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M E M O R A N D U M

**To:** C. Robert Kidder, Chair, Board of Trustees  
Roderick J. McDavis, President

**From:** Stephen T. Golding  
Vice President for Finance and Administration

**Date:** April 6, 2012

**Subject:** Ohio House Bill 133 – University Mineral Rights

At the January 2012 Board of Trustees meeting Chair Kidder requested that the University prepare a report regarding the implementation of Ohio House Bill (HB) 133 and the protection of University mineral rights under that statute. The scope of the enclosed report includes the Board of Trustees' fiduciary rights and responsibilities under the statute, the implications of horizontal high-pressure hydraulic fracturing to extract oil and gas on University owned land, a preliminary economic analysis that will require continued data gathering over time and a recommendation on the potential for the lease of University mineral rights to a third party entity, as well as measures to implement in the event of such a lease.

This is a very complex issue prompting significant discussion within the University community, the greater Athens community, the southeast Ohio region, and throughout the state. Within the University community there are differing points of view on the optimal course of action. A newly formed Ad Hoc Mineral Rights Committee developed this report in a good faith effort to capture all aspects of the discussion and to set forth an approach that responds to the concerns and competing interests that have been expressed. The aim of the report's recommendations is to protect the long-term interests of the University and insure (under current statute) that the Board of Trustees has the final determination regarding of activities on and utilization of University-owned property.

The Committee focused on three specific public policy objectives based on current Ohio statute, in addition to discussions and testimony received during the campus forums. The proposed public policy objectives are as follows:

- **Protect the rights of the Ohio University Board of Trustees** to be the final authority regarding activity on and utilization of University-owned property, as recognized in Ohio HB 133 within the fiduciary responsibility of university boards of trustees; in the period prior to the Oil and Gas Leasing Commission's adoption of rules, the University controls the terms and conditions of its leases. After the rules are adopted, the University can propose to the Commission special terms and conditions to be included in a lease that address "specific conditions related to the parcel of land" to be leased, R.C. 1509.73 (B)(5) and (C)(4).

- **Uphold a principal tenet of fiduciary responsibility—good stewardship of physical, human and financial capital**—As it relates to mineral rights, this responsibility includes environmental stewardship of our land and upholding university commitments to ecological sustainability and climate neutrality, consideration of the impact of hydraulic fracturing on our surrounding communities including the potential effects on air and water quality, and the recognition that the University holds an asset of potential significant monetary value that could benefit the University.
- **Fulfill Ohio University’s public policy role within the state**—Part of the University mission is to improve the quality of life for all Ohioans through the applications of its research where relevant. In fulfillment of that mission, Ohio University has demonstrated a significant commitment to alternative energy sources; our nationally recognized faculty researchers are working in the area of horizontal high-pressure hydraulic fracturing and are developing monitoring, assessment and treatment technologies that could address many of the environmental concerns raised about this method of oil and gas extraction. Additional research is being conducted in environmentally friendly hydraulic fracturing technologies; the exploration of environmentally benign and cost effective chemicals for fracking fluids; and novel techniques for shale gas conversion and reformation into other petrochemicals. The committee believes that as a part of the University’s tripartite mission, the Board of Trustees should consider how to align our research capabilities in this area with any determination the Board makes with regard to leasing mineral rights of University owned land.

The Committee also included an examination of sustainable economic growth as part of the report. The history of multiple short-lived, boom-to-bust commodity resource extraction strategies throughout the history of Appalachian Ohio has been harmful and the failure to promote sustainable economic growth has led to impoverishment in the region as evidenced by the lowest per capita income and highest poverty rates statewide. The committee strongly recommends that if the Board of Trustees determines it to be in the best interest of Ohio University to lease its lands and sell its mineral rights, that a portion of the income received be used in collaboration with our local communities to develop strategies to promote sustainable economic growth that benefits the residents of southeast Ohio in the long term, as allowed by statute. It is also recommended, if allowable by HB 133, that the university invest a portion of the income toward renewable energy generation and research. The University is developing strategies for sustainable economic growth which will be made available to the Board of Trustees for consideration as they are formalized.

In summary, the Ad Hoc Mineral Rights Committee is, after consideration of a number of factors provided in this document, recommending\* a campus-by-campus decision as to whether or not it is in the best interest of that campus to lease their mineral rights. With that said, a majority of the Committee further recommends that only the Eastern Campus be permitted to enter into a lease at this time given the level of leasing activity surrounding that campus and the need to establish a baseline level of protection for University property.

*\*It should be noted that, due to the many intricacies of this decision, full committee consensus was not achieved. This fact further highlights the need for members of the Board of Trustees to become familiar with the information contained in this report.*

For the other campuses the committee recommends a moratorium until additional information can be gathered to insure the long-term protection of our campus environments and surrounding communities. It is the Committee’s goal that this be accomplished by the Board of Trustees adopting a model mineral rights lease for the University that will comply with the requirements of HB 133 and afford the University with the environmental and ecological protections envisioned in the University’s Sustainability Plan.

**Report to the Board of Trustees:**  
**Potential Leasing of Oil and Gas Rights on Ohio University Owned Lands**  
Viewed Through a Sustainability Lens

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**Special Thanks:**  
This report was made possible, in great part, thanks to the exceptional and in-depth feedback offered by the various students, faculty, staff and community members who participated in the feedback process. Of the 383 respondents to the survey, 303 declared their opposition to the leasing of mineral rights on Ohio University lands. An overview of the survey results can be found on page 20 of this report. The results, in their entirety, may be viewed [online](#).

## **Report Submission**

The Ohio University Ad Hoc Mineral Rights Committee, with support from the Presidential Advisory Council for Sustainability Planning (PACSP); the Ecology and Energy Conservation Committee (EECC); the Office of the President; and various Ohio University faculty, staff, students, and alums wishes to formally submit this report on the *Potential Leasing of Oil and Gas Rights on Ohio University Owned Lands* to the Ohio University Board of Trustees. For a listing of members of the aforementioned organizations, please see Page 10 of this report.

The pages that follow serve as an informed report to the Board of Trustees and offers recommended action for the Board's consideration. The Ad Hoc Mineral Rights Committee's recommendations are followed by a series of appendices that are intended to provide a deeper insight into House Bill 133, facts and figures associated with the shale oil boom, potential impacts of drilling in Southeast Ohio, perceived leasing opportunities on Ohio University lands, campus comment and leasing best practices.

As stewards to the environmental, financial and personal health and well-being of our campus, the Ad Hoc Mineral Rights Committee submits this report under the lens of institutional sustainability and climate neutrality; a concept embraced by President McDavis and by many of his peers throughout the nation who are signatories to the American Colleges and Universities Presidents Climate Commitment.

## **Introduction**

As Ohio University is placed into a situation where informed decisions regarding the potential leasing of oil and gas rights must occur in the near-term, it is essential that the Ohio University Board of Trustees are provided with a fair representation of the facts. This report is intended to offer an overview of the issues that must be considered and compiles the general reaction of members of our campus communities who stepped forth during the comment period.

If Ohio University does not choose to enter into a lease prior to the organization of the Oil and Gas Leasing Commission as established by [House Bill 133](#), the Board of Trustees must be prepared to accept or protest leases for parcels nominated by the state. We underscore the important voice the Board of Trustees has in this process and, as such, we are honored to serve as resources for the Board should any questions remain unanswered by this report.

On the following four pages, we have worked to offer a high level overview of our recommendations to the Board moving forward. All remaining pages and links in this document serve as an opportunity to provide supplemental resources to you in an effort to reach an informed decision. While not exhaustive, we feel confident that we have provided you with the most objective compilation of information possible despite the fact that this technology is truly in its infancy.

**April 2012**

The Ohio University Board of Trustees has been given the task of making an informed decision on the leasing of mineral rights on university-owned property for the purpose of horizontal hydraulic fracturing (fracking). The contents of this report are intended to offer some clarity as the board works to establish an institutional stance on the decision.

The Ad Hoc Mineral Rights Committee has established a list of potential scenarios which the Board of Trustees may encounter in the near future. We have outlined each of those scenarios here and offered our formal recommendation as a collective committee. Many of these scenarios are quite complex and, as such, the recommendations offered here do not necessarily reflect the personal and professional opinions of each individual represented on this committee.

### **Formal Recommendations**

The Board of Trustees, by way of this report, has been asked by the campus community to develop immediate next steps for action. The Ad Hoc Mineral Rights Committee has established the following recommendations for the Board of Trustees:

#### **Step One: Establish Baseline Inventory**

We recognize that, regardless of Ohio University's decision to lease its own land, local landowners have already signed mineral rights leases. As such, drilling practices entering our communities need to be held accountable to upholding environmental well-being and the safety of our students, faculty, staff and community members. In response to this, we recommend that the Board of Trustees commit to the up-front costs and work associated with collecting baseline data within 60 days of submission of this report. We suggest that partnerships be developed with the city or county engineer or administrator in each campus community so as to partner in cost-sharing efforts of these tests. Additional partnerships may include the Ohio Department of Natural Resource and the Ohio Environmental Protection Agency, if the Board so chooses.

Baseline data collection and analysis should include, but not be limited to:

- Drinking Water reserves
- Groundwater
- Any body of water within a reasonable hydrologic zone of a potential drill site in consultation with a hydrological engineer.
- Soil
- Department of Resources Geological Survey
- Farmland inventory (and harvest data)
- Access public health records which are indicators of environmental factors.
- Air quality (compared to Federal hazard standard)
- Road and bridge safety
- Habitat assessment of rare, threatened and endangered species

#### **Step Two: Ensure Long-Term Health of Resources and the Environment**

If Ohio University enters into any lease, it is requested that the above baseline data of the corresponding campus be formally submitted to the lessee. Upon receipt of such reports, we recommend that Ohio University request a formal written statement that the lessee acknowledges receipt of the data and guarantees that all baseline levels will not be degraded throughout the duration of drilling and within 5-10 years of subsequent termination of operations on University lands, as determined by the lease.

In maintaining our dedication to sustained environmental and human health, it is the recommendation of the Committee that Ohio University request soil, water, and air data from municipal and county governments of any lands adjacent to any University-owned properties engaged in drilling practices. A similar baseline monitoring approach as

offered above must be taken. This process is necessary to ensure the health and safety of our campuses and communities. Additionally, we are committed to adhering to our institutional values and guiding principles, which includes: Our commitment to the region is expressed through stewardship of shared resources.

### **Step Three: Establish Institutional Safeguards**

We recommend that the Board of Trustees work to identify its priorities as it relates to this conversation and put safeguards into place should any University land parcels be nominated for drilling. These safeguards include but are not limited to drafting a sample lease that includes a variety of stipulations that holds both the lessee and lessor accountable to long-term sustainability of ecological and financial health. In making these decisions, it is essential that the **Lease Development Stipulations/Best Practices** documents (provided in the Supplemental Resources section of this report) and the Land Inventory (to be provided upon completion) be carefully considered so as to protect our campus, community and economy.

### **Step Four: Create Consistent and Fair Decision-Making Procedures for All Ohio University Campuses**

Each Ohio University campus will receive varying levels of interest from drilling companies and varying levels of support from its campus community. As such, each campus must be offered the same level of consideration prior to entering into a lease. We recommend that Ohio University not seek out leasing opportunities on any of its campuses. Though, if approached for leasing agreements, a decision making process must be in place to ensure all campuses receive fair consideration. The Ad Hoc Mineral Rights Committee would like to suggest the following process:

- Upon being approached for a leasing agreement, a campus must form a Campus Mineral Rights Review Board. The chair should be selected by the President in consultation with the Executive Vice President and Provost and the Vice President for Finance and Administration. Membership should include the Campus Dean, the University Associate Vice President and Treasurer, Campus Director of Facilities, a minimum of two campus faculty representatives, and the University Director of Real Estate, representation from University Legal Affairs, and University Communications and Marketing.
- The Campus Mineral Rights Review Board shall be responsible for preparing a formal recommendation to the President as expeditiously as possible.
- The President is then responsible for reviewing the recommendation with his staff, responding to the Campus Mineral Rights Review Board, and making a final formal recommendation to the Board of Trustees.
- The Board of Trustees maintains final approval/protest rights of any parcel of land nominated for leasing. Upon receiving the President's formal recommendation, the Board shall make a decision regarding leasing options and submit that decision to the state's Oil and Gas Leasing Commission.

In preparation for this process, it is important that we provide an overview of the current status of each campus' land:

- **Athens Campus:** This campus has not yet been approached for leasing agreements. Though, we do anticipate that portions of this land may be approached or nominated in the near-term. As such, the Ad Hoc Mineral Rights Committee makes the following recommendations for moving forward:
  - o Abstain from any mineral rights leasing of the Athens campus in the near-term.
  - o Create a sample lease that contains all the safeguards necessary in protecting the institution, its land and the surrounding community. Keep such a lease on file for future nominations.
  - o Allow the Board of Trustees to revisit nominations after one year of initial protest to determine if substantial improvements to the drilling technology have occurred so as to allow a Mineral Rights Review Board to revisit leasing options.
- **Chillicothe Campus:** This campus has not yet been approached for leasing agreements. We do not currently anticipate near-term leasing nomination to occur. Though, if such a situation presents itself, a similar approach as outlined for the Athens campus should be taken.
- **Eastern Campus:** This campus has been approached for leasing agreements. Leasing activity has been moving forward aggressively in Belmont County. It has been determined that the land surrounding Ohio University-owned lands have already been leased and, as such, drilling (with no surface activity) on our lands may be inevitable. It is the understanding of the Ad Hoc Mineral Rights Committee that, due to the provisions of House Bill 133, we must create our own lease now and enter into an agreement prior to the effective date of HB 133 so

as to ensure proper safety measures are addressed and honored. A written resolution will be recommended to the full Board of Trustees on April 20, 2012 which will authorize the administration to enter into a lease with a reputable company at the Eastern Campus.

- Immediate next steps suggest that the Board of Trustees must now work with the Mineral Rights Review Board of the Eastern Campus to prepare a lease that includes as many safeguards as possible for the proper protection of our Eastern Campus and the surrounding community.
  - Please see **Lease Development Stipulations/Best Practices** document provided in the Supplemental Resources section of this report for suggestions on moving forward with lease preparation.
- **Lancaster Campus:** This campus has not yet been approached for leasing agreements. We do not currently anticipate near-term leasing nomination to occur. Though, if such a situation presents itself, a similar approach as outlined for the Athens campus should be taken.
- **Southern Campus:** This campus has not yet been approached for leasing agreements. We do not currently anticipate near-term leasing nomination to occur.
- **Zanesville Campus:** This campus has not yet been approached for leasing agreements. We do not currently anticipate near-term leasing nomination to occur. Though, if such a situation presents itself, a similar approach as outlined for the Athens campus should be taken.

### **Step Five: Securing Investments**

Each drilling operation will, most certainly, provide a unique set of challenges and opportunities. As such, it is imperative that the Board of Trustees prepare the proper financial investments to protect our land, resources and health. It is the recommendation of the Ad Hoc Mineral Rights Committee that, upon signing any lease, the Board of Trustees requires financial investments in the form of surety bonds through the provisions of the lease. It is recommended that the Board of Trustees require a minimum of \$5 million in bonds that can be accessed should the lessor forfeit any repairs, maintenance, recovery or mitigation following the closure or abandonment of drilling operations and/or a well.

### **Step Six: Determining Proper Use of Income**

Financial prosperity through the extraction of natural resources raises a series of ethical questions regarding the proper value of, receipt of, ownership of and responsibility to these minerals and its associated land. Under House Bill 133, any proceeds generated by mineral rights leasing on state lands must go toward Capital Improvements (including the acquisition of land, and payment of capital costs including equipment, renovations, and repairs of facilities). With this in mind, the Mineral Right Committee has weighed the many arguments associated with this question with great seriousness and makes the following recommendations for allocation of income, based on legislative authority and availability of sufficient funds:

- 1.) Anything below a threshold of \$1 Million will be applied directly the associated campus.
- 2.) Any income amount in excess of \$1 Million will be appropriately divided among the following projects:
  - Scholarships
  - Infrastructure development.
  - Sustainable economic development of the associated campus' community.
  - Renewable energy generation
    - Does not necessarily have to be placed on the grounds of the associated campus, if placement elsewhere would yield higher energy generation.
  - Academic research development as it relates to sustainable energy generation.
    - This is to include capital costs associated with sustainable research.
    - This supports Benchmarks 23 and 35 of the Ohio University Sustainability Plan.

\*It should be noted that, currently, not all of the above items are permissible under statutory changes enacted under House Bill 133. And, as such, we encourage the Board of Trustees to make efforts toward influence on these matters.

### **Step Seven: What happens if our land is nominated after July 1?**

After the adoption of the rules by the Oil & Gas Leasing Commission, R.C. 1509.73 (the Commission) prescribes the process by which property owned by a state agency is nominated for leasing. The Commission is required to approve or disapprove a nomination. If the nomination is approved, the property is eligible for leasing under the supervision of the Commission. However, public universities are afforded a right to veto a nomination. University property is designated as “class 2 property”, R.C. 1509.70 (B), and, as provided in R.C. 1509.73(B)(6), the commission may not offer class 2 property for lease unless the university, upon receiving notice of the nomination, notifies that Commission that the property “may be offered for lease”. The university’s failure to provide that permission effectively vetoes the nomination. There is no language that the Commission may overrule that veto.

With that understanding, it is the recommendation of the Ad Hoc Mineral Rights Committee that the members of the Board of Trustees work with legal counsel to prepare a sample lease containing the desired provisions (see Pages 19-21 of this report). We ask that the Ohio University Board of Trustees then make a motion not to enter into any lease agreements without the safeguards provided in that document. It is recommended that such a sample lease is prepared and placed on file with the university and with the Oil and Gas Leasing Commission no later than July 1, 2012.

### **Step Eight: Establish Long-Term Maintenance Policy**

Proper oversight of leased land must be considered in the development of a lease. This may require a formal institutional policy on long-term maintenance of the drill site. At minimum, we recommend that the Board of Trustees create a new Ohio University position or contract locally to ensure regular oversight of any drilling sites. This will assist us in the maintenance of the health and safety of University lands through proper monitoring and regular reporting of drill sites during drilling and for at least 10 years following the termination of a lease. The University must ensure that the lessee is in compliance with all environmental, health and safety regulations and that regular testing of all items referenced in Step 1 are honored. An example of a best practice for ensuring such regulations may include the installation and monitoring of security cameras on a drilling site. It is imperative that the individual(s) assuming this responsibility creates no conflict of interest and is, thus, not funded by the lessee.

