



MARCELLUS SHALE SAFE DRILLING INITIATIVE STUDY

PART I

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EXECUTIVE SUMMARY (to be added)

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Section I – Overview

A. Marcellus Shale

Geologists have long known about the gas-bearing underground formation known as the Marcellus Shale, which lies deep beneath portions of the Appalachian Basin, including parts of Western Maryland. Until advances in horizontal drilling and hydraulic fracturing, however, and the combination of these two technologies, few thought that significant amounts of natural gas could be recovered from the Marcellus Shale. Drilling in the Marcellus Shale using horizontal drilling and high-volume hydraulic fracturing began around 2005 in Pennsylvania and the number of wells has since increased rapidly.

As the use of hydraulic fracturing increased, so did concerns about its potential impact on public health, safety, the environment and natural resources. Exploration for and production of natural gas from the Marcellus Shale in nearby states have resulted in injuries, well blowouts, releases of fracturing fluids, releases of methane, spills, fires, forest fragmentation, damage to roads, and evidence of contamination of ground water and surface water. Other states have revised or are in the process of reevaluating their regulatory programs for gas production or assessing the environmental impacts of gas development from the Marcellus Shale. Research on the Marcellus Shale by governmental entities, academic organizations, environmental groups and industry is currently underway focused on drinking water, natural resources, wildlife, community and economic implications, production technologies and best practices.

B. Developments in Maryland

Maryland Departments of the Environment and Natural Resources each have roles in the evaluation of natural gas projects and would be involved in any future permitting decisions for drilling in the Marcellus Shale.

The mission of the Maryland Department of the Environment is to protect and restore the quality of Maryland's air, water, and land resources, while fostering smart growth, economic development, healthy and safe communities, and quality environmental education for the benefit of the environment, public health, and future generations. In addition, MDE is specifically authorized by statute to issue permits for gas exploration and production.

The Department of Natural Resources leads Maryland in securing a sustainable future for our environment, society, and economy by preserving, protecting, restoring, and enhancing the State's natural resources. The Department of the Environment is also

required to coordinate with the Department of Natural Resources in its evaluation of the environmental assessment of any proposed oil or gas well.

MDE's regulations had not been revised since 1993 and thus were written before some of the advances in technology and without the benefit of more recent research. Maryland law allows MDE to place in a permit conditions that the Department deems reasonable and appropriate to assure that the operation shall not only fully comply with the requirements of the law, but also provide for public safety and the protection of the State's natural resources.

Beginning in 2010, applications were filed for permits to produce gas from the Marcellus Shale in Maryland using horizontal drilling and high volume hydraulic fracturing. In the 2011 legislative session, bills were introduced regarding further study and development of regulations before permits could be issued. A bill passed the House that would have funded the study by assessing a fee on those who hold gas leases in Maryland, but it died in the Senate committee at the close of the session. In response, the Governor issued the Marcellus Shale Safe Drilling Initiative in Executive Order 01.01.2011.11 on June 6, 2011.

C. The Executive Order and the Advisory Commission

Executive Order 01.01.2011.11 directs the Maryland Department of the Environment (MDE) and the Department of Natural Resources (DNR) to assemble and consult with an Advisory Commission in the study of specific topics related to horizontal drilling and hydraulic fracturing in the Marcellus Shale. The Advisory Commission convened on August 6, 2011, and includes a broad range of stakeholders and representatives from western Maryland. Represented are the scientific community, the gas industry, business, agriculture, environmental organizations, citizens, and government. See Appendix A for a list of Commissioners.

The Executive Order tasks MDE and DNR, in consultation with the Advisory Commission, with conducting a three-part study and reporting findings and recommendations. The Commission is staffed by DNR and MDE. The completed study will include:

- i. By December 31, 2011, a presentation of findings and related recommendations regarding the desirability of legislation to establish revenue sources, such as a State-level severance tax, and the desirability of legislation to establish standards of liability for damages caused by gas exploration and production;
- ii. By August 1, 2012, recommendations for best practices for all aspects of natural gas exploration and production in the Marcellus Shale in Maryland; and

- iii. No later than August 1, 2014, a final report with findings and recommendations relating to the impact of Marcellus Shale drilling including possible contamination of groundwater, handling and disposal of wastewater, environmental and natural resources impacts, impacts to forests and important habitats, greenhouse gas emissions, and economic impact.

This document is Part I of the study, a report on findings and recommendations regarding sources of revenue and standards of liability.

