Table of Contents

Brigid Kenney -MDE- <brigid.kenney@maryland.gov>

Critique of RESI study of the economic and fiscal impacts of fracking on Garrett County

1 message

Michael Bell <mebassociates2@gmail.com> Mon, Jun 30, 2014 at 11:39 AM
To: Brigid Kenney -MDE- <brigid.kenney@maryland.gov>
Cc: Jim Raley <jraley@garrettcounty.org>, Annie Bristow <piperannie@gmail.com>, Paul Roberts <paulr@deepcreekcellars.com>

Brigid

Thank you for creating a short period for submitting comments on the RESI report.

My wife and I own a tourist dependent business in Garrett County. To me, this issue is a critical foundation for the work of the Governor's advisory committee.

I am attaching my critique of the RESI report. I would like these comments and concerns to be shared directly with all the committee members. I have copied this e-mail to those for which I have e-mail addresses. Please forward the critique to the rest of the members of the committee.

My bottom line is that the report is so flawed it cannot be used to inform a public policy debate on these issues at both the state and Garrett County levels. I know you and the entire advisory committee have worked hard to establish and maintain your credibility as you deal with the critical, and emotional, issues associated with fracking in Garrett County, and the rest of the state. In my view, any reference to the RESI report in the debate on the economic and fiscal impacts of fracking on Garrett County would undermine those efforts.

Can you tell me the plan for moving this issue forward in your Committee? When will this topic be discussed at the committee? What role does the public have in the process of your committee developing its response to these concerns? What other materials have you collected critiquing this report? Can those be shared with the public also.

You and I, and your entire committee, share a concern that your committee receive the best available inputs to inform your debate on the important issues you are dealing with on behalf of

all the residents of Garrett County and the state. The committee must have professional, objective, comprehensive input for informing those critically important debates. This report does not provide such input and must be withdrawn from consideration when talking about the economic and fiscal impacts of fracking on Garrett County.

I would be happy to discuss these issues with you and your colleagues further. This is critically important.

Thank you for your leadership on this, and many other, related issues.

Mike

Dr. Michael Bell

Research Professor

George Washington University

301-387-9030

Critique of RESI.docx
49K

TO: **Eric Robison**
Member
Garrett County Shale Advisory Committee
FROM: **Michael Bell**
DATE: **June 30, 2014**
RE: **Critique of RESI Report on the economic and fiscal impact of fracking**

Conclusions of Critique

The RESI report leaves the clear impression that it is a pro-fracking report in tone, organization and presentation:

1. ***It is full of unsubstantiated, subjective statements sympathetic to fracking;***
2. ***In the section analyzing the economic conditions and trends in Garrett County there is NO mention of tourism/recreation/high-end second home market, rather the authors stress the history of energy development in the region;***
3. ***The authors claim they identified two counties comparable to Garrett County which have fracking and tourism, but they are not like Garrett County which, of the three counties, has the highest median owner occupied house value, the highest per capita money income and the highest median household income as a result of the tourism, recreation and high-end second home industries;***
4. ***In the section analyzing the impact of fracking on tourism the authors say they cannot quantify the impact and provide no estimates of how fracking impacts tourism; and***
5. ***Using information in the report, a reasonable estimate of the NET economic and fiscal impact of fracking in Garrett County is that there will be a net loss in property tax revenues and substantial reductions in the estimated output and jobs generated as a result of fracking.***

The scope of work for this project says that "The final report will serve as a comprehensive impact analysis for use in informed policymaking." Unfortunately, this report fails to achieve that goal:

1. ***The main analytic parts of the report are fatally flawed rendering most of the numbers useless;***
2. ***The report lacks a well-articulated framework setting out goals/objectives of the project. As a result it reads as a random collection of analytic exercises rather than a coherent analysis of well-articulated issues;***
3. ***The report lacks any meaningful documentation of what was done and how it was done. The reader has no idea how the numbers were generated and how to interpret them;***
4. ***There is no discussion/description of the data used in the empirical analysis. The reader is left wondering what variables were used, what relations are being tested and what the source of the data is; and***

5. ***The organization of the report is confusing and unnecessarily redundant at times.***

This report is seriously flawed conceptually and empirically resulting in an essentially "black box" analysis. The report comes across as being neither comprehensive nor objective. As a result the report cannot be used to inform any policy debate on this topic. These concerns are discussed in more detail below.

Introduction

My name is Michael Bell. My wife and I have owned property in Garrett County for 35 years. Three generations of our family have enjoyed the Garrett County experience. Garrett County has been our permanent residence going on 14 years. We run a tourist dependent business. That is why I consider the report ***Impact Analysis of the Marcellus Shale Safe Drilling Initiative,*** written by the Regional Economic Studies Institute at Towson University, the most important study being done for the Governor's Marcellus Shale Advisory Committee. ***What is the impact of fracking on the current economic and fiscal base of the county?***

The following discussion provides a critique of this critically important report. I view this report through the lens of a consultant, polished with more than 25 years of experience. During my career as a consultant I worked at the Urban Institute in Washington DC, 9 years as a Research Scientist at the Institute for Policy Studies at Johns Hopkins University in Baltimore, 11 years as a Research Professor at the George Washington Institute of Public Policy at George Washington University (my current affiliation), and 17 years as President of my own consulting business MEB Associates. I also taught Introduction to Policy Analysis and State and Local Finance to students in the Masters of Policy Studies program at Johns Hopkins University.