Ohio University requires lessor to provide proof that they have purchased a surety bond before allowing them on University property. The lessor must provide:

1. regular (monthly/weekly) inspections of the site
2. documentation of lapses in compliance
3. preferred solutions for compliance to these rules – including a realistic and timely attention to fixing deficiencies
4. punitive sanctions ranging from small fines to lease termination and bond forfeiture depending on the severity of the offense

It is recommended that any lease include an arbitration clause that does not preclude the University’s rights to sue under Ohio State law if they lessor still does not comply with the terms of the lease.

### **Closing**

House Bill 133 has, most certainly, accelerated a serious conversation about the value of state lands that Ohio University calls home. The many intricate layers of this legislation require that the Board of Trustees approach mineral rights leasing carefully and swiftly. We genuinely hope our insights have offered some strategic guidance to your decision making process. We appreciate your consideration of these recommendations.

The pages that follow provide an overview of the research, campus comments, investments and narratives considered during the development of these recommendations. While not exhaustive, the appendices offered here serve as a resource to evaluate next steps.

## **Report Contributors/Membership**

### *Ad Hoc Mineral Rights Committee*

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Dustin Kilgour, Interim Associate Director of Operations  
Jill Carlson, Student Representative  
Eden Kinkaid, Student Representative  
Elaine Goetz, Graduate Student Representative  
Jessica Bilecki, Graduate Student Representative

### *Ecology and Energy Conservation Committee*

Paul Logue, Athens City Planner  
Ana Rosado Feger, Management Systems Staff  
Annie Laurie Cadmus, Director of Sustainability  
Clifford Hamilton, Hazardous Materials Coordinator  
Henry Woods, Recycling/Refuse Coordinator  
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### **APPENDICES**

- A. Fracking Overview & Resources
- B. Memorandum to the Vice President of Finance & Administration
- C. Forum Presenter Notes: Greg Nadon\*
- D. Forum Presenter Notes: Joe Adams\*
- E. Forum Presenter Notes: Bernhard Debatin\*
- F. Environmental Studies Resolution
- G. President McDavis Response to ES Resolution
- H. Ecology and Energy Conservation Committee Resolution
- I. Faculty Senate Resolution

*\*Please note: All Forum Presenters were invited to share their notes from the event.  
We have included all materials received by our presenters.*

## **Environment**

The environmental impacts of Horizontal Hydraulic Fracturing (fracking) have been a topic of great concern in Southeast Ohio over the course of the past year. Research completed on [drilling violations](#) in Pennsylvania in recent years suggests that this topic requires significant attention. Members of the Ad Hoc Mineral Rights Committee have worked together to identify potential opportunities, concerns and uncertainties on the topic of the environment as it relates to oil and gas drilling:

### **Opportunities**

- Institutional Research on environmental impacts:
  - o It is desirable for the institution to position itself as a leader in environmental impacts and water flowback studies for the industry.
    - It is essential that such environmental research is not influenced by existing industry players.
- Potential environmental internship opportunities for students:
  - o In an effort to increase environmental education opportunities at Ohio University, it is encouraged that potential leasing opportunities include experiential learning for a large number of Ohio University students.
- Increased *domestic*\* extraction of a power source preferable to coal.
  - o Note: “Preferable” in relationship to Clean Air Cool Planet Greenhouse Gas Emissions calculator used by Ohio University.

### **Concerns**

- Water safety/quality and associated health concerns
- Destruction of quality soil for use in farming, gardening, landscaping, etc.
- Long-term ecosystem viability and biodiversity of local habitats
- Health of local farm lands, farm animals and resulting negative impact on local food economy
- Increased [air pollution](#)
- Disposal of drill cuttings
- [Failure](#) of [well casings](#)
- Increased institutional carbon footprint (will equate to financial demands placed on institution for offsets)
  - The Land and Resource Management Sub-Council of the Climate Action Plan, a university-supported initiative, has proposed a benchmark that would require the Lessee to provide documentation of offset investments for actual CO2 emissions from aggregate behaviors associated with drilling (transportation, construction, extraction, water use, etc.)
  - Would require enhanced efforts on the part of the institution to track [emissions](#).

### **Uncertainties**

- \*Can we guarantee that the extracted gas will be used domestically?
- Some [researchers](#) suggest that natural gas may not actually have a smaller carbon footprint than coal, as originally thought

### **Summary**

It is the conclusion of the Ad Hoc Mineral Rights Committee that leasing of oil and gas rights on university-owned lands is in strict opposition to the institution’s commitment to carbon neutrality and sustainability values. A large financial burden will be placed on the institution in its efforts to offset extraction emissions. Therefore, when viewed solely through an environmental sustainability lens and weighed appropriately, it is the conclusion of the preparers of this report that Ohio University should not enter into a mineral rights leasing option for any of its campuses.

## **Economy**

According to the Ohio [Department of Development](#), southeast Ohio is the most impoverished region of the state. As such, a potential boom in economic growth is initially alluring to some individuals. To better understand this topic, the Ad Hoc Mineral Rights Committee has offered potential opportunities, concerns and uncertainties on the topic of the economy as they relate to oil and gas drilling:

### **Opportunities**

- Potential employment opportunities in a region traditionally hit hard with higher-than-average unemployment rates
- Potential education and training opportunities in a region with historically low rates of postsecondary attainment
- Property tax assessments that will benefit schools which are often under-funded
- The potential direct, indirect and induced effects of investment in related supply chain industries to serve the needs of the oil and gas industry and its employees. Examples include: engineering, steel, construction, housing, fuel, transportation, fabrication shops, welders, maintenance and repair shops, automotive dealerships, heavy equipment manufacturers, and more.

### **Concerns**

- Questions as to how many of the jobs will be filled by residents of the region
- Reinvestment into the region—a commitment that extractive industries have not historically demonstrated
- How much of the work is long-term versus short term?
- Tourism, particularly “eco-tourism”, is a significant revenue-generating element of the Appalachian economy and anything that keeps visitors from coming will harm not only those vendors but related spinoff vendors as well: gasoline, restaurants, and retail, among others.

### **Uncertainties**

- How much economic benefit will be accrued and is the risk of drilling worth the uncertainty of the [economic reward](#)?

### **Summary**

When viewed solely through an economic sustainability lens and weighed appropriately, it is the conclusion\* of the preparers of this report that Ohio University should only enter into mineral rights leasing options if the institution is able to justify a reasonable return on investment and provide for the appropriate protections of the institution as outlined in this report.

*\*It should be noted that committee consensus was not achieved on this decision. Those in opposition cited an unguaranteed economic gain as a result of drilling.*

## **Socioeconomic**

The potential socioeconomic impacts of fracking have been overlooked during the process of evaluating the worth of a drilling boom in our region. In an effort to shed some light on this subject, members of the Ad Hoc Mineral Rights Committee have worked together to identify potential opportunities, concerns and uncertainties on the topic of the social and economic issues as they relate to oil and gas drilling:

***Please see Appendix B for a more robust examination of the potential socioeconomic implications.***

### **Opportunities**

- Postsecondary enrollment opportunities for those entering the area for work
- Economic enrichment for the University in the form of endowments, gifts and other forms of philanthropic giving
- Are there political benefits that might be accrued? That is, with money in the region might that mean more attention and political voice?

### **Concerns**

- Maintenance in the quality of life that citizens have come to associate with the culture and history of the region as it relates to the natural environment
- The impacts of new found wealth (should that be the case) in a region not used to such inputs—sort of a “lottery effect”
- Potential increase in divorce rates
- Crime and violence
- Housing costs? Will rents and prices go up with the greater demand for housing? Or will land and housing values plummet if the environment and landscape are no longer as pristine as we have liked?

### **Uncertainties**

- Questions of [environmental justice](#) and the assumed risks taken on by a population that has traditionally been exploited?
- Would fairness, equity, and ethical principles be in place?

### **Summary**

When viewed solely through a socioeconomic lens and weighed appropriately, it is the conclusion of the preparers of this report that Ohio University should abstain from near-term leasing on its Athens campus.

While regional representation and input was offered to the Ad Hoc Mineral Rights Committee, the committee recognizes that it does not have a thorough grasp of the unique cultural needs of each campus’ surrounding communities. As such, it is recommended that regional campuses that are experiencing an immediate push for near-term leasing be apprised of these potential socioeconomic repercussions and consider them carefully upon the first meeting of the associated campus’ Mineral Rights Review Committee and include such evaluations in their report to the President.

## **Infrastructure**

With oil and gas drilling on any parcel of land comes a variety of associated infrastructure impacts. Local resources and amenities become stressed and local businesses may experience a sudden influx of demand and patronage. Members of the Ad Hoc Mineral Rights Committee have sought a great deal of community feedback on the topic of infrastructure demand in order to identify potential opportunities, concerns and uncertainties on the topic of infrastructure within oil and gas drilling.

### **Opportunities**

- Potential for the industry to build/pay for new roads, bridges, etc. in a region/state hard-pressed for and in great need of such assistance.
  - This would have to be a provision of the lease.
- Increase in local jobs related to infrastructure development
  - Lease would have to include a local sourcing stipulation.
- Spin off of infrastructure development in other industries, economic opportunities

### **Concerns**

- Irreparable or extremely costly damage to roads, bridges, and other infrastructure
  - Potential road blockage in emergency situations puts our campus community at risk
  - Potential corrosion of concrete and steel as a result of the chemicals
- Handling waste from processes; new or larger landfills and deep injection wells will be needed
- Local schools may become stressed in attempts to accommodate an influx of workers' children
- Local health facilities, emergency management teams, and first responders may not be able to accommodate increased demand of services
- A sudden boom in population and industry could negatively impact the power grid
  - Could lead to increased power costs in an impoverished area
  - Could lead to rolling blackouts

### **Summary**

A sudden influx of industry and population will place new infrastructure demands on a community that may not be prepared to accommodate such needs. As we are unable to secure infrastructure assurances on all legal leasing documents throughout the region, we feel it is in the best interest of the institution to immediately begin discussions with appropriate government officials to secure proper financial investments so as to ensure our students, faculty and staff will not be disturbed by potential strain caused by the oil and gas industry in our community.

## **Health and Safety**

Consideration must be given to the health impacts this could have on a region that already has difficulty accessing affordable and adequate healthcare. Scientific studies show that [air pollution](#) up to five times higher in regions with drilling versus regions absent of drilling; [water](#) used for consumption and hygiene containing dangerous levels of mercury, and methane; natural habitats are being destroyed and, thus, changing the natural interdependency of species of regions with drilling instances of crime are increasing in areas of significant booms of wealth. The Ad Hoc Mineral Rights Committee has worked with Ohio University Environmental Health and Safety staff to identify potential opportunities, concerns and uncertainties on the topic:

### **Opportunities**

- Research opportunities with regard to [public health impacts attributable to drilling/extractive processes](#)
- New employment in medical staffing

### **Concerns**

- Negative impact on tourism:
  - Potential harm to the local landscape, which is a significant draw for tourism. If water/air are polluted then resources that bring people to the region will be harmed, e.g. hunting, hiking, biking, and fishing.
- Negative impact on:
  - Ecological and eco-system health—not just people but flora and fauna, air and [water quality](#)

### **Uncertainties**

- Uncertainty of long term versus short term impacts on public [health](#)—the science is too new here
- How safe are the drill sites for workers?
- How close can pedestrians get to a drill sites?
  - This remains a concern both during and after drilling practices.

### **Summary**

It is the conclusion of the preparers of this report that the uncertainties associated with the health and safety of our campus and community are significant. At this time, it is advised that Ohio University not enter into mineral rights leasing options when viewed solely through the lens of health and safety.

## **Public Relations**

Ohio University prides itself as a leader in sustainability through its exceptional programs and beautiful geographic situation in the foothills of Appalachia. Therefore, public image should remain a topic of importance for the Board of Trustees when considering a potential oil and gas boom near any of Ohio University properties. This can be a complex issue. The Ad Hoc Mineral Rights Committee has identified potential opportunities, concerns and uncertainties on the topic of the public relations as they relate to oil and gas drilling:

### **Opportunities**

- Possibility for increased student scholarships
  - An endowed scholarship(s) that benefit historically under-represented or first-generation college students from Appalachia or elsewhere would probably be received favorably—especially when viewed as a new opportunity
- Short-term economic success of local businesses due to influx in population

### **Concerns**

- Potential negative social ramifications (increased cases of rape, violence, crime due to sudden influx of populations; increased addictions to gambling, alcohol and drugs)
- Inappropriate demand on community infrastructure (roads, lands, hotels, water treatment, etc.)
- Institutional commitments such as the Climate Action Plan and Sustainability Plan are contradictory to the general public image of the practice of fracking.
- Recruitment challenges from admissions and enrollment management—especially when that office went to great efforts to create its “sustainability” brochure and promotes such efforts a lot
- Contradictions of university touting its beautiful setting
- Potential negative impacts on fundraising and development funds
  - Survey data suggests that alums and others may be less likely to offer donations if OU were to enter into a lease agreement.
- Potential loss of faculty and staff due to relocation (survey results suggest this may be a possibility).

### **Uncertainties**

- Will this positively or negatively impact the university’s ability to recruit quality faculty, staff and students?
- Do city and/or county governments stand to gain any tax incentives and, if so, how do they use these resources to create a more sustainable economic future?
- Could potential drilling options harm existing community [relationships](#)?

### **Summary**

Regardless of Ohio University’s decision to lease, we are in the public eye on this decision. Ohio University is currently one of few institutions throughout the country engaged in serious discussion about leasing agreements. Therefore, we are aware that we will become a case study for other institutions. It is imperative that, in an effort to maintain a positive public image and uphold our reputation as a sustainable institution, we approach all conversations openly and honestly with the public. When viewed solely through a public relations lens and weighed appropriately, it is the conclusion of the preparers of this report that Ohio University should not actively seek out mineral rights leasing options at this time.

If a lease is prepared for any of its campuses, though, it is essential that significant effort is made to allow for research opportunities on the drill site. This will allow Ohio University’s situation as a public case study to actually offer scientific, peer-reviewed data about the process. Thus, upholding the institution’s research mission and its responsibilities to serving its community.

### **Land Inventory**

Mapping for all Ohio University campuses has been accomplished. The maps identify the land parcels owned or otherwise controlled by Ohio University as State Land. The maps have been forwarded to Mr. Michael George, an Akron-based Attorney at Law with a Law Firm specializing in Oil and Gas Leasing. This firm was appointed by the Ohio Attorney General to assist Ohio University with this initiative.

All land as it sits now is classified as number two pursuant to Ohio Law. It will be incumbent upon the University with the assistance of outside counsel both environmental and business counsel to further reclassify all the property owned by the University. This project is underway.

The first property to be reviewed will be the campus at Belmont or Ohio University Eastern. The Belmont area is experiencing a great amount of activity and the University officials have been approached both by companies and contiguous landowners to join in the leasing of the University land that contains valuable shale oil and gas.

### **Lease Development Stipulations/Best Practices**

Under House Bill 133, Ohio University will have until June 30, 2012 to choose to enter into a standard lease for mineral rights on any of its land. During that time, the university has the right to create its own lease agreement. In the case that Ohio University enters into an Oil and Gas Rights Lease, it is recommended that the Board of Trustees take the following items into consideration when preparing such a document.

Option 1: No Surface Activity Lease. Should the lease of any Mineral Rights currently owned by Ohio University occur, it is recommended that the institution sign a no-drill lease that allows for the modification of "no surface activity." Many of the provisions provided below offer suggestion for inclusion in such a lease.

Option 2: Surface Activity Lease. Institutional leaders must be aware of the potential hazards of hydraulic fracturing on university owned lands. As such, it is recommended that any lease that Ohio University enters into protects the future success of the institution. It is recommended that the following requirements be included in the development of any leasing agreements for Oil and Gas Rights at all of Ohio University's campuses.

### **Recommended Lease Provisions:**

Establish an Ohio University Mineral Rights Review Board to include but not be limited to representation from University Legal Affairs, Budget Office, Facilities Management, Facilities Planning, Office of Sustainability, Student Affairs, Plant Biology, Development, University Communications and Marketing, Admissions and each of the regional campuses. The Review Board shall be responsible for overseeing the proper execution of any lease agreements entered into by the institution or state.

Ohio University retains the sole discretion/approval of the location of wells, waste pits, drilling machinery and construction (and associated infrastructure to include, but not limited to, trailers, trucks, built structures, roadways, gates, signs, lighting and other items).

Lessee must provide Ohio University with monthly reports to include the exact contents of the hydraulic fracturing fluids used on University lands and the quantity and type of mineral extracted.

Minerals shall remain exclusive to oil and gas. Lessee has no authority to extract any additional materials without approval from the University and additional contracts, as appropriate.

As Ohio University is committed to carbon neutrality, it is essential that carbon offsets are included in the fuel usage associated with mineral extraction on our lands. The University Ecology and Energy Conservation Committee is the expert source for specifics regarding requests for carbon offset standards.

The Lessee shall be responsible for restoring all pre-existing roads and resurfacing any lands that were altered for the sake of excessive foot or vehicular traffic. "Excess" in this document relates to any activity that exceeds activity prior to the Lessee assuming Mineral Rights.

Timber Clause: Lessee agrees to notify Ohio University of any planned removal of trees. A carbon offset must be applied to any situation which requires removal of any natural landscaping.

Habitat Protection: It is necessary that all natural habitats existing on Ohio University land are protected. The Review Board must approve of any site selection and reserves the right to refuse said sites if wildlife activity stands to be disturbed.

Water Damage: In the event that Lessee activities disrupt water sources on leased property, Lessee must correct damages immediately. Lessee's use of water sources, ponds, lakes, creeks, etc. is strictly prohibited.

No well may be drilled within 500 feet of water sources or buildings.

Ohio University land may not be used for disposal or injection wells.

Lands deemed as "Protected" land by the Review Board may not be included in this lease. The Review Board reserves the right to remove lands from this lease at any time should significant data be collected to name new land as "Protected." Such additions will be removed from the lease and compensation for such changes will be arranged with the Lessee. Compensation is not to exceed the original costs offered in this lease agreement.

Pugh Clause: at the end of the primary term, the lease will expire as to any part of the land that is not being used by the petroleum company

All wells or stations must be properly fenced/gated for the safety of Ohio University students, faculty, staff and visitors. The Ohio University Review Board and Environmental Health and Safety reserves the right to request additional safety measures be enacted at any time during the duration of this lease.

Lessee must provide a waste removal plan to be approved by the Review Board prior to commencement of any drilling. Storage of any byproducts, fluids or waste may not be stored on Ohio University property and must be properly managed in accordance with state and federal laws.

Upon abandonment, all wells must be cased and plugged and land be restored to its original state.

Lessee must allow regular research and testing of the site and associated production by Ohio University affiliated researchers (approved by the Review Board). All information regarding fluids, practices and expenditures must be made available to Ohio University researchers. Research will not be influenced by Lessee's position or financing.