D. The Work of the Advisory Commission

For this initial phase of the study, the Advisory Commission was established and met in person on three occasions: August 4, October 7, and November 15. Meetings were held in Western Maryland. An additional meeting was held by conference call on [INSERT DATE]. The Advisory Commission adopted the following statement of goals to govern its consideration of the topics: [DELETE IF THE GOALS HAVE NOT BEEN ADOPTED]

The Marcellus Shale Safe Drilling Initiative Advisory Commission will assist State policymakers and regulators in determining whether and how gas production from the Marcellus Shale in Maryland can be accomplished without unacceptable risks of adverse impacts to public health, safety, the environment, and natural resources. To guide its deliberations, the Advisory Commission adopts and will refer to the following goals.

Goal #1: Support a healthy, sustainable economy and environment.

Goal #2: Minimize and, if possible, eliminate air, water and land contamination and other short-term and long-term adverse impacts.

Goal #3: To the extent adverse impacts cannot be eliminated, ensure that those who suffer negative impacts are appropriately compensated and damage is mitigated.

Goal #4: Ensure that the citizens of Maryland, especially those most impacted by the industry, receive significant benefits from gas production.

Goal #5: Acquire sufficient baseline information so that Maryland has an understanding of current surface water and ground water availability and quality, and air quality.

Goal #6: Ensure adequate State oversight of compliance and environmental conditions and sufficient resources to support those activities.

Goal #7: Advocate continuous improvement in regulating gas exploration and production.

Resources were provided to the Commissions through MDE's web page, including articles from scientific journals, government publications, industry standards and

guidelines, and publications and reports by non-governmental organizations. These included the New York State Department of Environmental Conservation, Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (Revised Draft 2011), the Pennsylvania Governor's Marcellus Shale Advisory Commission Report (2011), and The SEAB Shale Gas Production Subcommittee: Ninety-Day Report (August 11, 2011). The Secretary of MDE provided an initial briefing on Marcellus Shale issues, and staff prepared briefing memoranda on revenue and liability issues. Members of the public submitted comments to Commission. Lastly, the Commissioners themselves, a well-informed and diverse assemblage, shared information and brought their expertise to bear.

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Section II - Revenue

A. Introduction

The Executive Order requires the Departments to report on the desirability of establishing:

- one or more sources of revenue, such as a State level severance tax or other assessment, to fund
- State activities relating to hydraulic fracturing - including impact assessments, research, broad area monitoring, and remediation where no liable entity can be identified.

This section of the report addresses both items, in reverse order. For State impacts, the Departments examined a wide variety of sources describing potential environmental and natural damages from Marcellus Shale drilling and related operations. For sources of revenue, the Departments investigated Maryland's general taxing practices; practices specific to gas production; permit fees; and a fee for State activities relating to hydraulic fracturing that must be completed before drilling starts, such as collecting baseline resource data. In consultation with the United States Geological Survey, the Departments have also preliminarily developed a rough estimate of the amount of potential revenue from the Marcellus Shale play in Maryland. The Departments' findings and a potential recommended cost and revenue structure are presented below.

B. State Activities Relating to Hydraulic Fracturing

The impacts of hydraulic fracturing occur both on and off the permit site. In order to assess these impacts, the following information and actions are required: pre-drilling onsite data, regional background data, and monitoring and enforcement, at the pre-drilling, drilling, fracking, and production, and post-production stages.

Impacts Associated with a Specific Well or Site

On-site impacts are the immediate actual and potential impacts from the drilling operation.

Pre-Drilling

The permit applicant is required to provide pre-operational data for the site will be needed so that, if impacts occur, they can be identified and addressed. The permit

applicant will be required to provide the baseline data for the site and immediate environs. The applicant is responsible for providing this information at its own expense. The expense to the Departments will include the cost of reviewing the data presented by the permit applicant.

Drilling, Fracking, Production and Post-Production

The permittee will be required to follow regulations and to monitor, report and correct impacts associated with the drilling, fracking, production and post-production. These could include:

- Site-specific surface and groundwater monitoring
- On-site presence of a State or State-certified inspector during drilling and fracking, paid for by the permittee
- Construction of new roads and pipelines in accordance with regulations and permit conditions
- Periodic testing of nearby public and private water wells
- Recordkeeping and reporting to document that all wastes, including flow-back, are properly transported, treated, and disposed of
- Repair of public facilities (roads, road signs, etc.) damaged by vehicles traveling to or from the drilling site
- Remediation of site-related surface or ground water contamination
- Remediation of site-related natural resource damages – short term, long term
- Proper plugging/sealing of well if it is not going into production or after production
- Removal of temporary facilities and equipment and partial reclamation of the site
- Full reclamation of the site

The permittee will be responsible for performing these actions at its own expense.

The State could incur expenses for additional activities, such as:

- Increased truck traffic enforcement by Maryland State Police Commercial Vehicle Enforcement Division

Non-Site Specific (General or Regional) Impacts

The hydraulic fracturing operation may have impacts that extend beyond the site. In order to assess these impacts, the Departments first must develop pre-drilling baseline data so that, if impacts occur, the impacts can be identified and addressed.