The audience of this report is the Governor's advisory committee and everyone else involved in making policy concerning fracking in Marcellus Shale. As such the report should be written in non-technical language which explains what is being done and how it was done in plain English with no jargon so anyone pulling it off of the internet can understand it. The report needs to be self-contained in the sense that it has to document what was done and how it was done so the reader understands the analysis and can therefore interpret the numbers with confidence. ***This report fails on all these accounts.***

Scope of Work

The scope of work for this project says that

> "Through research, analyses, surveying, and stakeholder input, RESI will produce a final report quantifying the impacts of gas drilling and hydraulic fracturing ("fracking") on Allegany and Garrett Counties for MDE. ***The analyses will delve deeper than previous studies***, and involve examining the potential short-term economic impacts and long-term economic development issues associated with

> drilling. The final report will serve as ***a comprehensive impact analysis*** for use in informed policymaking." [p. 1, emphasis added]

The critique of the report provided in the next section documents how the final report provided in May 2013 fails to meet these objectives.

The scope of work continues

> "The study will investigate the following elements to develop a ***comprehensive understanding*** of potential impacts of natural gas exploration and production in Marcellus Shale:
>
> 1. Community impacts
> 2. Economic impacts, and
> 3. Fiscal impact. [emphasis added]

The following critique examines each of these sections of the final report.

Critique of Report and Appendices

Section 2 of the Report

The scope of work says that as part of the community impact analysis "RESI will perform an ***evaluation*** of existing conditions based on background documents, existing data, and stakeholder input." [Section 3.2.2, p. 3] [Emphasis added because it is not clear what it means to "evaluate" existing conditions and no such "evaluation" is provided in this section of the report].

Section 2 of the report responds to this directive and is titled Introduction to Western Maryland. According to the authors, "To accurately analyze the impacts of Marcellus Shale drilling, RESI first collected background information on the counties comprising the impacted region. Such information included the economic conditions and trends in Western Maryland, …." [p. 15]

Section 2.1 describes economic conditions in Western Maryland. The authors limit this discussion to look at employment, unemployment, income and educational attainment only. [p. 15] The second paragraph provides data from the *2008-2012 American Community Survey 5-Year Estimates* on labor force and employment rates.[1] Based on these numbers it appears that the estimate of total employment (private plus government) in Garrett County is approximately 8,621.

[1] The *2008-2012 American Community Survey 5-Year Estimates* presents estimates of individual variables based on the five year average estimates of that variable. The numbers here represent the average value for the 2008 to 2012 period including the Great Recession and the very limited recovery experienced in Western Maryland.

Table 1 lists private employment in the top five industries in Garrett County. Adding the numbers in the table indicates private employment in the top five industries is 5,114, although the table says Top 5 Total is 9,708. The table says that the top five industries in Garrett account for 52.7 percent of total private employment in the county. The 5,114 employees in the top five industries is, in fact, 52.7 percent of 9,708. So the total in the table is not for the top 5 industries as indicated, but apparently is total private employment according to the Bureau of Labor Statistics. ***This confusion is a result of sloppy proof-reading which raises issues about the integrity and accuracy of other numbers in the report.***

This section reports information from different data sources which indicate different estimates of different definitions of the level of employment in the county. There is no effort to acknowledge, much less reconcile or explain, these differences.[2]

There is no mention, much less discussion, of the 130 year history of Garrett County being a vacation/recreation/high end second home destination point and the impact that has on the local economy. Failing to recognize and discuss this critical element of the county's economy is a serious omission/oversight on the part of the authors. The authors claim at the beginning that "To accurately analyze the impacts of Marcellus Shale drilling" they must describe current conditions and trends. Since this section focuses only on the history of energy development in the region and prospects for drilling in Marcellus Shale and totally ignores tourism/recreation/second homes, it comes across as being slanted toward energy development and drilling.

Section 3 of the Report

The scope of work says that "RESI will begin with a thorough review of existing resources, including but not limited to . . . [among other documents] literature exploring the economic impacts of natural gas drilling and production, both regionally and elsewhere in the U.S."

Section 3 of the report claims to be a "review of literature" regarding community and economic impacts of shale drilling that other states expected to experience, have experienced, or perceived to have experienced." The community impacts are divided into 6 categories:

Agriculture – Stakeholders [it is not clear what stakeholders] "voice concerns regarding water supply and availability, which could impact not only residents but also agriculture."