Ohio University reserves the right to inspect operations at any time ("inspection" to include still photography, videos, surveying, sampling and other activities as deemed appropriate by Ohio University staff and affiliates). If Lessor finds Lessee in guilty violation of environmental harm, Lessee must cease operations until damages are repaired.

Upon commencement of lease agreement and for five years following abandonment of site, Lessee must finance local water testing to all water sources within 2 miles of each drill site. Any negative results must be repaired under the “water damage” provision provided above.

Each lease must refer to government ordinances for acceptable noise levels at each drilling site. Additional permit requirements must be adhered to.

It is necessary that reasonable lighting options are employed during evening hours in a manner that complies with government ordinances and does not disrupt residences or places of business.

Lessee must engage with local alternative energy companies to use alternative energy sources for operations.

At least 60 percent of Lessee’s employees on site must be hired locally.

Lessee must work with various academic departments to accommodate educational opportunities related to drilling sites including, but not limited to: photography assignments, biology field trips, energy education projects and more.

The lease may not be extended without recommendation from the Mineral Rights Review Board. The Review Board needs a minimum of 60 days to make a recommendation on any requests to extend a lease. Any mention to “force majeure” or lease extension in any lease is to be considered null and void.

## **Campus Community Feedback**

### **Method**

A combination of online surveys and public forums were used to gather community opinion regarding the possibility of hydraulic fracturing occurring on Ohio University properties. Methods for informing the community about forums and surveys included news articles in Ohio University *Compass*, *The Athens News*, the Office of Sustainability website, facebook, and twitter pages, campus-specific announcements and personalized emails to multiple listservs and organizations.

The Ad Hoc Mineral Rights Committee created an online survey which students, faculty, staff and the public were invited to complete. The survey collected both quantitative data and qualitative data.

A public forum was held at each campus. Comments were documented and submitted to the Director of Sustainability for inclusion in this report. All forum participants were invited to complete the online survey.

The forum structure hosted by the Athens campus differed from branch campuses. The Athens forum consisted of a one hour information session followed by an informal discussion period with panelists. The first session consisted of six panelists speaking to the following considerations: House Bill 133, geology, general safety, general environment, water safety, and economic and legal challenges. All panelists spoke for approximately five minutes. Afterwards, written questions from the audience were addressed for 20 minutes. This portion of the evening was offered via live webcast to regional campuses and other members of the Ohio University community may have been unable to attend. You may view an archived video of this session online at:

<http://www.ohio.edu/media/?videoid=7F255432DE5BFF2EA7D5E15CBA8D2C6B>

Following the formal presentations, participants were invited to engage with speakers and guests regarding any remaining questions/concerns on the topic. Each attendee was encouraged to complete the online survey, and it was stated that free internet access was available at Baker Center and public libraries. In addition, notes were taken on the informal conversations that occurred during the second portion of the evening. All questions written by audience members during the first hour were also recorded.

For more information about the Forums, please view the following news articles:

- <http://www.ohio.edu/compass/stories/11-12/3/fracking-forum.cfm>
- <http://thepost.ohiou.edu/content/panel-examines-benefits-costs-hydraulic-fracturing-athens>
- <http://www.athensnews.com/ohio/article-36508-forum-at-ou-airs-issue-of-leasing-campus-land-for-oil-natural-gas-drilling.html>
- [http://www.athensohiotoday.com/news/article\\_251882b2-7922-11e1-bca0-001a4bcf887a.html](http://www.athensohiotoday.com/news/article_251882b2-7922-11e1-bca0-001a4bcf887a.html)
- <http://www.chillicothe Gazette.com/article/20120313/NEWS01/203130305/Several-forum-opposed-fracking-OU-campuses?odyssey=tab%7Ctopnews%7Ctext%7Cfrontpage>

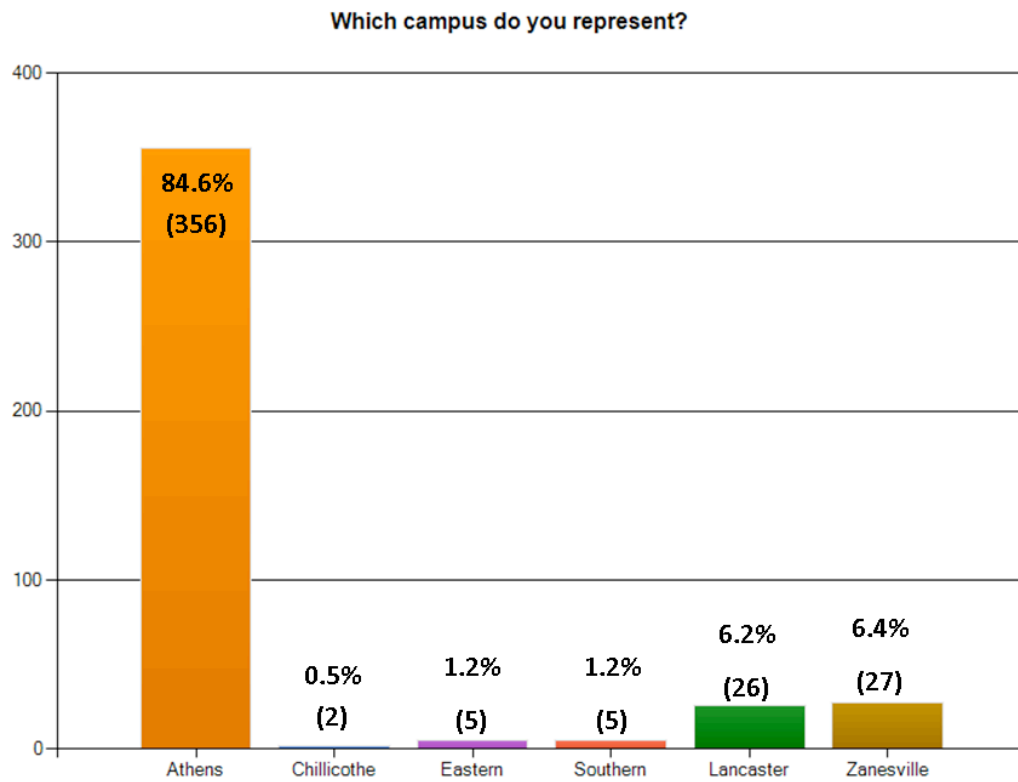
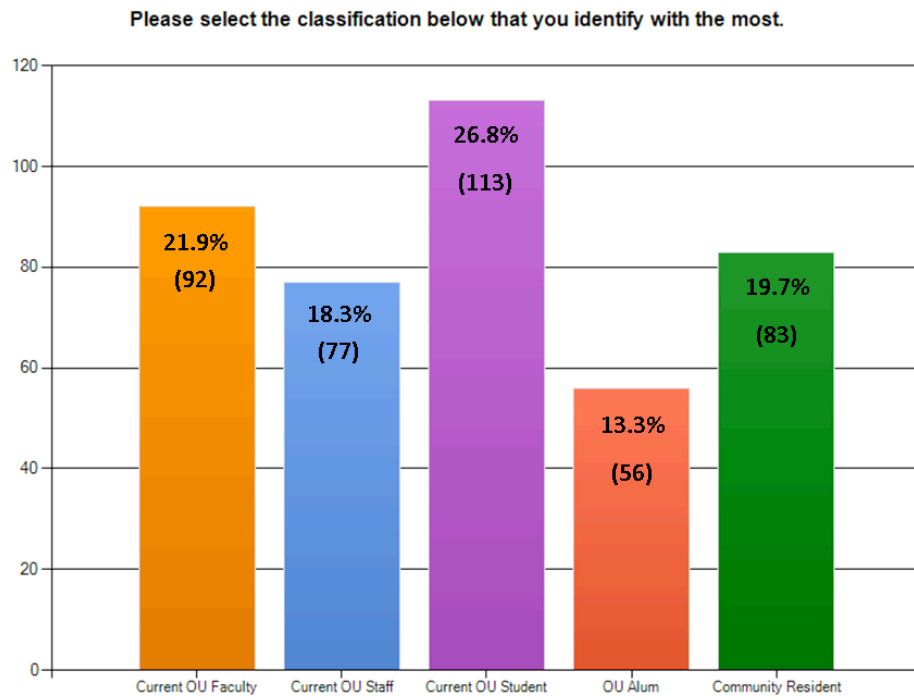
### **Survey:**

The online comment form served as a mechanism in which individuals were given the opportunity to provide feedback on the specific topic of oil and gas leasing under House Bill 133. 421 people began the survey, with a total of 383 respondents taking the survey to its completion (91% completion rate). The survey settings allowed only one completed response from each IP address. The pages that follow outline the results of this survey and will provide an overview of campus/community response to the topic.

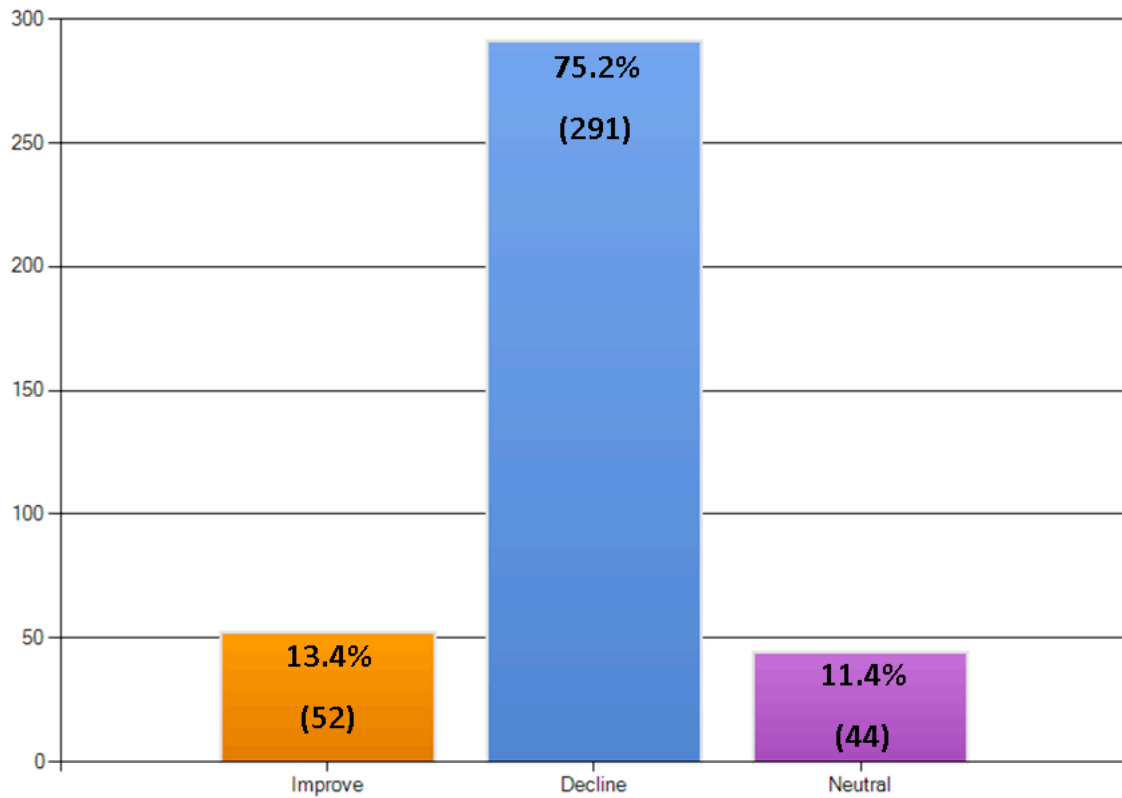
A full report of the survey results and comments collected at each of the forums may be viewed online at:

[http://issuu.com/sustainableou/docs/survey\\_forum\\_results?mode=window&backgroundcolor=%23222222](http://issuu.com/sustainableou/docs/survey_forum_results?mode=window&backgroundcolor=%23222222)

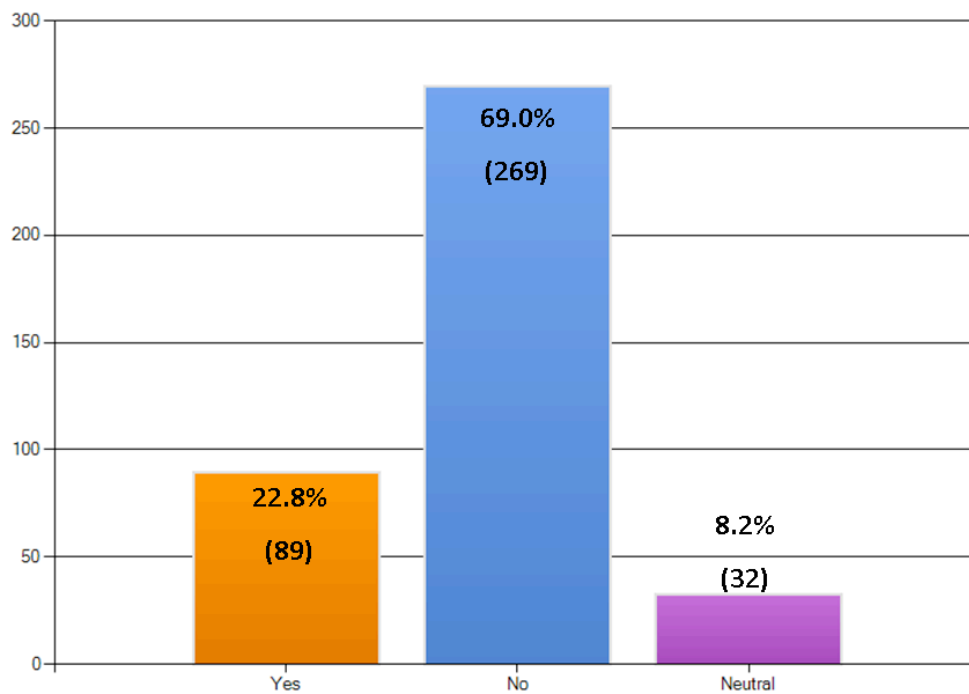
## Online Survey Results:



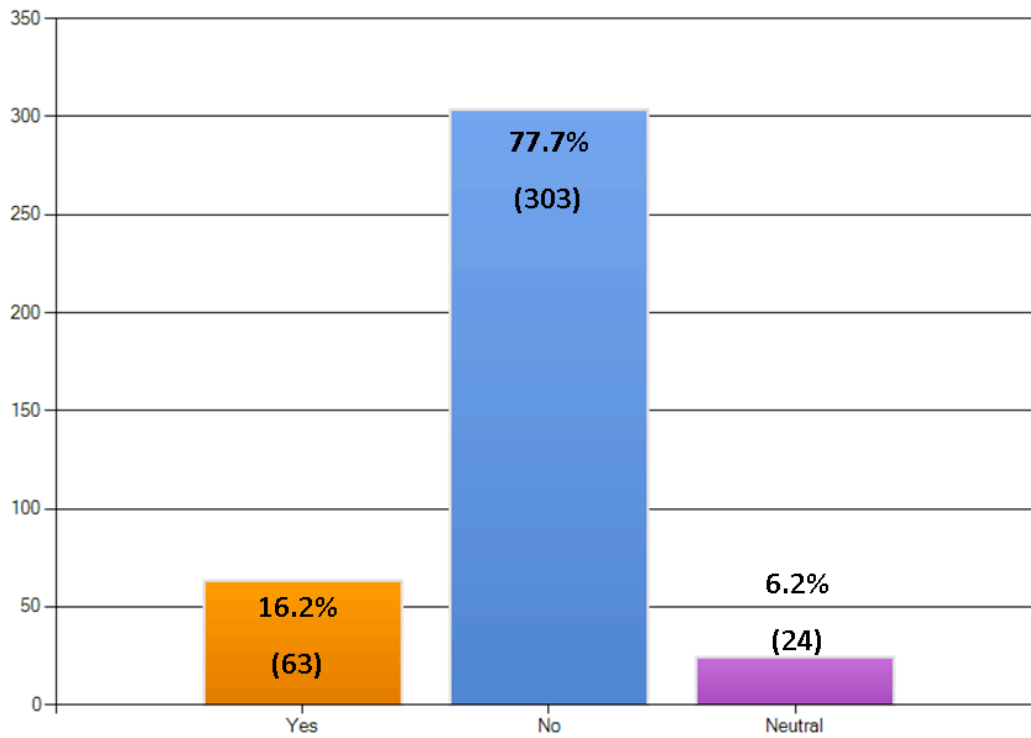
**How do you feel your quality of life could be impacted by fracking?**



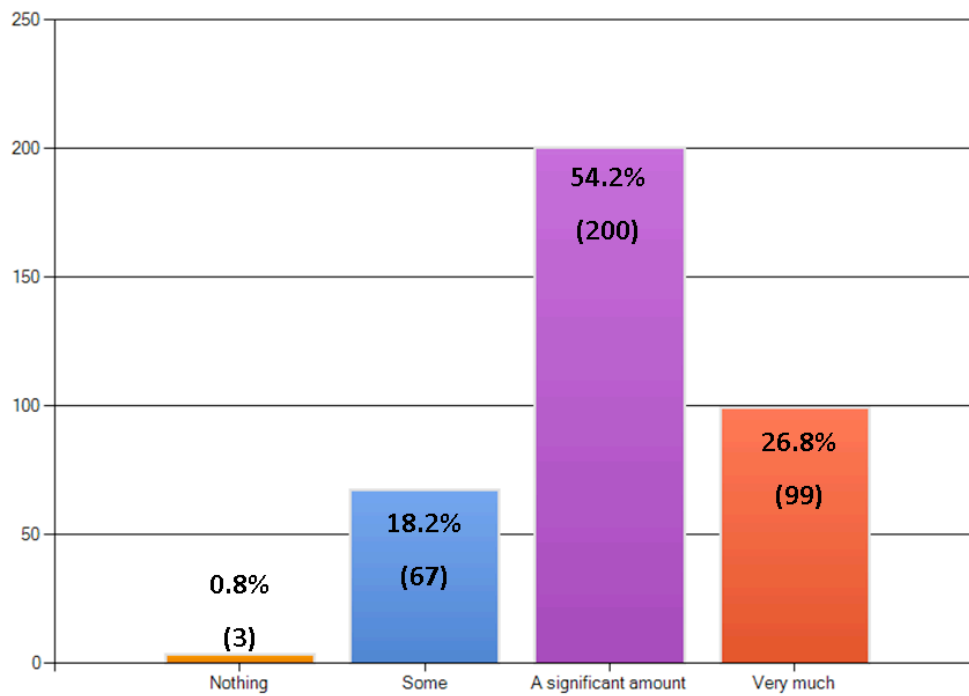
**Do you feel fracking can provide a positive, long-term boost to the local economy?**



Should Ohio University sign a lease allowing fracking on our lands?