Pre-Drilling

Baseline studies would include:

- Regional surface and groundwater water quality data
- Regional air quality data
- Collection of regional fishery, wildlife, habitat and other environmental data

The costs to the Departments will be the costs of collecting and interpreting the baseline data.

Drilling, Fracking, Production and Post-Production

There may be impacts on natural resources and the environment from gas development and production that cannot be attributed to a specific permittee or party. Impacts may occur on the State and local level. The State could incur expenses for additional activities, such as:

- Increased truck traffic enforcement by Maryland State Police Commercial Vehicle Enforcement Division
- Repair of State roads
- Regional surface and groundwater monitoring
- Investigating incidents of environmental impact or damage to determine cause and whether it can be attributed to a particular well site or permittee (who can then be billed)
- Mitigation/remediation of contamination from drilling mud, drill cuttings, fracking fluid, gas, etc.
- Mitigation/remediation of any damages or impact on public water supplies
- Mitigation/remediation of natural resource damages – both short term and long term
- Restoration of natural resources and ecological resources and services
- Response to seepages of gas or fluid that appear to have a connection to gas well activity
- Investigations to determine which new technologies and management practices should be required for development of deep gas reserves in the safest, most effective and environmentally responsible manner.

The probability of occurrence of a significant adverse environmental impact on important resources is unknown; hydraulic fracturing in the Mid-Atlantic region is a relatively new phenomenon. However, such impacts, should they occur, will be expensive to address. Consider a hypothetical example: contamination by salts of a drinking water aquifer used by a community of 1,000 people in 400 homes, with an average daily demand of 100,000 gallons per day. Two options, one for a community was served by a public water system and one for a community with individual wells, with cost estimates, are described below:

Option I: If the community was served by a public water system whose wells have become contaminated, the system could install a reverse osmosis treatment system

- Estimated Capital Cost = \$5,000,000 (including required pre-treatment)
- Additional Operation and Maintenance (O&M) Cost = \$300,000 per year
- Present Value of O&M (at 4% for 20 years) = $300,000 \times 13.5903 = \$4,077,090$
- **Total Estimated Cost is approximately \$9,077,000**

Option II: If the community was served by individual wells which became contaminated, but a public system (assumed for purposes of the hypothetical to be 4 miles away) with sufficient quantities of clean water is available, water could be provided by that system

- Force Main Estimated Cost = $21,120 \text{ LF} \times \$100 \text{ per LF} = \$2,112,000$
- Pumping Station = \$1,000,000
- Storage tank and distribution system = \$3,000,000
- Estimated Capital Cost = \$6,112,000
- Additional O&M Cost = \$300,000
- Present Value of O&M = \$4,077,090
- **Total Estimated Cost is approximately \$10,190,000**

The local governments could incur expenses for additional activities, such as:

- Increased local law enforcement (both traffic and crime)
- Increased local emergency services (fire and rescue first responders)
- Increased demand for health services
- Public education specific to the shale gas industry
- Other demands for social services
- Repair of local roads
- Maintenance and improvement of community social wellbeing
- Improvement of other economic sectors in preparation for the end of the "gas boom" and economic adjustment assistance
- Creation of public amenities for tourism and other sectors to improve the "post gas boom" local economy

C. Sources of Revenue

The Departments identified five potential sources of revenue that may be used to offset the costs and impacts of Marcellus Shale fracturing.

Real property taxes are assessed against the value of the property. The Maryland statute regarding property taxes provides: "If minerals and mineral rights are owned separately from the land in which they are located, the supervisor may assess the minerals and

mineral rights separately from the land.” Md. Tax-Property Code Ann. § 8-229. According to State Department of Assessment and Taxation, this provision has not been used, mainly because it is so difficult to estimate the value of mineral rights when the minerals rights are still in the ground.

Personal property taxes may be assessed against the value of the property. Personal property is exempt from State property tax. Md. Tax-Property Code Ann., §§ 7-301. However, local jurisdictions may impose a tax on personal property. Md. Tax-Property Code Ann., §§ 6-202 and 6-203. If natural gas were considered a mineral or earthen material, the machinery and equipment used to extract it would be considered manufacturing property subject to taxation. Md. Tax-Property Code Ann. § 1-101 (r); Md. Tax-Property Code Ann., § 7-225. At this time, neither Allegany nor Garrett Counties taxes manufacturing property, although such taxation is authorized by State law.

Other states assess personal property taxes on the value of equipment or other assets used to produce oil or gas, ranging from 2% in Alaska, 6.2% in Wyoming, and 27% in New Mexico.

