissioner Mark Smith of Bradford County, speaking in December 2010, there has been an increase in traffic accidents, traffic violations, crime, homelessness, cost of housing, and use of the County Courthouse in Bradford County as a result of gas exploration and extraction causing an increase in the County budget at the tax payer’s expense.
- e. The State of New York’s system of taxation is outdated and based on a form of gas extraction that has a steady rate of production over a long time rather than a large initial

peak of production followed by a precipitous decline. Unless New York State addresses these taxation inadequacies, additional municipal expenses associated with natural gas extraction will not be offset.

- f. Information gathered by the Tompkins County Council of Governments Task Force on Gas Drilling's Land Value and Assessment Workgroup indicates mortgage lending is often compromised under the conditions stipulated in many gas leases resulting in a decrease in property value and an inability to sell property. ([http://www.tompkins-co.org/tccog/Gas Drilling/Focus Groups/LandValues Assessment.html](http://www.tompkins-co.org/tccog/Gas_Drilling/Focus_Groups/LandValues_Assessment.html)).

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