How much do you feel you know about fracking



3. Using the scale provided, do you consider the following potential impacts of fracking to be positive or negative?

	Extremely Negative	Negative	Neutral	Positive	Extremely Positive	Response Count
Personal Safety	51.3% (200)	24.6% (96)	15.1% (59)	5.6% (22)	3.3% (13)	390
National Security	21.8% (85)	19.7% (77)	39.2% (153)	11.0% (43)	8.2% (32)	390
Water	71.8% (280)	13.3% (52)	8.2% (32)	2.8% (11)	3.8% (15)	390
Roadways	45.6% (178)	29.7% (116)	15.1% (59)	4.9% (19)	4.6% (18)	390
Economy	22.8% (89)	21.8% (85)	22.6% (88)	17.7% (69)	15.1% (59)	390
Local Ecosystems	71.5% (279)	11.5% (45)	8.2% (32)	4.9% (19)	3.8% (15)	390
Institutional Enrollment Rates	35.4% (138)	25.4% (99)	28.5% (111)	5.6% (22)	5.1% (20)	390
Faculty/Staff Recruitment	35.6% (139)	30.5% (119)	22.3% (87)	6.7% (26)	4.9% (19)	390

7. How do you rate the importance of the following when making a decision about fracking?

	answered question				390
	skipped question				31
	Neutral	Not at all important	Somewhat Important	Extremely Important	Response Count
Scholarships	29.5% (112)	26.3% (100)	27.6% (105)	16.6% (63)	380
Environment	1.5% (6)	1.5% (6)	10.0% (39)	86.9% (339)	390
Water Safety	1.5% (6)	1.8% (7)	6.7% (26)	90.0% (351)	390
Roadways	5.2% (20)	4.1% (16)	40.5% (157)	50.3% (195)	388
Economy	3.9% (15)	5.4% (21)	37.5% (145)	53.2% (206)	387
Aesthetics	7.2% (28)	7.2% (28)	27.7% (108)	57.9% (226)	390
Noise	7.5% (29)	5.9% (23)	33.8% (131)	52.8% (205)	388
University Reputation	7.8% (30)	5.7% (22)	18.8% (72)	67.7% (260)	384

## **APPENDICES**

- A. EECC Fracking Overview & Resources
- B. Socioeconomic Report
- C. Memorandum to the Vice President of Finance & Administration
- D. Forum Presenter Notes: Greg Nadon\*
- E. Forum Presenter Notes: Joe Adams\*
- F. Forum Presenter Notes: Bernhard Debatin\*
- G. Environmental Studies Resolution
- H. President McDavis Response to ES Resolution
- I. Ecology and Energy Conservation Committee Resolution
- J. Faculty Senate Resolution

*\*Please note: All Forum Presenters were invited to share their notes from the event.  
We have included all materials received by our presenters.*

# Oil and Mineral Rights Update

*Prepared by: Ecology and Energy Conservation Committee*

*Last Updated: April 12, 2012*

The Ecology and Energy Conservation Committee (EECC) is committed to providing Ohio University students, faculty and staff with the appropriate education on environmental topics relevant to the region. The information that follows was compiled in an effort to offer the Ohio University community with transparent communication regarding its oil and mineral rights leasing.

## **Overview:**

Due to the recent interest in the oil and gas leasing of lands in Southeast Ohio, a great deal of students, faculty and staff have reached out with questions regarding Ohio University's stance on the Hydraulic Fracturing (fracking) of its lands. While private landowners have the right to lease their mineral rights on a personal basis, public lands are governed under different laws. Ohio University lands are considered "state lands" and, as such, are governed under House Bill 133 (link provided in the "Resources" section). This provides the state with the right to "nominate" parcels of land for mineral rights extraction and essentially removes the state agencies' rights to directly accept or reject leasing requests from companies seeking to extract the minerals.

Currently, Ohio University is working to prepare for the mandates of House Bill 133. A great deal of action is being taken in an effort to protect the university and its constituents. Such actions include (though, don't exclude):

- Title Determination: Ohio University is working to determine the exact number of acres owned or managed by the university.
- Classification of properties: Under House Bill 133, state agencies (such as institutions of higher education) must provide the Oil and Gas Leasing Commission with a listing of institution-owned lands and their associated Classifications (see House Bill 133 link below for more information regarding land classifications). Once all title determination has been complete, Ohio University must begin to appropriately group and then "classify" each of its lands.
- Preparation of Lease Terms: By June of 2012, the Oil and Gas Leasing Commission (as established through House Bill 133) will have established (and will begin enforcing) rules for nominating parcels of land for mineral rights leasing. Under these rules, it is anticipated that state agencies must submit to leasing using a general state lease without provisions specific to the agency.
  - o Ohio University administration is working to protect the local economy, environment, human health and animal health by creating lease provisions should we enter into a lease at any of our campuses. A great deal of time is being spent by a variety of professionals in the consideration of these provisions.

## **Resources:**

The Ecology and Energy Conservation Committee has compiled the following short list of resources in an effort to provide the campus community with an objective overview of oil and gas leasing as well as the hydraulic fracturing (fracking) process. Please note that not all of the resources provided below are peer reviewed and, as such, great effort has been made to offer a balance of resources to allow the reader to intelligently approach this topic and create a well-informed response. If you would like to submit an article for consideration, please email the EECC Chairperson, Stephen Scanlan at [scanlans@ohio.edu](mailto:scanlans@ohio.edu). Please note: we cannot accommodate all requests.

Academic and University Documents

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Organizations and special interest groups surrounding this discussion:

Student, staff, faculty and community action is also being taken in an effort to raise awareness of this conversation. EECC has done its best to compile a listing of known groups below. If you know of additional groups that are focused on this conversation (regardless of its stance), please submit the name of the group and the primary contact and/or website to EECC Chairperson Steve Scanlan at [scanlans@ohio.edu](mailto:scanlans@ohio.edu).

- Athens County Fracking Interest Group (<http://www.acfan.org/>)
- Buckeye Forest Council (<http://www.buckeyeforestcouncil.org/>)
- Network for Oil and Gas Accountability and Protection (<http://www.portagecitizens.org/neogap/>)
- Ohio Environmental Council (<http://www.theoec.org/>)
- Ohio Oil and Gas Association (<http://ooga.org/>)
- Ohio University Students Against Fracking
- Sierra Club Ohio (<http://ohiosierraclub.org/category/gasandoilfracking/>)
- Slow Down Fracking in Athens County (<http://slowdownfracking.wordpress.com>)
- Stop Fracking Ohio (<http://www.facebook.com/StopFrackingOhio>)

## **APPENDIX B – Socioeconomic Report**

### **The socioeconomic impacts of shale oil and gas development to Ohio University and the communities of southern and eastern Ohio**

*Prepared by Donna Goss and Scott Miller*

#### **Background:**

The growth of the oil and gas industry in eastern and southern Ohio is a result of the confluence of technologic, economic and geologic forces. The growing desire to develop these shale resources can be attributed to international market forces for carbon-based fuels, a growing desire to become less reliant upon foreign sources of energy, environmental considerations - including the growing threat of climate change, and national security concerns.

Ohio's oil and gas fields produced 78 billion cubic feet of natural gas and 4.7 million barrels of crude oil in 2010. Since oil and gas production began in Ohio in 1860, the state has produced more than 8.5 trillion cubic feet of natural gas and 1.14 billion barrels of crude oil with an approximate market value of \$124.4 billion based upon the average wellhead price in 2010.

The tight shales that underlie this region, particularly the shales known as the Marcellus and Utica, represent unconventional sources of oil and gas. Unconventional sources also include deep offshore oil and gas, tar sands such as those found in the western US and Canada, and methane hydrates which are found in deep sea reserves. The Marcellus Shale is found in Middle Devonian-aged rocks and is located between 5,000 and 8,000 feet below the surface. Its thickness ranges anywhere from about 50 feet to 900 feet. The Utica Shale is from the Ordovician age and is found approximately 2,000 feet below the Marcellus. The Utica varies in maturity across the region and is of particular importance in Ohio due to the large geographic extent of the formation and because it may be a substantial source of "dry" gas (natural gas comprised mostly of methane); "wet" gases (also referred to as high-BTU gases) such as ethane, propane, and butane; petroleum condensates; and oil. Each of these commodities holds a different market value with heavier condensates and oils currently attracting substantially higher prices. These source rocks are accessible and their oil and gas are retrievable due to the innovative combination of new horizontal drilling techniques that allow a single well to be sunk deeply and extend in many directions along with hydraulic fracturing (commonly referred to as "fracking" or "fracing") whereby a mixture of water, sand and chemicals are injected under extremely high pressures to "frac" the rock and allow the oil and gas trapped therein to migrate to the surface.

#### **Scope:**

Ohio University (OHIO) will need to balance the opportunity for leasing or selling its rights to develop these resources and the revenues that these opportunities bring with the potential downside impacts that the region will see as these plays are produced. This report seeks to identify and expand upon some of the opportunities and downside impacts to the university and to the communities of southeast Ohio associated with the development of the Marcellus and Utica plays. It is important to note that OHIO has the right and responsibility to negotiate the highest and best signing bonus, royalty payment, environmental remediation, water and air quality monitoring and infrastructure improvements necessary to ensure the safety of its students staff and faculty as well as the larger community of which it is a part while also maintaining the efficient and sustainable operations of its facilities.

### **Opportunities attributable to Ohio University**

Many of the obvious opportunities that can and will be attributed to OHIO involve the revenues the university will achieve as a result of lease signings and royalties. Current estimates for bonus signings for residential leaseholders in the region range from lows of \$100 per acre in the earliest phases to recent estimates of \$5000 per acre and even unverified assessments in upwards of \$7500 per acre. Often of much larger benefits accrue for lease holders through the associated royalty payments that reflect a proportion of the value of the minerals that are retrieved from each well. Reports of royalty payments in Ohio range from values in the low teens to as high as 17.5% for certain areas in the region. Higher royalty rates are negotiable and the return on those rates increases substantially based upon the valuation of the gas and oil that is recovered from the wellhead. Typically oil and high-BTU gases such as propane and butane provide a higher market clearing price than natural gas and ethane. These higher prices increase the overall value of a particular well and justify higher royalty payments.

As a result of regional oil and gas development many families and communities will be looking for ways to retain the wealth that is entering the area. Capital formation through lease signings and royalties represent a substantial opportunity to increase philanthropic giving. Regional community foundations and nonprofits will benefit from the new-found wealth created through this boom cycle. Foundation giving may increase OHIO's endowments for scholarship and capital expenditures. Capital flight is a concern. There is a very real opportunity for angel and venture investment funds to flourish as a result of the development of these resources. OHIO and its regional development partners should encourage capital retention efforts in an effort to retain and recycle capital within this region.

Foundations, families and corporations benefitting from this boom all represent opportunities for OHIO through its new development campaign via increases in scholarships and professorships. The campaign may also benefit through estate planning efforts whereby regional landowners deed their property and mineral rights to the university.

Multiple academic units across campus are receiving suggestions from the private sector, alumni and regional development organizations to increase funding and curricular activities related to oil and gas exploration and development. There are no current plans to substantially modify or create new degree programs at OHIO to meet the industry's demands for trained workers. It is the belief of institutional leaders that current programs can meet the need for this industry.

### **Impacts to the university**

OHIO will be challenged through its capital budget to maintain and improve university infrastructure should drilling operations occur on university-owned property or property that immediately abuts it. The impact of 24-hour operations with hundreds of tractor trailer trucks will significantly degrade road conditions and cause substantial disruptions for commuters. Bridges, culverts, roads, traffic signals and more will be impacted.

The construction related to shale gas exploration includes many different stages, each of which will likely decrease the aesthetic value of the university. The major complaints lodged by citizens where shale gas drilling occurs include dust, noise, and road damage from industry truck travel. Well pads and drill rigs will be the most visible signs during the active drilling phase of the operations. Water loading sites will have to be developed to fill the hundreds of tanker trucks that will deliver the estimated 4-7 million gallons of water per well to the site. Once extraction occurs the gas and oil byproducts will need to be transported via pipelines and trucks to storage facilities and compressor stations. Installation of gas and liquid storage facilities on university-owned lands present health risks along with construction concerns. Pipeline integrity is also a concern. Poorly-installed and maintained pipelines raise the possibility of gas leaks and – in the worst case – explosions. Flowback and produced waters from the well will need to be taken to treatment or disposal

facilities. The present preferred option for disposing of these contaminated waters is through deep well injection facilities. It was the injection of these waste materials which has been widely attributed to causing a magnitude 4.0 earthquake on December 31<sup>st</sup> in the Youngstown area. The state promptly shut down the injection well believed to be responsible for the temblor.

In order to mitigate these impacts OHIO should be prepared to negotiate infrastructure improvements either as part of its lease agreement or as a separate impact agreement with the company(s) it leases with. Negotiating an option for natural gas off-takes for the lessor is also an option that OHIO may want to exercise during the lease signing process. This may decrease energy costs for university-owned properties and help offset the impacts during the development and operational phases of these projects.

#### **Opportunities attributable to regional communities**

Several economic impact analyses of the development of the Utica and Marcellus shales have recently been completed. Estimates of direct and induced jobs range from as high as 204,000 with spending exceeding \$14 billion, to a low of approximately 20,000 jobs. Importantly, communities need to understand that the economic boom created by this new opportunity will not last. It is cyclical and local towns need to plan for the time when the resources and/or the market valuation of the resources decrease. Communities should use this opportunity to plan for and invest in more sustainable growth post-boom.

Salaries for well rig positions are often very good. Rig laborers (roustabouts and roughnecks) can make as much as \$90-\$100,000 per year with overtime. Vocational school welding graduates can walk out of high school and into jobs earning as much as \$65-\$80,000 per year and Master Welders may earn twice that. Drivers with a Commercial Driver's License (CDL's) earn upwards of \$50,000 per year and dozens of drivers are needed on every rig. An advanced degree is often not necessary to work on these rigs. Skilled trades and specialized training is important and companies often recruit and hire workers and will train them as necessary on specific tasks.

Shale gas exploration will likely cause an increase in immigration as many out-of-state employees will initially comprise the primary workforce needs of the exploration companies – the exception being in fabrication, truck driving and hauling, and construction and civil engineering jobs. Most local employment opportunities come in the post-drilling production phase. These out-of-state workers will place added pressures on the local housing market causing temporary upward pressures on home values and property tax assessments. The increase in population will induce spending at businesses near well sites and regional operations centers. These “hyper-local” spending decisions will drive local businesses to invest back into their operations to meet the growing demand. A complete analysis of the regional manufacturing and service industry that supports this industry is essential because while it is very capital intensive, it creates very few direct jobs locally. As a result it is imperative to look at the induce effect this industry has on the greater regional economy and the development and support it provides to other regional industries. Additionally, the job growth that may emanate from these investments may lead to increases in family income in the region. Likewise, as has been discussed previously, local landowners stand a chance of realizing substantial financial gains if they choose to lease their mineral rights to oil and gas companies.

#### **Impacts to regional communities**

An increase in local population brings with it many negative effects. The one consistent and overriding theme is that all levels of local government are frequently hit with a larger-than-expected demand for their services. More often than not these local governments lack the budgetary capacity to meet the necessary growth for their services and resources.

While pressures mount on local public service providers, most local residents are equally unprepared for the disruptions to community and social cohesion caused by drilling. These issues are wide-ranging and include animosity between community members that have leased their mineral rights and those who have not, and the subsequent increase in economic inequality; many people will realize immense financial gains and others will see nothing. This will create a situation of “haves and have-nots”.

Additional changes in local communities include overcrowding in local stores and price increases at local businesses. Out-of-state employees who bring their families will place an increased burden on local school districts that will then need larger classrooms and increased staff. Existing school levies may not be adequate to compensate for these increased pressures. Large groups of young men without families bring with them concerns about increased drug use, prostitution, alcoholism and domestic violence issues. These put added pressures on local police and emergency response personnel and the health care system more generally. Fire and emergency services are frequently unprepared for the types of fires and HazMat accidents that come with modern drilling operations.

Communities can expect an increased demand for affordable housing which may cause displacement of low income families and place an ever-increasing burden on local social service agencies. There is also an increased demand for hotel space during shale exploration and development. While this is good for local hoteliers it places an increased stress on other business travelers and tourists hoping to visit the area. In addition many states have a “permanent resident exclusion” from state and local hotel occupancy taxes on long-term lodging. The displacement of local travel and tourism as a result of the lack of adequate and affordable hotels is an often underreported concept in these oil and gas fields.

Oil and natural gas drilling is not a long-term economic development prospect. Rural economies based upon resource extraction lack the foundation for positive long-term development outcomes. These boom-to-bust economies are subject to frequent price fluctuations for their resources, build out their local infrastructure to meet the growth and cannot meet their maintenance and debt service costs when price shocks cause scale backs in local production, and cannot shift their taxing authority from these highly-paid workers to the smaller, lower-income populace that is left behind.

#### **Impacts to both the university and regional communities**

The shale boom has many eastern states, including Ohio, struggling to determine how to tax and manage the local impacts of drilling. More mature energy states tax oil and gas revenues and use the revenues to offset public expenditures elsewhere in the budget. States such as Texas (a 7.5 percent severance tax), Oklahoma (7.1 percent), and North Dakota which is in the midst of its own shale energy boom charges 5-6 percent. Alaska charges somewhere between 25 and 50 percent, writes a check to every resident once a year, and has stashed away over \$40 billion for future expenditures through its oil and gas severance fee. Pennsylvania recently imposed a small impact fee after two unsuccessful attempts to enact one on oil and gas. West Virginia has an existing fee of slightly more than 5 percent on all fossil fuels. Ohio currently has no such tax though Governor Kasich has recently warmed to the idea of a local impact fee of less than 1 percent that would be used to offset capital expenditures at the local level.

There is a need for baseline data collection to ensure that environmental hazards and economic issues are addressed in both the university and at the local community level. Baseline data is essential in order to assess the impact on environmental factors (water and air quality, soil contamination) infrastructure (roads, bridges, culverts, local housing stock) and public services (first responders, water and wastewater treatment facilities, social service agencies, and taxing authorities).

## APPENDIX C

### MEMORANDUM

TO: Mr. Golding

FROM: Nicolette Dioguardi and Dave Northrop

DATE:

RE: Shale Gas Leasing Questions

This memorandum is provided to respond to questions that you have posed regarding leasing of university property for the production of shale gas.

**1. Will a lease entered into by the university prior to the adoption of rules by the Oil and Gas Leasing Commission remain in force after the adoption of the rules? Is the Commission empowered to adopt rules that would affect the terms and conditions of such a lease?**

A lease entered into by the university prior to the adoption of rules by the Commission will not be affected by the rules, and will remain in force in accordance with its terms. R.C. 1509.73(A)(1) provides that prior to adoption of rules by the Commission, a state agency may lease its property "in consultation with the oil and gas leasing commission" without any indication that rules subsequently adopted by the Commission may affect such leases in any way. To the contrary, that subparagraph provides further that upon adoption of the rules, a state agency may lease its property only under the direction of the Commission. Thus, the statute appears to draw a sharp line between the period before and after the adoption of rules, and limits the Commission's authority to leases entered into after rules are adopted.