A severance tax is a tax imposed on the value of natural resources extracted from the earth, such as coal, oil or gas. Severance taxes are determined after commencement of drilling when the gas is extracted and can be measured, and the taxes are assessed and paid after the gas is extracted. Generally, a severance tax is based on the value of the gas extracted at the wellhead; the sale price of the gas, or the volume or weight when it is extracted.

Maryland and Pennsylvania are the only gas-producing states in the Mid-Atlantic area that do not have some form of state-level severance tax. Most states apply a statewide tax while some authorize counties to impose the tax. The formulas for calculating severance taxes vary considerably across the states in both the basis for calculation and the amount of the taxes. There are many exceptions (deductions and credits) that factor into the final tax rate and usually lower the tax payment made to the state. Revenue from a state severance tax is usually placed in the general funds of the State. Tax rates from selected states are listed below:

Alaska	25% of net value at production
Kansas	8% of gross value
Texas	7.5% of market value at well
Oklahoma	7% of average monthly price
Wyoming	6% of gross value, including royalties
West Virginia	5% of gross value

Headwaters Economics, an independent, nonprofit research group whose mission is to improve community development and land management decisions in the West, conducted a detailed study of energy tax policies in Colorado, Montana, New Mexico, Utah and Wyoming. One of the four major conclusions of the study is that “States can increase effective tax rates and realize higher revenue from energy development with little risk of

affecting the local energy economy.” The study found no evidence to suggest that different tax rates led to more or less energy investment, and citing the example of Montana – which cut tax rates to stimulate drilling but experienced less energy development than Wyoming, which did not cut tax rates.¹

Garrett County levies a tax of 5.5 % on the wholesale market value of gas produced from wells in Garrett County. Ten-elevenths of the money received is distributed to the County, and one-eleventh to the municipalities in the County, on a per capita basis. Public Local Laws of Garrett County, Sections 51.01 through 51.07.

Allegany County levies a 7% tax on the wholesale market value of natural gas produced in Allegany County. Chapter 394, Allegany County Code.

A permit fee is a fee assessed to defray the costs of regulatory review and enforcement. In Maryland, a person must obtain a permit from MDE’s Minerals, Oil, and Gas Division before drilling a well for the exploration, production, or underground storage of gas or oil in Maryland. MDE is required to set and collect permit and production fees related to oil and gas well drilling. Fees must be set at a rate necessary to cover all costs incurred by the State to (1) review, inspect, and evaluate monitoring data, applications, licenses, permits, and other reports; (2) perform and oversee assessments, investigations, and research; (3) conduct permitting, inspection, and compliance activities; and (4) develop and implement regulations to address the risks to public safety, human health, and the environment from oil and gas well drilling and development.

Unlike most taxes, permit fees generate revenue in advance of the actual gas production; however, the fees would be assessed only against those who apply for permits.

A study fee is a fee that may be imposed on an industry to enable regulators to collect baseline data and other information prior to allowing a regulated activity. In 2011, the Maryland General Assembly considered House Bill 852 (HB 852) that would have imposed a fee prior to the extraction of any gas. Under HB852, certain persons with gas interests in Garrett and Allegany Counties would have been required to pay a fee of \$10 per acre per year for two years to Maryland’s Oil and Gas Fund. The purposes for which the fee would have been used included studies of most of the issues in the Executive Order, including installation of well and stream gages for baseline ground and surface water monitoring and studies of best practices for gas exploration and production.

D. Projected Amount of Revenue

The U.S. Geological Survey (USGS) recently completed a reassessment of the undiscovered oil and gas potential of the Marcellus Shale within the Appalachian Basin Province of the eastern United States. The assessment is based on the geologic elements

¹ Headwaters Economics, Energy Revenue in the Intermountain West: State and Local Government Taxes and Royalties from Oil, Natural Gas, and Coal, October, 2008. (http://headwaterseconomics.org/pubs/energy/HeadwatersEconomics_EnergyRevenue.pdf)

of the formation's total petroleum system, including its characteristics as a petroleum source rock as well as a reservoir rock.² The USGS did the reassessment because newer drilling and completion technology allows the recovery of more gas and additional, timely production data was available for Marcellus wells. Using the USGS percentages of the resource within each state,³ Maryland is estimated to have the following amounts of technically recoverable volumes of natural gas at 95%, 50% and 5% confidence levels.

Estimated Marcellus Shale Gas Resource in Maryland			
	F95 - Min	F50	F5 - Max
Natural Gas (billion cubic feet)	711	1,302	2,383

The new USGS estimate of the volume of recoverable gas is substantially less than the estimate used previously by an extension agent in consultation with a representative of Sampson Resources.⁴ The new USGS estimate is less than half (47.4%) of the minimum amount of natural gas used by the extension agent, and is just one-fifth (19.86%) of the maximum amount of natural gas used by the extension agent.

A large amount of uncertainty still exists in estimates of the amount of gas present in the formation, and also in predictions of the future price of natural gas. In the absence of data from Maryland wells in the Marcellus Shale, estimates of actual production are based on assumptions that may not hold true. That said, using the USGS data available today and the same price for wellhead natural gas used by the extension agent, each 1% of severance tax on Marcellus Shale gas is estimated to result in revenues ranging between \$27.9 million and \$93.7 million during the lifetime of the gas extraction. Average annual receipts per 1% of severance tax range from \$558K to \$1.8M; at a 50% confidence level, \$1M.

	F95 - Min	F50	F5 - Max
Total Play Value Over 50 Years	\$ 2,794,325,499	\$ 5,115,416,118	\$ 9,365,344,842
Total Receipts Over 50 Years per 1% of Severance Tax	\$ 27,943,255	\$ 51,154,161	\$ 93,653,448
Average Annual Receipts per 1% of Severance Tax	\$ 558,865	\$ 1,023,083	\$ 1,873,069

The average annual severance tax receipts would be reached only after the gas field is in full production, not during the initial startup years. These values will be reached only if all the technically recoverable gas is produced and sold. Some portion of that gas will not

² Coleman, J.L., et al., Assessment of Undiscovered Oil and Gas Resources of the Devonian Marcellus Shale of the Appalachian Basin Province, 2011: U.S. Geological Survey Fact Sheet 2011-3092, 2 p., available at <http://pubs.usgs.gov/fs/2011/3092/>.

³ Coleman, J.L., et al., USGS Re-Assessment of the Undiscovered, Technically Recoverable Oil and Gas Resources of the Marcellus Shale, Appalachian Basin, USA. PowerPoint presentation, MD-DE-DC Water Science Center, U.S. Geological Survey, Baltimore, MD. 21 Oct. 2011.

⁴ UMD Extension Agent, Estimated Marcellus Shale Natural Gas Value, http://www.mde.state.md.us/programs/Land/mining/marcellus/Documents/Economic_Value_Estimates.pdf.

be recovered in practice because it is located in areas that cannot be drilled because of ownership, unwillingness of an owner to lease mineral rights, or other factors.

E. Draft Recommendations for Discussion Purposes Only

A successful cost and revenue structure to offset the costs of State activities will satisfy the following three objectives:

- The local economy, social wellbeing, public infrastructure, and natural environment (including natural resources and the ecological functions of healthy ecosystems) will be protected during gas well drilling and production, and maintained or restored to the same or better condition when the drilling and production cease.
- Each permittee will be responsible for all activities and costs related to the well site and all impacts attributable to its activities. Where possible, the costs should be internalized and paid directly by the permittee.
- As part of internalizing the costs of all impacts of Marcellus Shale drilling, permittees should collectively be responsible for impacts of industry activities that cannot be attributed to an individual well site or permittee.

The two identified sets of impacts to State resources are (a) costs associated with a specific well or site, and (b) costs of non-site specific (regional or general) impacts. Here are potential funding mechanisms for each set of costs that could satisfy the foregoing objectives.

Costs Association with a Specific Well or Site

At the pre-drilling phase, the applicant would bear the cost of collecting and presenting the data required by the State for permit review. State costs for review will be included in the drilling permit fee.

During drilling, fracking, and production, on-site costs would be the responsibility of the permittee, and permit conditions will require monitoring, reporting, and correction of these impacts. State activities relating to inspections and compliance will be funded by permit fees. Permit provisions might require:

- Site-specific surface and groundwater monitoring
- On-site presence of a State or State-approved inspector during drilling and fracking site operations
- Collection and reporting of specific data during drilling, e.g., geophysical logs, and collection of drill cuttings
- Periodic testing of nearby public and private water wells

- Recordkeeping and reporting to document that all wastes, including flow-back, are properly transported, treated, and disposed of
- Repair of public facilities (roads, road signs, etc.) damaged by vehicles traveling to or from the drilling site.
- Remediation of site-related surface or groundwater contamination
- Remediation of site-related natural resource damages – both short term and long term

The Department of the Environment currently requires the applicant for a permit to provide a performance bond, the release of which is conditioned on compliance with the law, regulations, permit, orders of the Department, including those relating to reclamation of the site. By statute, the bond cannot exceed \$100,000 per well, or \$500,000 as a blanket bond for all of the applicant's wells.

Non-Site Specific (General or Regional) Impacts

In order to conduct post-drilling general or regional impact assessments, the Departments require general or regional baseline data, including ground water and surface water information. Subject to approval by the General Assembly, the Departments would collect a Marcellus Shale study fee on a per-acre basis from owners who, after January 1, 2007, acquired a gas interest in real property in Allegany or Garrett Counties for the purpose of drilling for natural gas.