**2. After the adoption of rules by the Commission, may the university veto a third-party's "nomination" of university property for leasing? Can that veto be overruled by the Commission or the Division of Oil and Gas Resources Management?**

R.C. 1509.73 prescribes the process by which property owned by a state agency is "nominated" for leasing. The Commission is required to approve or disapprove a nomination. If the nomination is approved, the property is eligible for leasing under the supervision of the Commission. However, public universities are afforded a right to veto a nomination. University property is designated as "class 2 property", R.C. 1509.70(B), and, as provided in R.C. 1509.73(B)(6), the Commission may not offer class 2 property for lease unless the university, upon receiving notice of the nomination, notifies that Commission that the property "may be offered for lease". The university's failure to provide that permission effectively vetoes the nomination. There is no language providing that the Commission may overrule that veto.

However, the Chief of the Division of Oil and Gas Resources Management is given authority by R.C. 1509.27 to issue "mandatory pooling orders". Such orders may be issued upon request by persons who have insufficient property under lease to form a "drilling unit" to add adjacent properties to the drilling unit. After notice to the adjacent property owner and opportunity for a hearing, the Chief may issue an "mandatory pooling order" to add that property to the drilling unit without the property owner's consent. The non-consenting owner receives a royalty for gas produced by the well, and no surface operations may be located on the non-consenting owner's property. There is no statutory language addressing whether this mandatory pooling authority applies to university property for which a nomination has been vetoed, and one can argue that the Chief's general pooling authority must yield to the explicit authority granted to universities to refuse to lease its property. However, we cannot reliably predict how the Chief or a reviewing court would rule on this question.

We therefore conclude that, with the possible exception of a mandatory pooling order, the university may effectively prevent the production of gas on its property.

**3. Can we require special terms and conditions in a lease after the Commission adopts rules?**

The statute suggests that the answer to this question is "yes", but it is not entirely clear. R.C. 1509.73(B)(5) provides that the Commission's notification to a state agency that the Commission has approved a nomination of the agency's property "shall request the state agency to submit to the commission special terms and conditions that will apply to the lease of a formation within the parcel of land because of specific conditions related to the parcel of land." R.C. 1509.73(C)(4) provides that the Commission's advertisement of the property for lease shall include the language of

the lease, including "special terms and conditions, if applicable, that apply to the lease because of specific conditions related to the parcel of land." Thus, these two passages suggest that the university may submit special terms and conditions to the Commission, and the Commission must include those conditions in the advertised lease.

Two considerations, however, place some doubt on this conclusion. First, under the quoted language, the special conditions must be based upon "specific conditions related to the parcel of land". This suggests that the conditions must arise from the physical characteristics or uses of the property or adjacent properties, and may not, for example, impose upon the lessor the university's general environmental protection policies that are not tied to the specific characteristics of the property to be leased. Second, Commission may construe this statutory language as providing it with authority to reject or to modify conditions submitted by the university. If the Commission takes this view, any conditions submitted by the university would be suggestions only, and the university would not control whether or in what form the conditions would appear in the advertised lease. Given these considerations, it may be advisable for the university to link its veto authority with its authority to submit special terms and conditions by informing the Commission that the university will veto the nomination unless the terms and conditions are included in the lease without modification.

Accordingly, we cannot conclude with certainty that special terms and conditions proposed by the university would appear in a lease, but the statutory language allows us to argue that the Commission must include the terms and conditions as submitted.

In the period prior to the Commission's adoption of rules, the University controls the terms and conditions of its leases. After the rules are adopted, the University can propose to the Commission special terms and conditions to be included in a lease that address specific conditions related to the parcel of land to be leased.

It is therefore possible to treat each individual campus and the parcels of land under the control of that campus differently. We are not aware of any provision of state law that would allow any other governmental authority in the state to impose a development policy on the University with the possible exception of mandatory pooling orders.

Please contact us if you have questions on the above or if we can assist further.

## **APPENDIX D – Note/Maps/Resources Provided by Greg Nadon, Geologist and Forum Presenter**

### **Notes by Greg Nadon:**

General Comments based on the Forum

- 1) Please remember that only very small fraction of wells that have been hydraulically fractured generate the problems widely reported. The vast majority of oil and gas companies employ ethical professionals who have no interest in destroying the ecology of the region in which they happen to be working. However, accidents will happen so considering risk is always important.
- 2) The primary concern should be to protect the drinking water supply for the cities and towns.
- 3) A suggestion was made that if the University has to enter a lease that it be a non-drilling lease. Please consider the opposite approach. Ohio University is the best equipped institution in southeastern Ohio to monitor drilling and production. We should take a leadership role in this regard.
- 4) Dust pollution. The dust from the sand used in fracking will not be significant. The size of particles used injected into wells is sand and the dust is a very minor by-product of handling the sand. A far larger silica problem will be dust raised from roads under high traffic loads.
- 5) The use of fresh water in the fracking. This appears to be a serious problem at first glance, however it is not. A typical fracking operation uses several million gallons of water (the numbers quoted vary from 3 to 8 million). Three million gallons represents 1 minute of average flow of the Hocking River. Care must be taken not to withdraw so much that the ecology suffers but the quantities of water are available. Withdrawal from subsurface sources is more problematic.

## The Hydrocarbon Potential of the Utica/Pt. Pleasant Under Athens County: A Geologist's Perspective

The following is based on publically available data from the web site of the Ohio Geological Survey and a pdf file of the most recent presentation of Ohio's Chief Geologist, Larry Wickstrom. I have slightly modified some of the maps based on my experience but they do not differ in any substantive way with respect to Athens County from those presented the Survey. New data will continue to be published, however the trends already apparent will likely not change in any meaningful way. I have also shown the outlines of Muskingum and Belmont Counties to show the contrast in geology between the Athens campus and those of Zanesville and Eastern. A final note - as always, opinions will vary.

The target for the current interest in exploration in eastern Ohio is the Pt. Pleasant Formation. This geologic unit, which lies directly below the Utica and on top of the Trenton Limestone, is composed of organic shale and limestone that were deposited in a relatively shallow sea approximately 420 million years ago.

Whether or not the Pt. Pleasant is drilled in any location depends on both geologic variables and the ability of an operator to deal with the ensuing economic risk. In order to justify the expense of drilling an operator has to have a reasonable expectation of recovering costs and making a profit. In order to minimize the economic risk geologists evaluate parameters such as:

1) Does the interval contain enough organic carbon to generate commercial quantities of hydrocarbons?

This can be determined by chemical analysis and is typically referred to as Total Organic Carbon (TOC). Values of TOC of at least 0.5% are required for a hydrocarbon source rock and values of >1% are more commonly preferred. Map 1 shows that the Pt. Pleasant under Athens County has enough organic carbon to be of economic interest.

2) Was there enough heat to form hydrocarbons from the organic carbon?

Hydrocarbons form when organic molecules are broken down through a combination of heat and time. High heat values over a short time frame will produce oil or gas as will low temperatures over a long time period. Temperature increases with depth and the Pt. Pleasant, which is currently at depths of between 4,000 and 6,000 feet below sea level (Map 2), was formerly more deeply buried. It is reasonable to expect that the organic carbon in the eastern part of Athens County is more mature than the western end.

The degree of organic maturity can be expressed in several ways. One measure is vitrinite reflectance (%R<sub>o</sub>) or, in this case, equivalent reflectance. True vitrinite is not present in Ordovician aged sediments but there are other measures of organic maturity that can be equated to %R<sub>o</sub> values. Values of 1.4 to 1.6 occur in rocks that are producing oil; higher values produce increasing amount of gas. Map 3 shows the maximum values measured from samples of the Pt. Pleasant collected in Ohio wells. Athens County lies within the region that can be expected to produce a spectrum of hydrocarbons from oil to natural gas and this is of economic interest.

3) Were hydrocarbons formed and is there potential for more?

This question can be answered using a technique termed pyrolysis in which a sample of rock is heated in an oven and the artificially stimulated amounts of hydrocarbons measured. The amounts of oil already formed are approximated by a value termed S1 and the amounts that could still be formed by a second value, S2. A good source rock has S1 values > 1.0 and rock with good hydrocarbon generative potential has S2 values > 5. Both S1 (Map 4) and S2 (Map 5) values indicate that Athens County is a region of higher economic risk for drilling.

Based on these data the Ohio Geological Survey geologists have identified a region that they term the 'core productive zone' that is bounded to the east by lower %Ro values and to the north and south by the S1 and S2 values. Athens lies south of this zone.

Two other considerations must be addressed before exploring for hydrocarbons in the shale play.

#### 4) Is there enough rock present to form an economic accumulation?

This question can be answered by mapping the thickness of the productive beds, which is termed net pay. Net pay is not the same as total thickness. For example a well may encounter 100 feet of a target rock but only 20 feet will produce hydrocarbons due to differences in organic content or rock properties that were a result of differing environments of deposition.

Detailed maps of pay thickness are not easily acquired. One reason is that different companies have different criteria for establishing pay zones. However, it is known that from a regional perspective the Utica/Pt. Pleasant sediments thin to the south as they begin to drape on to of a feature known as the Lexington platform. Anecdotal reports indicate that the Pt. Pleasant thins abruptly when traced south into Athens County. This probable reduction in net pay increases economic risk.

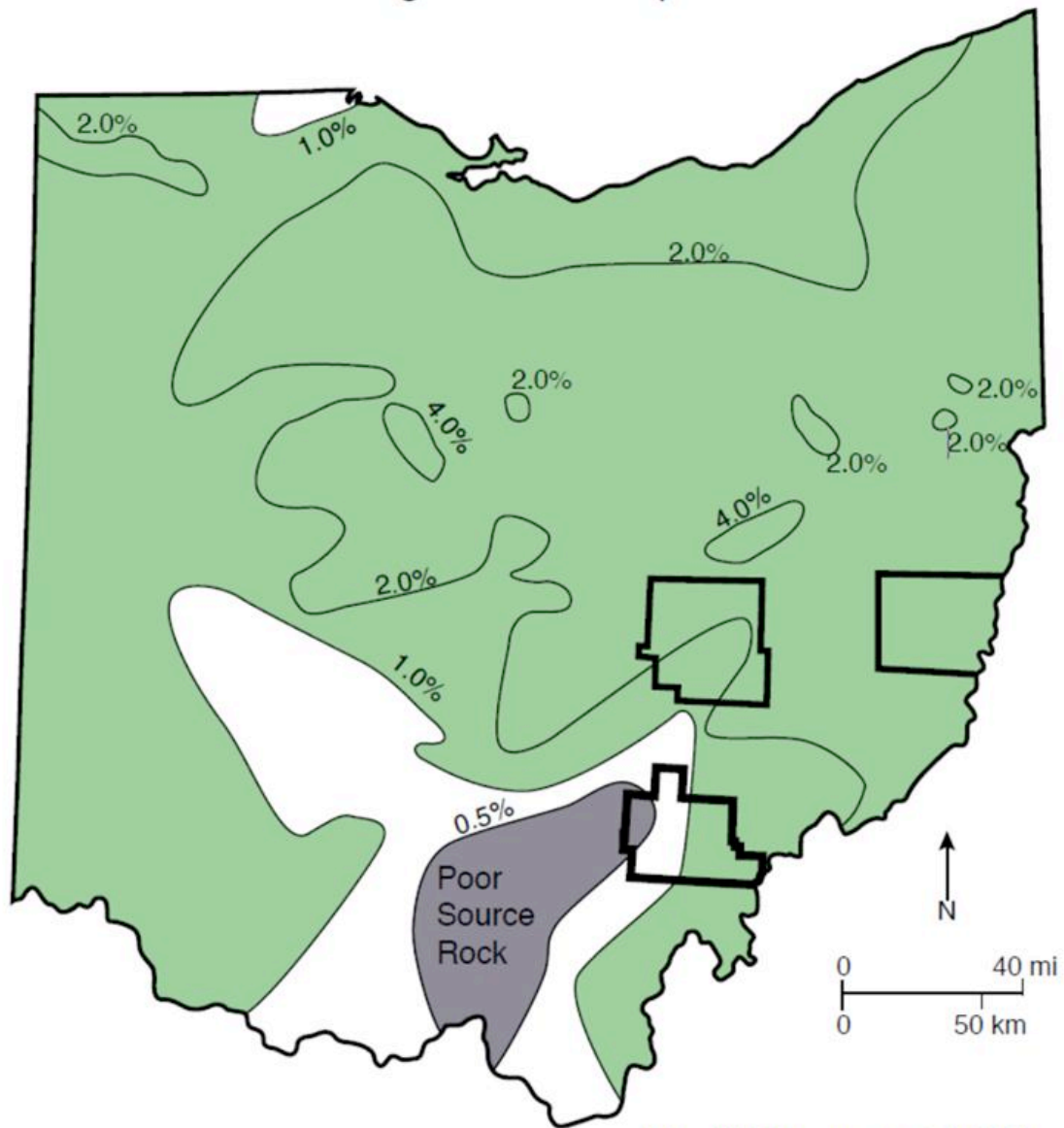
#### 5) Is the target deep enough to frack?

In order to use hydraulic fracturing the target zone has to be deep enough that the pressure of the overlying rock is sufficient to prevent fractures from propagating upward and to help expel the hydrocarbons. The goal of fracking is to enlarge fractures already present as a result of burial and tectonic forces and form smaller fractures that are linked. After the pressure is released the formation pressure helps expel the hydrocarbons into the well bore.

Different oil and gas companies have different cut-off limits for the minimum depth of a target based on the previous experience of the company and the preference of the geologists. The Pt. Pleasant in eastern Athens County is a viable target, however I cannot evaluate the minimum depth that would be reasonable.

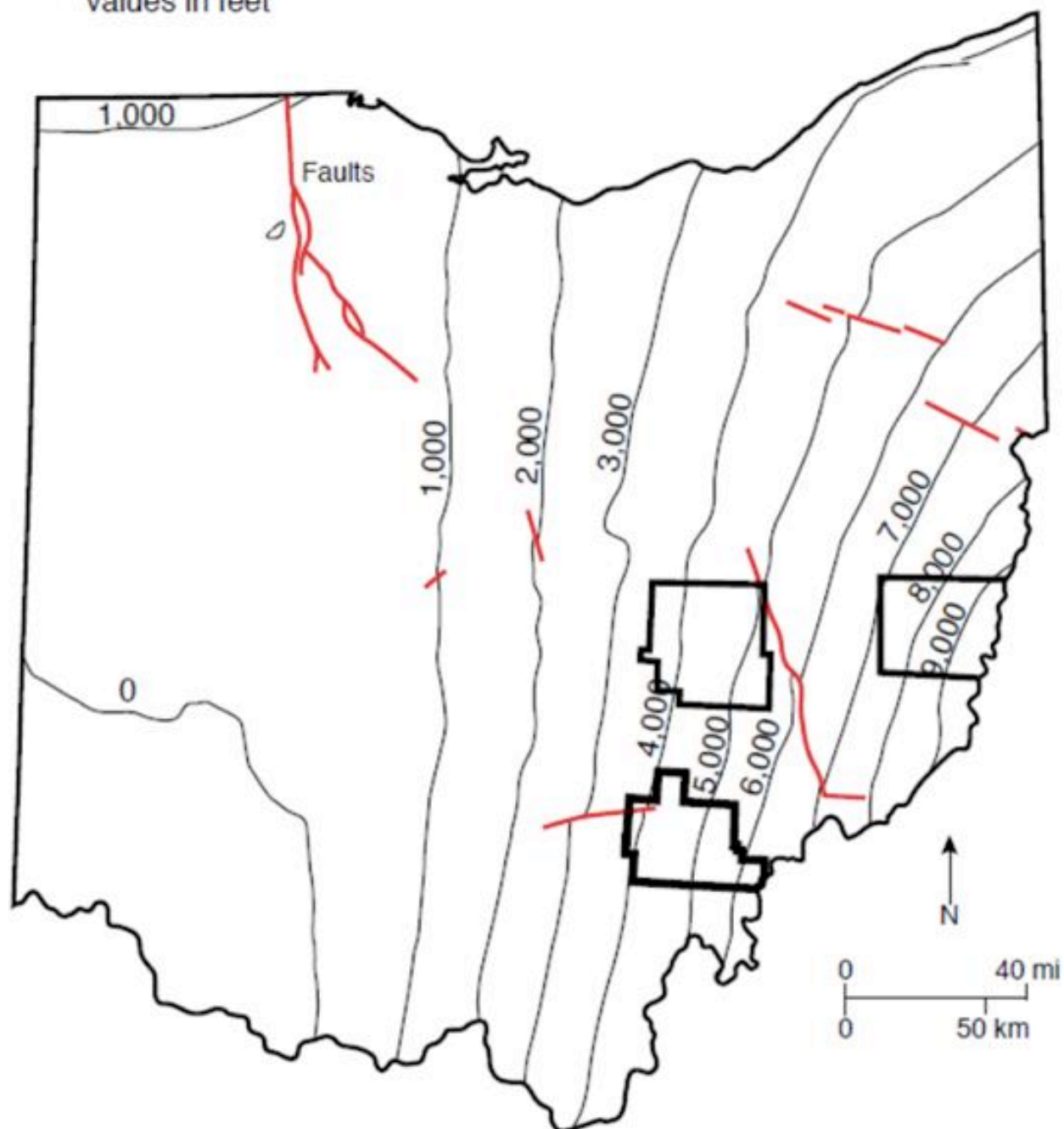
Athens County is presently a location of higher economic risk for Pt. Pleasant development that the core productive zone identified by the Ohio Geological Survey (Map 6). This only means that development will be delayed. The risk/benefit economic calculation changes if oil prices rise. Once the core production area is largely explored operators will move south until the risks outweigh the probable return.