The purposes for which the fee could be used will include studies of most of the issues in the Executive Order, including installation of well and stream gages for baseline ground and surface water monitoring and studies of best practices for gas exploration and production.

For State general or regional impacts occurring during or after drilling and fracking, subject to approval by the General Assembly, the State will establish a Marcellus Shale Environmental Fund paid for by a severance tax assessed on the industry. The severance tax is the best source of revenue for the Fund because it is connected directly to the activity of gas production by hydraulic fracturing. Models of a fund of this kind include MDE's Acid Mine Drainage and Treatment Fund established in 15-1103 of the Environment Article used for reclamation of abandoned mines for which there is no continuing reclamation responsibility on any party and Trust Funds established in other states such as New Mexico and Colorado. The amount of percentage of the severance tax levied should consider:

- The range and potential magnitude of environmental and natural resource damage and include a margin of safety, including a margin of safety; and
- The amount of potentially available revenue.

Garrett County has already established a severance taxes as has Allegany County. These revenues may be used to offset local impacts. Both local jurisdictions should deposit

revenue into a special fund that, among other things, would be directed toward programs and services that build the counties' human and physical capital, aid other sectors of the economy that may have been adversely impacted by gas development, and encourage diversification of their economies.

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Section III - Liability

A. Introduction

Executive Order 01.01.2011.11 directs the Departments to investigate the desirability of legislation that would define standards of liability for gas exploration and production. In consultation with the Advisory Commission, the Departments examined the current liability structure in Maryland, problems and gaps in this structure, and a range of responses available to the legislature or Administration. To guide the analysis, several goals were identified:

- To support a healthy, sustainable economy and environment;
- To the extent that adverse impacts cannot be eliminated, ensure that those who suffer negative impacts are appropriately compensated and damage is mitigated;
- To craft solutions that incentivize prevention of harm and foster prompt remediation; and
- To choose solutions that are fair to all parties.

B. The Current Liability Structure in Maryland

The only statutory authority directly addressing liability for gas well operators is within a subtitle of the Natural Resources Code that deals with oil and gas leases on State-owned land. The relevant section states that “[a]ny person who drills for oil or gas on the lands or in the waters of the State is strictly liable for any damages that occur in exploration, drilling, or producing operations or in the plugging of the person's oil or gas wells, including liability to the State for any environmental damage.” Md. Nat. Res. Code Ann. § 5-1703. While the section specifically mentions liability to the State, the scope or applicability of the section has not been tested.

There are also statutory requirements for a performance bond and insurance that must be held by oil and gas well permittees. The Department may not require a bond in excess of \$100,000 per well, or \$500,000 as a blanket bond for all wells of a permittee.⁵ The bond is released only after MDE determines that the well has been properly plugged, the site reclaimed, required records submitted, and obligations under the statute, regulations, and permit fulfilled.

⁵ The adequacy of the bond will be considered by the Departments and the Advisory Commission in the context of Best Practices for closure of Marcellus wells.

The statute requires liability insurance coverage of at least \$300,000 per person and \$500,000 per occurrence or accident. This insurance must cover injury to persons or property damage caused by drilling, production, or plugging. MDE's regulations expand the requirement of liability insurance coverage to \$1,000,000 per person and \$5,000,000 per occurrence or accident, but do not otherwise address liability.

Many states recognize the common law⁶ rule that mineral rights are considered the dominant estate, meaning those rights are considered legally superior to, and take precedence over, the rights of the surface owner. Even in those states, however, the mineral owner is not free completely to disregard the rights of the surface owner and must limit his interference to what is reasonably necessary to develop the mineral estate. It appears that Maryland courts have not decided whether the common law rule applies in Maryland.

Maryland recognizes several common law tort claims that may potentially be used by persons who believe they have been damaged by Marcellus Shale gas production:

1) Trespass

A person who owns land generally has the right to exclude others from the land. If someone intentionally or negligently enters onto that land (either on the surface or subsurface) without authority, he has committed trespass. The essential element of trespass is the entry, regardless of whether harm has occurred, although the existence of harm will affect the award of damages. The "entry" need not be by a person; in some circumstances the movement of pollutants onto property could be a trespass.

2) Negligence

A person can be liable if he negligently causes harm to another.⁷

3) Private Nuisance

If a person intentionally causes unreasonable, substantial interference with another person's right to use and enjoy his land, he can be liable for nuisance. A court might order the person to stop the interference, award money damages, or both. Nuisance is different from trespass in that there is no physical entry onto land.

4) Strict Liability and Liability for Abnormally Dangerous Activity

Strict liability means liability without fault. The basis for strict liability is the creation of an undue risk of harm to other members of the community, regardless of how much care was exercised in undertaking an abnormally dangerous activity (ADA). In the absence of a statutory definition of ADA, the issue of whether an activity is an ADA is a fact-intensive

⁶ Common law is the system of law based on custom and judicial precedent rather than laws enacted by a legislature.

⁷ If a person has a duty to act in a certain way, *e.g.*, to exercise reasonable care, and fails to do so, and that failure causes damage that is natural, probable, proximate, and not too remote, the person may be liable for the damage. A familiar example would be an automobile accident caused by momentary inattention

inquiry involving the consideration of multiple factors, including whether the activity is inappropriate to the place where it is carried on and the value of the activity to the community. The person seeking damages under strict liability must still prove the cause and effect between the action and the harm.

C. Criticisms of the Current Liability Structure

The current liability structure has been criticized on several grounds. Parties likely to be injured by gas well drilling and operation are the surface landowner, neighboring property owners, or members of the general public near the drilling site. A dispute between such an individual and an oil and gas company is a classic example of asymmetry of resources. The company is likely to be prepared to defend a suit because it has experience with such litigation and ample resources to engage counsel and experts. Individuals, on the other hand, have probably not been involved in similar cases, and would be at a disadvantage in hiring lawyers and experts. Individuals with valid claims who do bring challenges can anticipate considerable expense and may have to wait for the appeals process to be exhausted before receiving any compensation for their damages.

Second, any legal theory currently available will probably require the individual to produce evidence on complex and cutting edge issues of engineering, geology and hydrogeology. Opposing experts may draw opposite conclusions from the same facts, especially where scientific understanding is incomplete.

Third, there are few meaningful remedies for those who do not own their mineral rights, but are nevertheless injured in some way by the activities. People who own mineral and surface rights can negotiate for some protection when contracting for the sale or lease of those rights to another party. A contract or lease may incorporate protections against damage or include provisions for compensation. For example, the location for an access road could be specified to avoid cropland, or payment for crop damage could be stipulated. However, some surface owners never owned mineral rights in their land because those rights were reserved or transferred to someone else before the surface owner acquired the property. There is no way for these individuals to obtain any contractual protection.

Lastly, there are few meaningful remedies for neighboring residents, landowners, or businesses whose lands are not directly involved in drilling, but who may incur damage. As described above, a patchwork of common law tort claims provides the main source of remedies for these injured parties. Availability of a remedy differs depending on the situation and even when an injury seems to fall within one of the recognized torts, certain elements may be difficult for the injured party to prove under the circumstances.

D. Possible Solutions

Enact a Statute Creating a Presumption of Causation

The first option is to create a presumption that certain types of damage were caused by the drilling activity or operation of the gas well if the damage occurred close in time and place to the gas operations. The presumption should be limited to the sorts of damage that logically could be associated with the activity.

Maryland already has a similar law that could serve as a model. It applies to surface mines, such as sand and gravel mines, within karst terrain. Mine owners must obtain an MDE water appropriation permit in order to dewater the pit. When issuing the permit, MDE establishes a zone of dewatering influence around the surface mine. If drinking water wells in the zone of influence fail because of declining groundwater levels, or the surface suddenly subsides within that area, the permittee must replace the water supply or compensate the landowner for the other damage. Md. Env. Code Ann. §§ 15-812, 15-813. The presumption is rebuttable; that is, if the mine operator can prove by clear and convincing evidence that its operations were not the cause of the damage, it can prevail and avoid liability. Essentially, the burden is shifted to the operator, so that it must prove its actions were *not* the cause of damage, rather than the individual needing to prove that its actions were the cause.

In the context of gas well drilling in the Marcellus Shale, a similar law could be enacted that would require MDE to establish zones of influence surrounding gas wells in Garrett and Allegany Counties. For example, the zone of influence might extend to 3,000 feet from the vertical borehole. MDE would also be responsible for designating the types of damage that the gas well could cause within its zone of influence. Examples are methane in well water, pollution of well water, and damage to structures caused by vibration. Finally, MDE would identify a reasonable time period within which the damage would be presumed to have been caused by the activity. One year or more from completion of hydraulic fracturing may be appropriate. A program would be established by which MDE would oversee the remediation or compensation of affected property owners. As under the dewatering law, the permittee would be able to rebut the presumption by proving its activities were not the proximate cause of the damage. After the time period under the law passes, an allegedly injured party would not be without a remedy, but he would have to prove causation rather than take advantage of the presumption.

Such a law would provide an incentive to the driller to test drinking water wells before undertaking any site activities to document pre-existing problems. If a landowner refused to allow the driller to test his water, the landowner would not be able to take advantage of the law.

Enact a Surface Owners Protection Act

A second option is to create a law specifically for the protection of surface owners on whose, or under whose, land exploration or production activities occur. These laws have already been enacted in over a dozen states.