## Maximum Total Organic Content per well



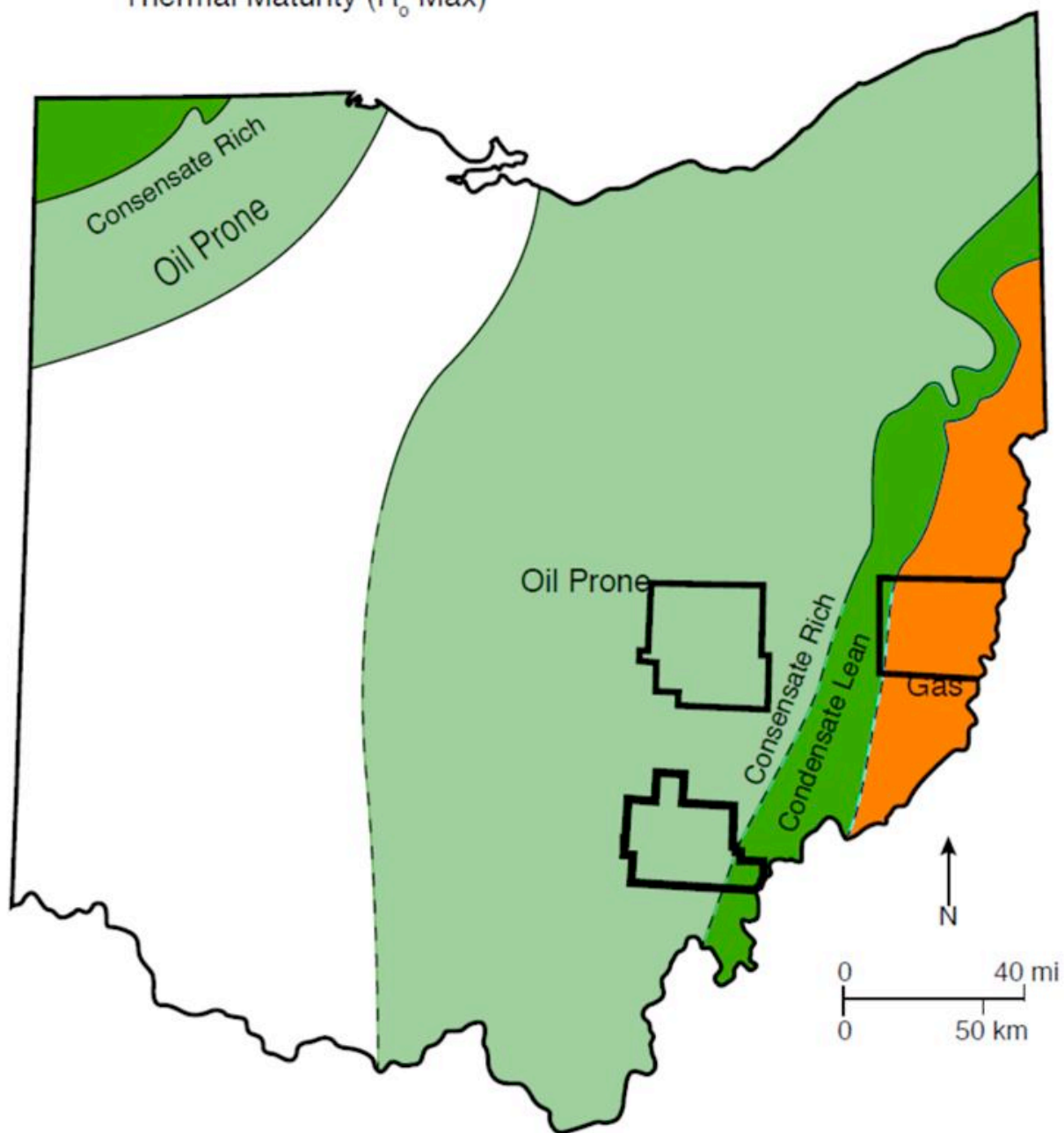
After Wickstrom et al. (2012)

Depth below sea level of the top of the Trenton Limestone  
values in feet



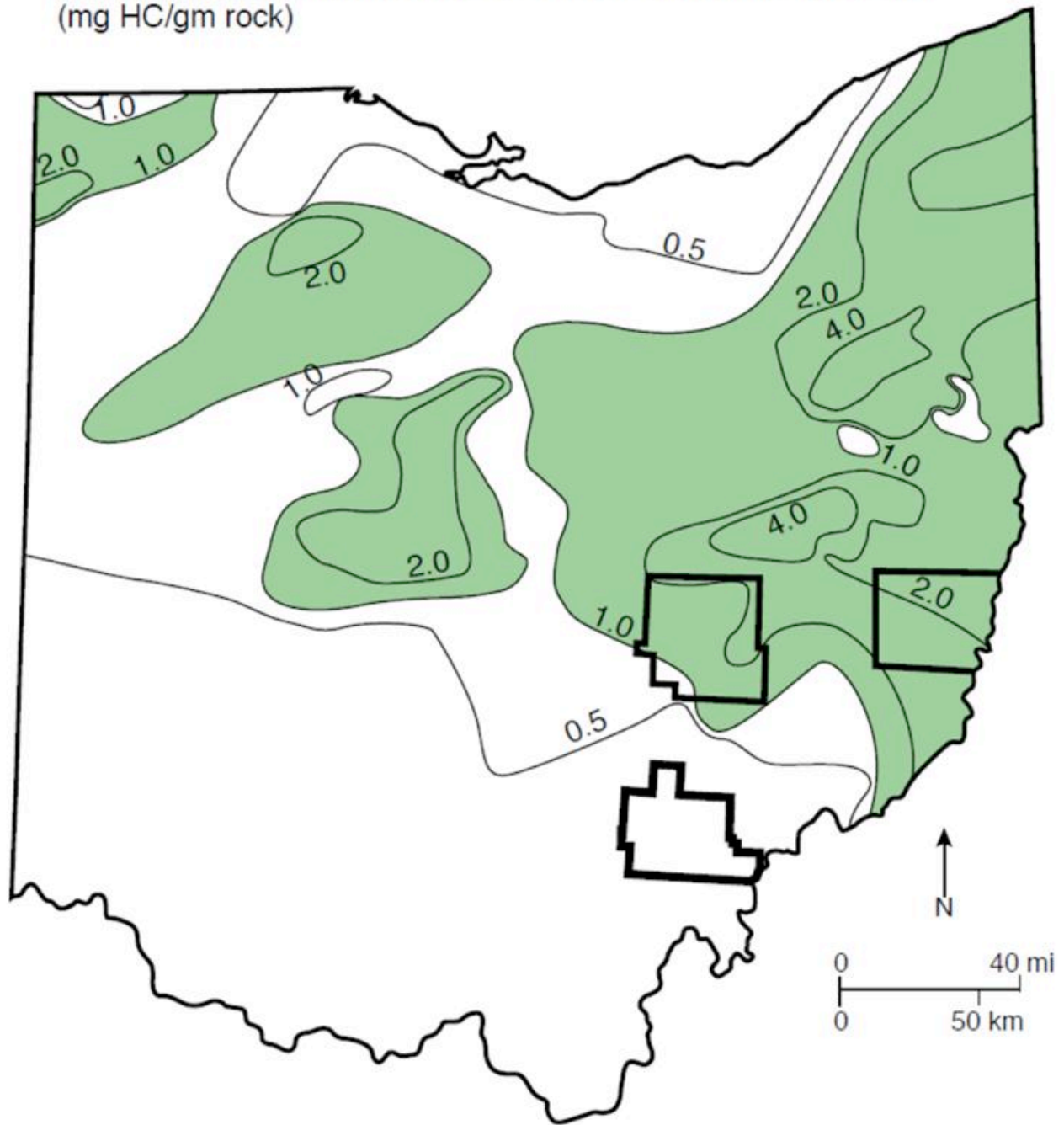
After Trenton/Black River Research Consortium Plate 2-6

Thermal Maturity ( $R_o$  Max)



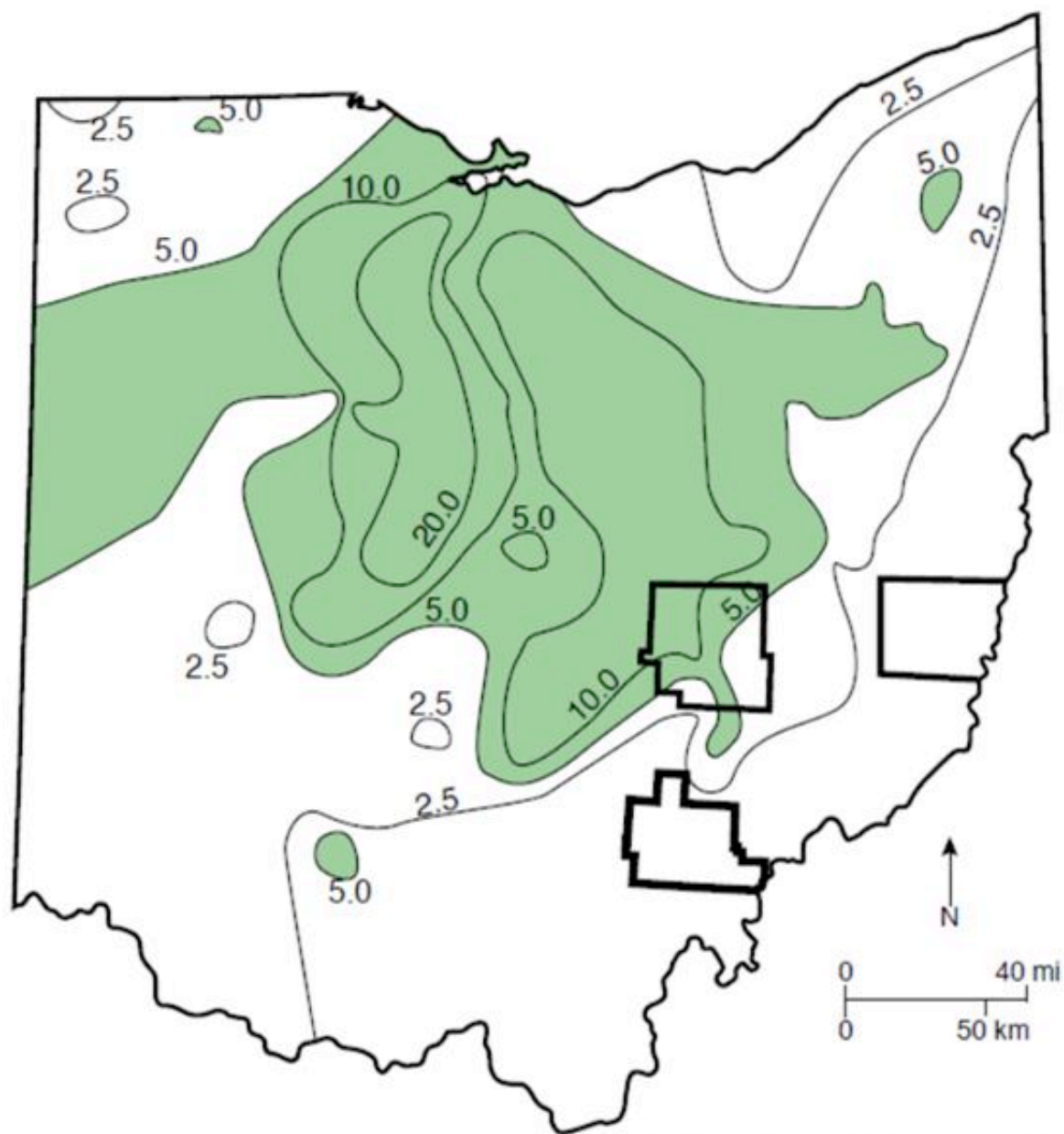
After Wickstrom et al. (2012)

Preliminary Map of Maximum Oil Generated Value (S1) per well  
(mg HC/gm rock)



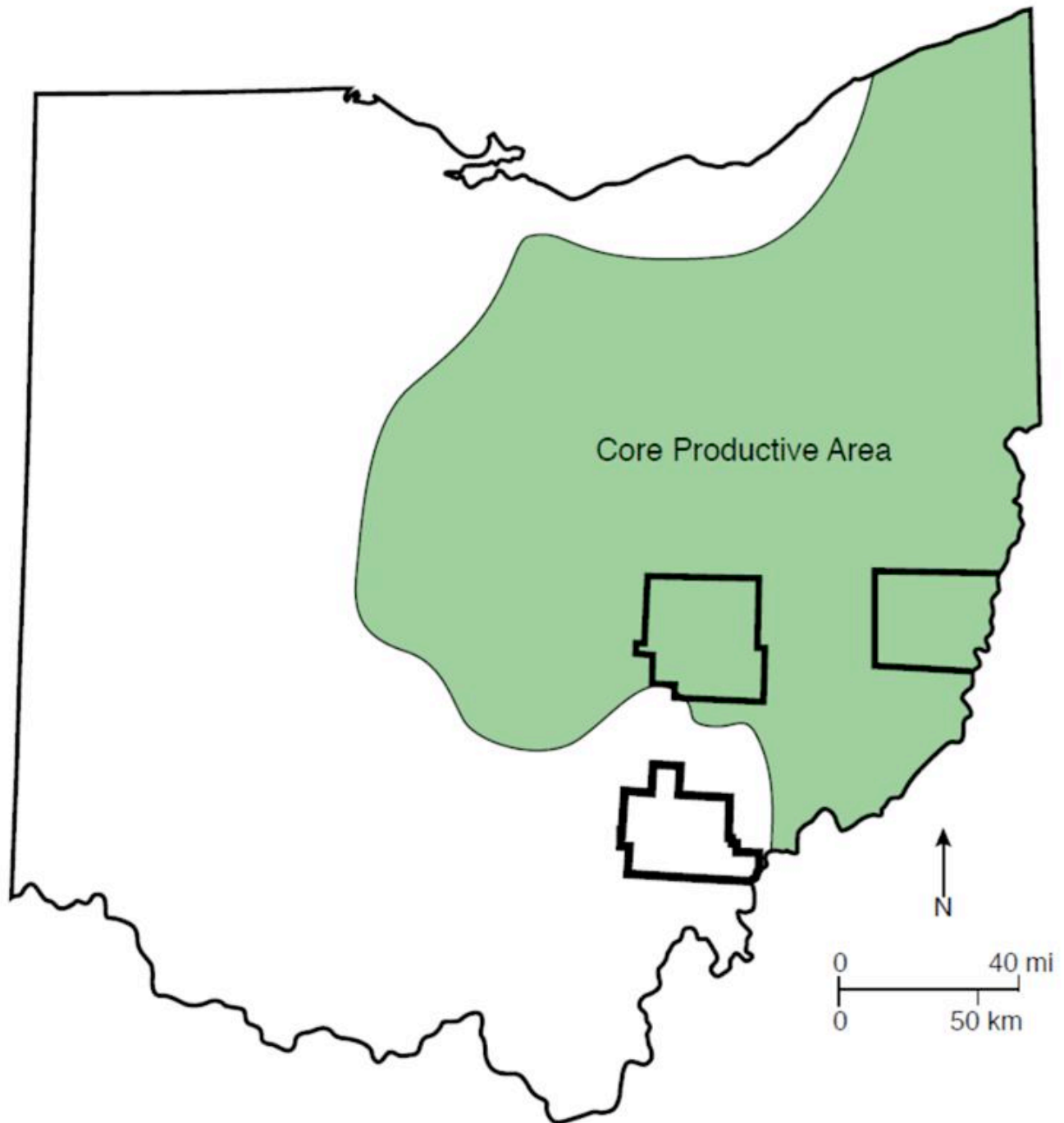
After Wickstrom et al. (2012)

Preliminary Map of Maximum Oil Generation Potential (S2) per well  
(mg HC/gm rock)



After Wickstrom et al. (2012)

“Core Productive” Zone as defined by the Ohio Geological Survey



After Wickstrom et al. (2012)

**APPENDIX E – Notes from Joe Adams, Forum Presenter**  
**Fracking Meeting Notes**  
**Joe Adams**  
**3/27/2012**

Safety is freedom from unintentional harm or risk

How safe is safe: 100? 75? 50?

95<sup>th</sup> percentile (i.e., doors/emergency escape)

Risk - frequency combined with severity

i.e. driving 58 vs 98

\* Both illegal

\* Both reduced safety

\* Same risk?

**Concerns**

- 1: Infrastructure
  - Roads – wear
    - Accident and frequency
  - Water Supply
    - Quality and quantity
  - Traffic (coal trucks)
    - Build their own
  - Electricity
    - Quantity needed
2. Waste Disposal
  1. Three methods
    - a. On site remediation
    - b. Off site remediation
    - c. Reinjection
3. Workplace Safety
  1. OSHA
  2. Typical oil rigs – dangerous
4. Pipelines – gathering lines (unregulated)
5. Emergency Access
  1. EMS
  2. Fire

**Regulatory Oversight**

- MSDS for injected material
- Licensing/permitting
- Enforcement

**Safety Bottom Line**

- If adequate controls are in place
- If they are properly enforced
- Fracking, like any other large scope industrial operation, can be conducted safely.

## **APPENDIX F – Notes from Bernhard Debatin, Forum Presenter**

*Oil and Gas Rights, Public Forum at Ohio University, March 27, 2012*

**Bernhard Debatin (Ohio University)**

### **Statement on General Environmental Considerations Regarding Fracking**

#### **1. Introductory Remarks**

Let me start with three introductory remarks before I get to the environmental considerations.

First, some definitions: When I say “fracking,” I mean the overall industrial process employed to conduct horizontal drilling and high volume hydraulic fracturing for the extraction of oil and gas from deep shale layers. This includes ancillary activities such as the transportation and delivery of water and fracking fluids, drilling muds, silica sands, solid and liquid wastes, and other chemicals to and from the drilling site. It also includes the technical infrastructure, such as the well pad and the drilling rig; the bore hole and the well casing; freshwater and wastewater tanks, pits, and sludge-ponds; compressors, tanks, and pipelines for the extracted gas and oil; as well as trucks and other equipment used in the process.

Second, we have recently learned from ODNR that Athens County seems to be outside of the productive part of the Utica Shale. This means that at least for now, the industry might not be too interested in drilling here. However, Athens County is still impacted by the issue of injection wells for toxic frack-water. Also, we should not forget that the ODNR map is based on rough estimates, which in this industry are wildly variable. Moreover, the map reflects the *status quo* of what is currently estimated as profitably recoverable. With constantly improving technology (“super fracking”) and rising energy prices, we’ll probably see the industry return to Athens County in the not so far future.<sup>1</sup>

Third, fracking is often presented as an economic blessing in the media and by politicians and the industry. However studies that stress the economic benefits associated with fracking have not been, for the most part, peer-reviewed and have been shown to overestimate the expected impact on local economic development. Moreover, they also mostly look at short-term benefits and tend to overlook the long-term impact. Therefore, these long-term costs are usually simply externalized and ignored in the cost/benefit analysis.<sup>2</sup>

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<sup>1</sup> See, for instance: G. Allen Brooks, “Musings: Are The Shale Resource Estimates Realistic Or Fantasy?,” *Rigzone*, March 29, 2012, [http://www.rigzone.com/news/article.asp?hpf=1&a\\_id=105581](http://www.rigzone.com/news/article.asp?hpf=1&a_id=105581).