The provisions of Surface Owners Protection Acts (SOPA) vary from state to state. Commonly, however, a method of identifying all persons having surface rights is identified. Before performing any work on the site, the permit applicant gives notice to surface owners; the notice must sufficiently disclose the plan of work and operations to enable the surface owners to evaluate the effect of drilling operations on the surface owner's use of the property. The notice must include an offer to discuss with the surface owners all surface activities and the placement of roads, pipelines, points of entry and the like, as well as a method of placing a monetary value on any damages due to the activity such as destruction of crops, lost timber, and diminution in property value. If the parties reach agreement on these issues, the terms are recorded in a legally enforceable document. States take differing approaches in the event agreement is not reached. Some SOPAs require one party or the other to bring a court action; others allow the driller to enter after posting bond for possible future damage; and some allow mediation or arbitration.

Enact a Law to Protect Residents, Landowners, and Business Owners Other than the Surface Owners

This option would address the problems of residents, landowners, or business owners who might be adversely impacted by exploration or production but who are not covered under a Surface Owners Protection Act. Upon request of any of these parties, the permit applicant would be required to enter into good faith negotiations with the party to determine how to eliminate adverse effects and to compensate for adverse effects that cannot be eliminated. If the parties reach agreement on these issues, the terms are recorded in a legally enforceable document.

The law could provide that, if the parties fail to agree, the permittee would be strictly liable to the resident, landowner, or business for damage caused by the activity. In other words, the permittee will be liable in a civil suit for damage to the other party's property as long as that party can show the damage was caused by the permittee's on-site or off-site activities. The challenging party would not need to show that there was any intent, negligence or fault on the part of the permittee.

Approach Community Impacts Through Mediation or a Community Benefits Agreement

Through a community benefits agreement, the permit applicant could, before beginning drilling, negotiate mitigations with groups and members of the community likely to be impacted by the activities. Alternatively, mediation would allow the permittee and members of the community to resolve incidents causing community-wide damage after they occurred.

Increase Financial Assurance Requirements to Cover Additional Foreseeable Types of Damages

Bonds and insurance are a form of financial assurance; that is, they assure that some funds will be available to pay for work if the permittee fails to perform, and that money will be available to pay for damages for which the permittee may be liable. Currently, bonds for oil and gas wells are limited in amount and address only compliance with laws, permits, and site reclamation. The comprehensive general liability (CGL) insurance requirements currently require coverage of damages for injury to persons or property. CGL policies generally exclude coverage for pollution damage, which can be covered by other forms of insurance, such as Environmental Impairment Liability insurance. Increasing the amount of financial assurance would not change the liability standard, but it would help assure that money will be available to perform work the permittee fails to do, or to pay damages once liability is established.

E. Draft Recommendations for Discussion Purposes Only

In order to promote the goals of environmental sustainability, public health, and equity, and to incentivize the prevention of harm, the Departments advance the following as the best options for addressing shortfalls in the current structure of liability:

1. Enact a law creating a rebuttable presumption of causation and an administrative process for requiring the permittee to remediate the damage, pay compensation, or both. The law should be modeled after Md. Env. Code §§15-812 and 15-813.
2. Enact a comprehensive Surface Owners Protection Act.
3. Approach community impacts through mediation or a community benefits agreement.
4. Amend the law that limits the amount of a performance bond to \$100,000 per well, or \$500,000 as a blanket bond for all wells of a permittee by making these the minimum amounts and allowing MDE to set the amount by regulation.

Section IV - Consultation with the Advisory Commission

The Departments' recommendations were presented to the Commission at the meeting on November 15 and further discussed during a conference call on [INSERT DATE]. The Advisory Commission [SUMMARIZE POSITION(S) TAKEN BY COMMISSION]

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Section V – Summary

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APPENDIX A

Marcellus Shale Advisory Commission

Chair

David Vanko, Ph.D., *a geologist and Dean of The Jess and Mildred Fisher College of Science and Mathematics at Towson University*

Commissioners

Senator George Edwards

Delegate Heather Mizeur

James Raley, *Garrett County Commissioner*

William Valentine, *Allegany County Commissioner*

Peggy Jamison, *Mayor of Oakland*

Shawn Bender, *division manager at the Beitzel Corporation and president of the Garrett County Farm Bureau*

Steven M. Bunker, *director of Conservation Programs, Maryland Office of the Nature Conservancy*

John Fritts, *president of the Savage River Watershed Association and director of development for the Federation of American Scientists*

Jeffrey Kupfer, *senior advisor, Chevron Government Affairs*

Dominick E. Murray, *deputy secretary of the Maryland Department of Business and Economic Development*

Paul Roberts, *a Garrett County resident and co-owner of Deep Creek Cellars winery*

Nick Weber, *chair of the Mid-Atlantic Council of Trout Unlimited*

Harry Weiss, Esq., *partner at Ballard Spahr*