<sup>2</sup> Thomas C. Kinnaman, “The Economic Impact of Shale Gas Extraction: A Review of Existing Studies,” *Ecological Economics*, 70 (2011): 1243-1249; see also: Amanda L. Weinstein and Mark D. Partridge, *The Economic Value of Shale Natural Gas in Ohio* (Columbus, Ohio: Ohio State University, Swank Program in Rural-Urban Policy Summary, 2011), <http://go.osu.edu/shalejobs>.

## 2. Environmental Concerns

Fracking, in short, means horizontal drilling and high volume hydraulic fracturing for the extraction of oil and gas trapped in deep shale layers. This is not your grandparents' little rocking horse oil well; it is a large-scale industry, a noisy, smelly, and dangerous workplace with a 24/7 frenzy of activity—and it is also toxic. Over 600 chemicals are used in drilling muds and fracking fluids, many of which are known to cause severe health problems, including cancer and chronic diseases. The most dangerous among them are benzenes and other volatile organic compounds.<sup>3</sup>

Proponents of fracking will tell you that this is merely a question of dilution: The chemicals make up only 1.5 to 4 percent of the fracking fluid, so they won't hurt you. That sounds convincing until you realize that we're talking about insanely large quantities. Depending on the site, a single fracking event requires somewhere between two and eight million gallons of water. For an average five million gallon frack job, we'd look at 100,000 gallons of chemicals. That's about 14 tank trucks full of toxic chemicals that need to be trucked to the fracking site, in addition to over 700 tank trucks of water. Residents in areas with fracking sites, such as Wetzel County, WV, learned the hard way that this not only takes a toll on roads and bridges, it also creates frequent traffic congestion and a heightened risk of accidents and spills.<sup>4</sup>

In addition to the transportation of water, chemicals, drilling muds, silica sands, and toxic wastewater, this industry also includes large, failure-prone technical apparatuses, such as the well pad and the drilling rig; the bore hole and well casing; freshwater and wastewater impoundments; and compressors, tanks, and pipelines for the extracted gas and oil. Spills, leaks, rig fires and explosions of tanks, pipelines or compressor station are not unusual, although they are rarely as dramatic as the 2010 BP Deepwater Horizon oil rig blaze in the Gulf of Mexico.

Based on previous experiences with leaks, spills, and accidents in Pennsylvania, Wyoming, Colorado, and Texas, it is safe to say that the most common dangers of fracking are water and air contamination. If OU were to allow drilling under the Ridges or a fracking company were to drill near University Estates (both options have been publicly discussed recently), our main drinking water source from the aquifers below the Hocking River would be in the immediate vicinity of the fracking wells. According to Anthony Ingraffea, a rock fracturing expert from Cornell University, cracked well casings are the most common culprit in aquifer contamination—and once the groundwater is polluted, it can't be cleaned up.<sup>5</sup>

Given our typical weather patterns, the Athens Campus of Ohio University would be downwind of these fracking sites. We would get an unhealthy mix of fugitive natural gas, volatile organic compounds, and diesel fumes, forming a

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<sup>3</sup> Michael Kelley, "The 10 Scariest Chemicals Used In Hydraulic Fracking," *Business Insider*, March 16, 2012, <http://www.businessinsider.com/scary-chemicals-used-in-hydraulic-fracking-2012-3>; see also U.S. House of Representatives Committee on Energy and Commerce, *Chemicals Used in Hydraulic Fracturing*, April 2011, <http://democrats.energycommerce.house.gov/sites/default/files/documents/Hydraulic%20Fracturing%20Report%204.18.11.pdf>.

<sup>4</sup> Al Blacevicius et al., "Fracking Experiences from 'Victory Field', Wetzel County, WV," *Slow Down Fracking in Athens County*, January 31, 2012, <http://slowdownfracking.wordpress.com/2012/01/31/fracking-experiences-wetzel/>.

<sup>5</sup> Chris Mooney, "The Truth About Fracking," *Scientific American*, October 19, 2011, <http://www.scientificamerican.com/article.cfm?id=the-truth-about-fracking>; Bernhard Debatin, "Cement Casing: The Weak Link of Fracking," *Slow Down Fracking in Athens County*, November 28, 2011, <http://slowdownfracking.wordpress.com/2011/11/28/cement-casing-the-weak-link-of-fracking/>.

dangerous ground-level ozone cloud. Researchers in Colorado found that these airborne toxic chemicals are emitted during all stages of the fracking process even under failure-free operation.<sup>6</sup>

Trucks would constantly drive back and forth, plugging up the freeway and State Route 682. In addition, the drilling and fracking operations would create a fair amount of noise and light pollution. “You can’t sugar-coat it ...you’re going to see about an 80-foot derrick, it’s lit up like a Christmas tree, it operates 24 hours a day, and there’s noise,” said Ohio Oil Council director Terry Fleming during a “Newswatch” discussion at the local WOUB station on February 28, 2012.<sup>7</sup>

### 3. Categories and Dimensions of the Environmental Impact

The environmental impact of fracking falls into two **main categories**, namely

- (1) the environmental impact during the normal, failure-free fracking process, and
- (2) the environmental impact due to accidents, spills, and leaks, caused by material failure, human error, a combination of both, or by illegal activities.

The environmental impact has two **main dimensions**:

- (a) the impact on the environment in general, that is, changes and damage to or actual contamination of air, soil, surface water, underground water, and the ecosystems and the organisms that depend on them, and
- (b) the impact on human health and well-being due to fracking-related activities under normal circumstances and in cases of accidents.

This allows us to look at the environmental impact in terms of a four-dimensional matrix:

<b>Category</b> <i>Dimension (Impact on)</i>	<b>1. Normal operation</b>	<b>2. Failures and accidents</b>
<b>a) General Environment</b>	<b>(1 a)</b>	<b>(2 a)</b>
<b>b) Human Health</b>	<b>(1 b)</b>	<b>(2 b)</b>

Table 1: Categories and Dimensions of the Environmental Impact

The following table provides a detailed breakdown of the different types of environmental impact by category and dimension (table 2).

<b>Category</b> <i>Impact on</i>	<b>1. Normal operation</b>	<b>2. Failures and accidents</b>
-------------------------------------	----------------------------	----------------------------------

<sup>6</sup> “...at each stage of production and delivery tons of toxic volatile compounds (VOCs), including BTEX, other hydrocarbons, and fugitive natural gas (methane), can escape and mix with nitrogen oxides (NOx) from the exhaust of diesel-fueled, mobile, and stationary equipment, to produce ground-level ozone.” (Theo Colborn et al., “Natural Gas Operations from a Public Health Perspective,” *International Journal of Human and Ecological Risk Assessment*, September 4, 2010, p. 4f., [http://www.endocrinedisruption.com/files/NaturalGasManuscriptPDF09\\_13\\_10.pdf](http://www.endocrinedisruption.com/files/NaturalGasManuscriptPDF09_13_10.pdf))

<sup>7</sup> See <http://woub.org/2012/02/28/newswatch-depth-fracking-frenzy-looks-environmental-downsides-and-economic-benefits>.

<b>a) General Environment</b>	<p><b><u>Water contamination and depletion</u></b></p> <ul style="list-style-type: none"> <li>• <b>Low-level ground- and surface water contamination</b> due to “normal” leakage</li> <li>• <b>Depletion of water resources</b> due to unregulated water withdrawal (up to 100,000 g.p.d. ) -- a single frack job requires 2-8 million gallons</li> <li>• <b>Disposal of toxic wastewater</b> in injection wells &gt; earthquakes and potential contamination of aquifers</li> </ul> <p><b><u>Air pollution due to</u></b></p> <ul style="list-style-type: none"> <li>• <b>Constantly escaping methane</b> &gt; greater greenhouse footprint than conventional gas or oil (Howarth et al. 2010)</li> <li>• <b>Other escaping volatile organic compounds (VOCs, incl. BTEX)</b> at any stage of the process (evaporating fracking fluids &amp; chemicals from wellheads, compressors, tanks, pipelines, and storage pits)</li> <li>• <b>Toxic waste evaporation pits</b> (Colborn et al 2010)</li> <li>• <b>Diesel fumes</b> from trucks, generators, and compressors</li> </ul> <p><b><u>Surface contamination</u></b></p> <ul style="list-style-type: none"> <li>• <b>Surface application</b> of toxic wastewater for dust and skid control on public roads (ORC 1509.226)</li> </ul> <p><b><u>Erosion and wear and tear due to</u></b></p> <ul style="list-style-type: none"> <li>• <b>Truck traffic</b> – one gas well can generate up to 1,300 round trips by trucks per site &gt; impact on infrastructure (roads, bridges)</li> <li>• <b>Pipeline construction</b> &gt; erosion and aesthetic problems</li> </ul>	<p><b><u>Water contamination and depletion</u></b></p> <ul style="list-style-type: none"> <li>• <b>Aquifer contamination</b> due to fracking fluids and/or methane traveling through cracked well casings (Ingraffea)</li> <li>• <b>Aquifer contamination</b> due to fracking fluids and/or methane traveling through cracks and crevices or through old gas/oil wells and coal mines (see EPA Pavillion Study)</li> <li>• <b>Illegal dumping</b> of wastewater into creeks and ponds</li> <li>• <b>Spills into creeks and ponds</b> due to accidents and leaking impoundments</li> <li>• <b>Depletion of water resources</b> due to illegal water withdrawal</li> </ul> <p><b><u>Air pollution due to</u></b></p> <ul style="list-style-type: none"> <li>• <b>Tank and pipeline explosions, rig fires, etc.</b></li> <li>• <b>Leaks and cracks</b> in wellheads, valves, compressors, tanks, and pipelines, etc.</li> <li>• <b>Evaporating fracking chemicals after spills</b> (volatile organic compounds)</li> </ul> <p><b><u>Surface contamination</u></b></p> <ul style="list-style-type: none"> <li>• <b>Surface spills</b> of fracking fluids due to accidents (trucks, pipelines, pumping stations)</li> <li>• <b>Spills or leakage</b> of wastewater from impoundments</li> <li>• <b>Spills of drilling muds and other solid fracking waste</b></li> </ul>
<b>b) Human Health</b>	<ul style="list-style-type: none"> <li>• <b>Silica dust</b> from sand additives; crystalline silica are sharp micro-particles that can cause cancer, silicosis, and heart disease.</li> <li>• <b>volatile organic compounds (VOCs, incl. BTEX)</b> &gt; known to be carcinogenic and toxic</li> <li>• <b>Diesel fumes</b> &gt; may cause asthma</li> <li>• <b>Truck traffic</b> &gt; noise and higher accident risk due to dense traffic, nuisance due to traffic jams</li> <li>• <b>Light and noise pollution from fracking site</b> &gt; impact on quality of life and well-being</li> <li>• <b>Change of natural environment to industrial landscape</b> &gt; impact on quality of life and well-being, aesthetics of environment</li> <li>• <b>Change in the social environment</b> &gt; community disruption, environmental and economic injustice, potentially higher crime rates</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Drinking water contamination due to failure of well casings</b> with carcinogenic and toxic soluble substances &gt; serious systemic health impact (Ingraffea, Bamberger &amp; Oswald 2012, Colborn et al 2010)</li> <li>• <b>Methane in drinking water</b> &gt; Severe impact on human health (see Oswald 2012, Colborn et al 2010)</li> <li>• <b>Air pollution with VOC</b> &gt; &gt; serious systemic health impact (Ingraffea, Bamberger &amp; Oswald 2012, Colborn et al 2010)</li> </ul>

Table 2: Environmental Impact by Category and Dimension

#### 4. Specific Effects of Fracking Chemicals on Human Health:

According to Colborn et al.,<sup>8</sup> many fracking chemicals can affect the skin and sensory organs, the respiratory system, gastrointestinal system and liver, and the brain and nervous system. Symptoms include eye and skin irritation, nausea and vomiting, asthma, coughing, sore throat, flulike symptoms, tingling, dizziness, headaches, weakness, fainting, numbness in extremities, and convulsions.

Fracking chemicals can also lead to chronic and long term organ and system damage of the immune system, kidneys, and cardiovascular system. They can cause cancer, mutation and disruption of normal reproduction and development. Other effects include damage of teeth and bones, change in weight and also sudden death. Additionally, the researchers also found strong ecological effects, particularly on aquatic and other wildlife.

These findings were corroborated by a recent study, showing that fracking fluids, methane gas exposure, and other gas-drilling related contamination can have a serious impact on the health of both humans and animals. The study, conducted by private practice veterinarian Michelle Bamberger and Robert E. Oswald of the Department of Molecular Medicine at Cornell University, investigated 24 different sites with gas wells, 18 of which were horizontal hydro-fractured wells. The researchers observed and documented severe changes in health of both humans and animals living close to these sites.<sup>9</sup>

## 5. Conclusions

The potential negative impact of fracking leaves us wondering how attractive Ohio University would be for students, faculty, and staff if we would have to live with the unintended consequences of this industry. It is difficult to put a price tag on the environment, on the destruction of natural beauty, on reduced quality of life, on community disruption, and on lost opportunities. But these issues are likely to translate into increased health care expenses, lower enrollment due to reduced attractiveness, fewer long-term jobs at Ohio University, and other damage to the local economy. It thus seems obvious that the short-term benefits of fracking would be easily outweighed by the long-term costs it creates. Therefore, the following conclusions should be kept in mind when considering leasing Ohio University-owned land:

1. Fracking endangers the natural beauty of the campuses and the surrounding areas, it puts the safety of our water, air, and soil at risk, and it poses a considerable risk to human health
2. If at all, Ohio University should only enter into **non-drilling leases** to minimize potential surface and groundwater contamination
3. All lease contracts Ohio University makes should include the **minimum precautions** as outlined in Appendix 1 of Faculty Senate Resolution on Hydraulic Fracturing, March 12, 2012.

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<sup>8</sup> Theo Colborn et al., "Natural Gas Operations from a Public Health Perspective," *International Journal of Human and Ecological Risk Assessment*, September 4, 2010, [http://www.endocrinedisruption.com/files/NaturalGas ManuscriptPDF09\\_13\\_10.pdf](http://www.endocrinedisruption.com/files/NaturalGas%20ManuscriptPDF09_13_10.pdf))

<sup>9</sup> Michelle Bamberger & Robert E. Oswald, "Impacts of Gas Drilling on Human and Animal Health," *New Solutions*, Vol. 22(1) 2012, p. 51-77.

## APPENDIX G

### Environmental Studies Advisory Board Resolution on Hydraulic Fracturing at Ohio University

The undersigned members of the Environmental Studies Advisory Board approved the following resolution:

As the fracking boom is reaching Southeast Ohio, it is important to remember that our region has experienced short-lived boom-to-bust resource extraction before. The coal boom of the late 19<sup>th</sup> and early 20<sup>th</sup> century left Southeast Ohio in a state of environmental degradation and deforestation. The economic benefits went one-sidedly to a few corporations and individuals, while the population remained impoverished and the environment degraded. Poverty, like the environmental impacts, extends to the present day with Athens County posting the highest poverty rate in the state at 32.8 percent.<sup>i</sup> A fracking boom without attention to and remediation of undesirable short- and long-term effects will likely have similarly serious consequences for our social and natural environment. Fracking has been presented by extractive industries to landowners, institutions, and the public at large as an inexpensive, environmentally-attractive way to extract gas and oil from deep-level shale.<sup>ii</sup> Furthermore, it has been presented as an important engine for local economic development. However, recent scientific studies indicate that all phases of fracking may result in significant negative effects to public and environmental health.<sup>iii</sup> In addition, the United States Environmental Protection Agency (USEPA) is currently conducting studies on existing fracking operations to identify health and environmental effects.<sup>iv</sup> Lastly, the studies that stress the economic benefits associated with fracking have not been, for the most part, peer-reviewed and have been shown to overestimate the expected impact on local economic development.<sup>v</sup>

The undersigned members of the Environmental Studies Advisory Board cannot, in good conscience, be passive bystanders in such an environmentally obtrusive and potentially hazardous activity as fracking, especially since we now have the tools to understand and regulate this resource extraction method. Scientists, engineers, policy makers and the public need more time to make intelligent and informed decisions about the full range of social, economic and environmental costs and benefits of fracking.

Despite the fact that fracking is an industrial method of extracting natural gas that involves the extended use of chemicals and hazardous materials during all phases of the process, fracking is exempted from relevant federal environmental regulations. State regulations are currently insufficient and still under development in Ohio. Meanwhile, policy research in New York State suggests that “underregulation can lead to unnecessary, tragic, and irreversible costs borne by those populations least equipped to bear them.”<sup>vi</sup>

We therefore voice our concern that fracking on land owned by Ohio University could have negative effects on the health and safety of our students, employees and the community at large. The well-being of Ohio University depends directly on the beauty and physical integrity of our campuses and their natural environment. Fracking-related contamination and pollution would significantly affect the university's ability to attract and retain students and faculty.

We urge the leadership of Ohio University to refrain from opening up its land to hydraulic fracturing until better knowledge about potential side effects—specifically water, air, and soil contamination—is available. Additionally, we request that the administration and the Board of Trustees include faculty, staff, students, and community members in all discussions related to hydraulic fracturing on University land.

However, should Ohio University ultimately choose—or be legally mandated—to lease its land for hydraulic fracturing, we strongly recommend that all of the precautions listed in the appendix be included and guaranteed in every lease contract.

The opinions expressed in this resolution are not necessarily those of the Voinovich School of Leadership and Public Affairs, Ohio University or The Ohio University Board of Trustees.

This resolution was signed by the following members of the Environmental Studies Advisory Board:

Dr. Elliot Abrams, Department of Sociology and Anthropology

Dr. Ted Bernard, Environmental Studies Program

Dr. Geoff Buckley, Department of Geography; Interim Director, Environmental Studies Program  
 Dr. Ariaster Chimeli, Department of Economics  
 Dr. Bernhard Debatin, E. W. Scripps School of Journalism  
 Dr. Jared DeForest, Department of Environmental and Plant Biology  
 Dr. Glen P. Jackson, Department of Chemistry and Biochemistry; Chair Environmental Studies Advisory Board  
 Dr. Natalie Kruse, Environmental Studies Program  
 Dr. Dina L. López, Department of Geological Sciences  
 Dr. Nancy Manring, Department of Political Science; Director, Environmental Studies Certificate Program  
 Dr. Bruce Martin, Recreation Studies Program  
 Dr. Michele Morrone, Department of Social and Public Health  
 Dr. Willem M. Roosenburg, Department of Biological Sciences  
 Dr. Nancy Stevens, Department of Biomedical Sciences

#### Appendix:

Minimum precautions to be included in any lease agreements between Ohio University and horizontal hydraulic high-pressure fracturing companies:

- Water withdrawal for fracking must be regulated to prevent draining of local streams, ponds, and lakes (currently, Ohio allows a single company to withdraw up to 100,000 gallons of water per day without permit).
- Tier 1-3 baseline water testing of all potentially affected ground water supplies must be conducted prior to initiation of fracking activities so that valid correlations can be made subsequent to the fracking process.
- The type and quantities of all chemicals used in the fracking process must be disclosed prior to use. Such transparency would guide health and environmental monitoring such that health issues associated with toxic chemical releases and spills could be addressed with the proper causal information (currently, Ohio law only requires after-the-fact disclosure and many chemical mixes remain undisclosed as "proprietary" formulas).
- Pressure testing of concrete well casings must be performed to ensure quality control, as this is the most common source of failure and water contamination;
- Vapor recovery systems must be implemented to prevent release of toxic gases into the air.
- Independent (third-party) air quality monitoring systems must be required at all fracking sites to identify the release of toxic fumes from wellheads, compressors, tanks, pipelines, and storage pits.
- Well gas must not be flared, but either captured or used to generate electricity via microturbines or other efficient devices.
- Noise and light pollution must be kept to a minimum; compressor stations and drilling pads must not be in visible or audible vicinity of Ohio University campuses.
- Drilling-mud-containing chemicals must be handled and disposed of as hazardous waste, and not be stored in open ponds.
- Frack wastewater-containing-chemicals must be handled and disposed of as hazardous waste.

## APPENDIX H – Presidential Response



Office of the President  
Culper Hall 108

March 9, 2012

Dr. Glen P. Jackson, Associate Professor  
Director, Forensic Chemistry Program  
Department of Chemistry and Biochemistry  
Ohio University  
175 Clippinger Labs  
Athens, OH 45701-2979

Dear Dr. Jackson,

The purpose of my letter is to thank you for the *Environmental Studies Advisory Board Resolution on Hydraulic Fracturing at Ohio University*. The information in the Resolution will be included in materials we will present to the Ohio University Board of Trustees at its April meeting.

We have worked closely with the faculty, students, and staff on the President's Advisory Council on Sustainability Planning (PACSP) and with the Ecology and Energy Conservation Committee (EECC) to develop a plan to gather input from members of the Ohio University community at each of our six campuses. As a part of those efforts, PACSP and EECC will host public forums on each Ohio University campus in the coming weeks. The forums are scheduled as follows:

- Chillicothe Campus – Monday, March 12 – 2 p.m. – Bennett Hall 145
- Southern Campus – Tuesday, March 13 – 2 p.m. – Bowman Auditorium
- Eastern Campus – Wednesday, March 14 – 2 p.m. – Shannon Hall 219
- Lancaster Campus – Thursday, March 15 – 2 p.m. – Brasee Hall 414
- Zanesville Campus – Monday, March 26 – 2 p.m. – Elson Hall 176
- Athens Campus – Tuesday, March 27 – 7 p.m. – Baker University Center – Baker Theater, Second Floor

We are grateful to the faculty, students and staff who serve on PACSP and EECC and to the members of the Environmental Studies Advisory Board for helping to frame a substantive conversation on this important issue.

Again, thank you for forwarding the Resolution to me, and for your commitment of expertise and time in developing it. Please share my response with the members of your Advisory Board.

Cordially,

Rodenick J. McDavis  
President

cc: Dr. Ben Stuart, Co-Chair, President's Advisory Council on Sustainability Planning  
Dr. Steve Scanlan, Chair, Ecology and Energy Conservation Committee  
Ms. Annie Laurie Cadmus, Director of Sustainability  
Mr. Stephen T. Golding, Vice President for Finance and Administration  
Mr. Harry Wyatt, Associate Vice President for Facilities  
Dr. Pam Benoit, Executive Vice President and Provost  
Dr. Kent Smith, Jr., Vice President for Student Affairs  
Mr. Eric R. Burchard, Director of Government Relations  
Ms. Renea Morris, Executive Director, University Communications and Marketing

## APPENDIX I – EECC Resolution



March 30, 2012

To: Dr. Roderick McDavis, President, Ohio University  
CC: Mr. Stephen Golding, Vice President for Finance and Administration  
Ms. Lisa R. Kamody, Chair, Administrative Senate  
Ms. Tracy Kelly, President, Graduate Student Senate  
Dr. Joe McLaughlin, President, Faculty Senate  
Mr. Kyle Triplett, President, Undergraduate Student Senate  
Ms. Traci Winchell, Chair, Classified Senate  
From: Ohio University Ecology and Energy Conservation Committee, Stephen J. Scanlan, Chair  
Re: Letter to protest against horizontal hydraulic fracturing on OHIO land

In 2011 the President's Advisory Council for Sustainability Planning (PACSP) unveiled the ambitious Ohio University Sustainability Plan that subsequently has been approved by President McDavis and the Board of Trustees. PACSP is currently drafting the Ohio University Climate Action Plan, which will keep OHIO in line with the goals of the American College and University Presidents' Climate Commitment, of which President McDavis is a signatory. Initiatives such as these reflect the strong commitment of Ohio University with regard to important environmental issues. Ohio University's commitment to these plans demonstrates its leadership among institutes of higher education, which play critical roles in promoting sustainability and responsible stewardship of public and private lands.

The Ecology and Energy Conservation Committee (EECC), in cooperation with the Office of Sustainability, has been charged with monitoring and implementation of these documents. The EECC is a standing committee at Ohio University with administrator, community, faculty, staff, and student representation. The mission and purpose of the EECC centers upon four roles:

1. Enhancing and preserving the development of a prosperous, equitable, and ecologically healthy campus and community
2. Improving the environment at Ohio University through monitoring, promoting, and supporting sound ecological, conservation, and sustainability practices in areas including but not limited to academics and education, administration, buildings and grounds, dining, energy, fundraising, procurement, and transportation
3. Promoting broad conservation practices on campus and in the lifestyles of Ohio University administration, faculty, students, staff, and visitors
4. Supporting the vital role that higher education plays in creating awareness of the interdependency of economic, environmental, and social forces challenging sustainability and ensuring its attainment.

The EECC therefore seeks to contribute to environmental well-being and the achievement of a more sustainable future through conservation on multiple fronts. It is with this authority and keeping with this mission that this committee hereby voices a letter of protest against the development of horizontal hydraulic fracturing (hereafter referred to as "fracking") operations on OHIO land.

The vision statement of the Ohio University Sustainability Plan claims that OHIO will be an active leader in campus and community sustainability and demonstrate the university's commitment to ecological citizenship, stewardship, and justice. Resource extraction processes in and of themselves present numerous challenges towards sustainability. When

brought to bear against the university's pledge toward sustainability and climate neutrality it is essential that university leadership live up to and not contradict its commitments. We believe that because of the numerous economic, environmental, health and other uncertainties regarding fracking and its potential negative impacts that the university should not rush to any decisions favoring the feasibility of this method of resource extraction.

We recognize that the demands of Ohio House Bill 133 have put the university in a difficult place and that a decision must be made in a timely manner concerning the use of university land. Furthermore, we understand the potential cost of losing control over potential mineral leasing rights on university property. However, such burdensome and unfairly imposed deadlines coerce the university into making decisions without having the full slate of knowledge about a process that could potentially be of great negative consequence to the health of the region and its citizens. Evidence from independent investigators and agencies such as the Environmental Protection Agency needs to be brought to bear before informed decisions can be made regarding the fracking process. State legislatures in Maryland, New Jersey, and New York have recognized this, and have placed a moratorium on fracking developments in those states. Other states continue to follow their lead. Thus, not only should fracking on OHIO land be opposed but, H.B. 133 itself calls for strong protest and a potential legal challenge from the university.

Ohio University, like many communities or individual landowners in the region certainly has a right and responsibility to consider the possibility of economic benefits from this process—something this committee has taken into consideration, especially given our current budgetary challenges. Furthermore, we understand the view that there could be great benefits accrued in the form of community development opportunities, endowed scholarships, faculty and staff positions, philanthropic interests, opportunities for research collaborations and funding, and new facilities and construction among others. This could especially be the case on regional campuses facing different types of challenges than in Athens. However, economic benefits that come with a price of irreparable environmental degradation, enormous social costs pertaining to health risks and the quality of life of our community, and ruinous damage to the mission and reputation of Ohio University have great potential for long-term harm and should not be pursued.

Furthermore, if history has shown us anything it is that the boom and bust cycle of resource extractive industries does little to improve the well-being of the regions in which they operate as profits leave and poor communities are left to clean up the mess (Billings and Blee 2000; Goodell 2012; Herringshaw 2004). This is especially the case in regions such as Appalachia where citizens are often unjustly forced to make the difficult decision of sacrificing environmental well-being for the hope of economic prosperity (Eller 2008; Scanlan 2011). True prosperity for the region can only come with a proper path of sustainability on environmental, social, and economic fronts of which Ohio University can be a model of research and teaching, just practices, and good citizenship. Too many uncertainties exist with regard to long-term impacts of extraction processes like fracking. The science is new, and what information exists on the process typically comes from or is funded by the industries involved. Therefore, the risk is too great to leave to the trust of the oil and gas industry whose only obligation is to act in its interest and that of its shareholders.

In perhaps a precursor to what may come to Ohio, Chesapeake Energy as one example was fined \$1.1 million in 2011 and another \$565,000 in 2012 by the Pennsylvania Department of Environmental Protection for contaminated water supplies resulting from gas drilling (Polson 2012). Stemming from this, water-related threats from fracking are one of the foremost concerns associated with the process, whether associated with tainted supply sources, mass consumption despite limited availability, or disposal of wastewater among other considerations (Ahearn 2012; Charman 2010; Reddy 2012). As our most precious natural resource it should go without saying that any activity or venture posing a threat to our region's water supply cannot in good conscience be pursued.

Further reinforcing the complexities of this issue and associated risk, there are numerous other environmental impacts and uncertainties as well that have been examined in a variety of studies. These range from health (Bamberger and Oswald 2012; Colborn et al 2011; Finkel and Law 2011) and climate change (Howarth et al 2011) to broader ecological concerns touching a number of fronts (Adams 2012; Levitt 2011) and the need for better governmental regulations to ensure the safety of the process (*Scientific American* 2012).

Coupled with these analyses are an extensive range of other areas of concern that we as a committee believe merit important consideration from the university before making a decision regarding fracking on OHIO land. These thoughts have been assembled through conversation among committee members and our colleagues across campus. These concerns can be summarized as follows:

- There is enormous potential for public embarrassment and backlash towards this issue. Such actions directly contradict the sustainability plan and make any efforts toward the President's Climate Action Plan now in process seem fraudulent and hypocritical. There is great potential for this to play out unfavorably not only in the local media but nationally and internationally as well. OHIO is known as a leader in sustainability efforts and that reputation could disappear with one action such as this.
- There is concern for detrimental impacts on student recruitment or faculty and staff retention who may question the university's commitment to sustainability in practice. Visitors are greatly impressed with what is happening here on the sustainability front, and students increasingly use this as a criterion in the college decision-making process.
- There are safety and infrastructural concerns regarding large trucks on roads not built for their use, noise from machinery, foul odors, and other side effects from natural gas extraction and transmission. Such aesthetically detrimental impacts are an important consideration particularly given the beauty and unique ecosystem that is Appalachia.
- The many features that attract outsiders to the region and generate much revenue for its citizens such as local foods and organic farming, outdoor recreation, among other things could be irreparably harmed by this industry. This could potentially have a negative economic effect perhaps not considered in the cost-benefit analyses of this issue.
- Environmental and economic justice concerns pertaining to the disproportionate share of hazards and ecological damage being thrust on those with the least economic or political power is also of great concern. The Appalachian region has long been exploited and this seems to be yet one more case where poor and working class families have been offered a "buy out" that supposedly will compensate them for the destruction of their land and living with the risks of ecological destruction.
- The gas industry employs an army of lobbyists, legal experts, and PR specialists to make fracking sound wonderful and fair and that the boon will benefit all. It is wise to remain skeptical of corporate spin and "greenwashing" no matter how much good may be claimed.

In closing, the Ohio University Mission claims that we are distinguished by our "beautiful Appalachian setting" and that "our Athens Campus offers students a residential learning experience in one of the nation's most picturesque academic settings" (<http://www.ohio.edu/focus/>). If the University truly believes in the beauty of Appalachia then fracking on OHIO or any land in the region cannot be tolerated, for anything else would be at best hypocritical. As a public university OHIO has an obligation to protect the community in which it resides. We have a responsibility to take the higher road and promote dialogue on important issues and serve as a moral compass apart from the political and business communities that have their own agendas. We therefore ask the Office of the President and the Ohio University Board of Trustees to actively take a stand on this issue and not allow fracking on OHIO land and also challenge the burdens of H.B. 133. By being a leader on this front OHIO can live up to its broader mission and speak for sustainability and the common good of the university and greater communities.

Thank you very much for your consideration and your willingness to move forward with dialogue as a campus community on this issue. Should you wish to discuss any of the above or if our committee can be of any assistance in any way please do not hesitate to contact Stephen Scanlan via email at [scanlans@ohio.edu](mailto:scanlans@ohio.edu) or telephone at 593-1350, ext. 1384.

The following members of the Ecology and Energy Conservation Committee have signed this letter of protest.  
Ms. Rachel Ackerman, Secondary Science Education and Environmental Studies Certificate, Undergraduate Student Senate  
Mr. Kyle Kingma, Environmental Studies, Graduate Student Senate

Mr. Paul Logue, Athens City Planner and Community Representative  
 Ms. Terri Nelson, Manager, Southeastern Ohio Regional Library Depository and at-large Administrative Representative  
 Dr. Jill Rosser, Department of English, Faculty Representative  
 Dr. Stephen J. Scanlan, Department of Sociology and Anthropology and Committee Chair  
 Dr. Hogan Sherrow, Department of Sociology and Anthropology, Faculty Representative  
 Mr. Henry Woods, Campus Refuse and Recycling, Classified Senate

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## APPENDIX J

Sense of the Senate Resolution  
on Hydraulic Fracturing on Land Owned by Ohio University  
Finance & Facilities Committee  
March 12, 2012  
First Reading

Horizontal high-pressure hydraulic fracturing of oil and gas, also known as fracking, is an extractive industry that may soon come to Southeast Ohio and our university. Our region has experienced short-lived boom-to-bust resource extraction before. The coal boom of the late 19<sup>th</sup> and early 20<sup>th</sup> century left Southeast Ohio in a state of environmental degradation and deforestation. The economic benefits went one-sidedly to a few corporations and individuals, while the population remained impoverished. The consequences are still tangible 100 years later. A fracking boom without attention to and remediation of undesirable short- and long-term effects may result in have similarly devastating consequences for our social and natural environment.

Whereas fracking is an industrial method of extracting natural gas involving the extended use of chemicals and hazardous materials during all phases of the process, but relevant federal environmental regulations do not apply to fracking and state regulations are still under development and in their current form insufficient and inconsistent (see appendix (1) for a list of unregulated desiderata);

Whereas fracking has been presented by extractive industries to landowners, institutions, and the public at large as an inexpensive, environmentally attractive way to extract gas and oil from deep-level shale; and

Whereas studies show that projections about the economic benefits seem to overestimate the expected impact on local economic development and an increasing number of studies indicate that fracking, in all phases of the process, may result in significant negative effects on the health and well-being of humans and animals, and may cause serious damage to our environment, particularly to water, soil, and air (see appendix (2));

Whereas Ohio University and its regional campuses gain their attraction from and depend directly on the beauty and physical integrity of our natural environment and fracking-related contamination and pollution would significantly affect the university's ability to attract and retain students and faculty;

Whereas Ohio University President McDavis has publicly expressed his reservations against fracking on public land—the Wayne National Forest—until all risks are assessed and assurances of the safety of the local water supply and the local economy can be provided (see appendix (3));

Be it resolved that Ohio University refrain from opening up its land to hydraulic fracturing until better knowledge about potential side effects—specifically water, air, and soil contamination—is available; That Ohio University support every effort to maintain and promote safe, sustainable, and environmentally friendly activities on Campus and on university-owned land to preserve the health and safety of its students, employees and the community;

That if Ohio University should ultimately choose—or be legally mandated—to lease its land for hydraulic fracturing, all of the precautions listed in appendix (1) be included and guaranteed in every lease contract.

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## Appendix D Endnotes:

- <sup>i</sup> Ohio Department of Development. (2011). *Ohio Poverty Report. April 2011*
- <sup>ii</sup> See, for example, Chesapeake Energy webpage at <http://www.chk.com/Pages/default.aspx>; ODNR webpage at <http://www.ohiodnr.com/mineral/shale/tabid/23415/Default.aspx>; and the Ohio Oil and Gas Association at <http://ooga.org/>.
- <sup>iii</sup> See, e.g.: Theo Colborn, Carol Kwiattkowski, Kim Schultz, and Mary Bachran, "Natural Gas Operations from a Public Health Perspective," *Human and Ecological Risk Assessment* 17(2011), 1039-1056; Madelon L. Finkel, "The Rush to Drill for Natural Gas: A Public Health Cautionary Tale," *American Journal of Public Health* 101(2011), 784-785; Michelle Bamberger and Robert E. Oswald, "Impacts of Gas Drilling on Human and Animal Health," *New Solutions* 22(2012) 51-77, accessed March 8, 2012, [dx.doi.org/10.2190/NS.22.1.e](http://dx.doi.org/10.2190/NS.22.1.e); Robert W. Howarth, Renee Santoro, and Anthony Ingraffea, "Methane and the Greenhouse-Gas Footprint of Natural Gas from Shale Formations," *Climatic Change* 106 (2011): 679-690, accessed March 8, 2012, [doi:10.1007/s10584-011-0061-5](http://dx.doi.org/10.1007/s10584-011-0061-5); Robert W. Howarth, Anthony Ingraffea, and Terry Engelder. "Natural Gas: Should Fracking Stop?" *Nature* 477 (2011): 271-275, accessed March 8, 2012, [doi:10.1038/477271a](http://dx.doi.org/10.1038/477271a); and Chris Mooney. "The Truth about Fracking." *Scientific American* 305 (2011): 80-85.
- <sup>iv</sup> See <http://www.epa.gov/hydraulicfracture/>
- <sup>v</sup> Thomas c. Kinnaman, "The Economic Impact of Shale Gas Extraction: A Review of Existing Studies," *Ecological Economics*, 70 (2011): 1243-1249; see also: Amanda L. Weinstein and Mark D. Partridge, *The Economic Value of Shale Natural Gas in Ohio* (Columbus, Ohio: Ohio State University, Swank Program in Rural-Urban Policy Summary, 2011), accessed March 8, 2012, <http://go.osu.edu/shalejobs>.
- <sup>vi</sup> Emily C. Powers, "Fracking and Federalism: Support for an Adaptive Approach that Avoids the Tragedy of The Regulatory Commons," *Journal of Law and Policy*, 19(2011), 913-971.