The discussion of this issue only references one study in South Texas which suggests that any problems with water availability are manageable problems because "companies involved in hydraulic fracturing in the region have offered to consider using alternative water sources or recycling their wastewater." ***Apparently, according to the authors,***

[2] Another, and more up to date, estimate of employment in Garrett County is provided by QuickFacts, produced annually by the Census Bureau, which estimates total private non-farm employment (a subset of total private employment) in Garrett County in 2012 as 11,074.

there are no other documented impacts of fracking on agriculture and there are no other studies that explore these issues. This is clearly not accurate, reflects very selective choice of what to discuss and comes across as pro-fracking by minimizing and basically ignoring broader impacts of fracking on agriculture.

Schools – The study team surveyed educational leadership and interviewed education and community stakeholders [but the authors do no indicate who was interviewed or surveyed]. The results indicated concerns with an ***expected potential*** influx of workers to impact school demographics, student needs, social services and housing. [emphasis added]

No data on the experiences of other communities where fracking is taking place with regard to school demographics or student needs is presented. There is more than a decade of evidence in areas where fracking has been taking place in Texas and North Dakota. A simple telephone survey of a couple of dozen school districts could have provided some insights into this issue. Again, ***the discussion is very superficial, incomplete and essentially useless speculation***. ***There is no literature review at all.***

The other impact of fracking on schools discussed in this section is how a number of school districts in Pennsylvania and Texas have "struck deals with natural gas companies" to frack on school property to generate additional revenues for education." ***Really? Is that the primary impact on schools? Again, this leaves the impression the report is really pro-fracking***.

Health – The authors claim the "health and safety topic area is perhaps the top concern for stakeholders in areas considering or pursuing shale drilling." They divide the health issues into four topics:

1. Water contamination is mentioned as a concern associated with drilling for gas. There is very little meaningful information provided on this topic and the authors assert that Cabot Oil and Gas refuted the allegations that fracking destroyed the water supply of Dimock, Pennsylvania. ***Virtually no reference to studies of the impacts of water contamination from fracking and what is provided by the authors is put forward as speculation.***
2. The authors acknowledge that there is some evidence that suggests air emissions related to gas drilling could also be a health risk. The authors site one study. Talking about concerns with the effects of gas drilling on human and animal health, the authors again quote just one study. The authors conclude "Best practices in regard to human and animal health are essential in avoiding adverse impacts. Other studies do not find a definitive correlation between shale drilling and adverse health and safety effects."

   There is no documentation or literature cited to substantiate or support these subjective statements. These types of unsubstantiated

subjective statements, which appear throughout the report, re-enforce the tone of the report as being pro-fracking. Again, this discussion is not a review of existing literature and adds nothing to the discussion on this topic. The authors should have conferred with the University of Maryland, School of Public Health on these issues.

3. The authors refer to one paper by Worldwatch Institute expressing concern about the impact of blowouts and seismic risks associated with drilling for gas. Two studies are mentioned, but the authors' conclusion is that "proper monitoring of drilling operations and their seismic impacts is another best practice to be considered during hydraulic fracturing." ***Apparently the authors are not aware of any additional studies linking blowouts with health hazards and fracking with earthquakes. This is not a thorough discussion of this situation.***

There is no mention or discussion of issues related to noise, dust and dirt, lights at night, radiation, accidents, the public health infrastructure in the county, etc. Again, ***this section seems superficial and incomplete.***

Housing – the authors mention two studies discussing the impact of fracking on housing. The only impacts they discuss, however, are how fracking impacts the demand for housing services and the level of rent in the county. Nothing about the inability of properties near wells to secure government guaranteed mortgages, nothing about the inability of properties near wells to obtain homeowners insurance, no other impact of fracking on housing. ***This seems selective and superficial.***

Traffic and Roads – Reference is made to one 2010 study of best practices to protect roads impacted by drilling including

1. Studying traffic flow impacts
2. Collecting data regarding road conditions
3. Adopting road use agreements
4. Managing trucking routes, and
5. Enforcing traffic and road regulations.

A 2012 Wall Street Journal article is mentioned where the administrator of one of the impacted counties in Texas estimated that the cost of building up the county's road to withstand the inflow of drilling-related traffic exceeds $100 million, compared to the county's entire annual budget of $6 million. ***This does not represent a comprehensive literature review on this topic.***

Tourism and recreation – this discussion references one 2011 study that says tourism was impacted in Pennsylvania, Texas and Wyoming. The authors do not say how or to what extent tourism was impacted in any of these states. Rather, the authors assert that tourism related businesses (hotels, restaurants and retail) can address the needs of shale drilling workers. The authors neglect any potential impact of fracking on other

businesses related to tourism/recreation/second homes. The study quoted by the authors concluded that "the regional industrialization associated with widespread drilling could do substantial damage …***threatening the long term growth of tourism***." [emphasis added] But the authors of the RESI study conclude "While it is unlikely that direct drilling activity will have long-term consequences, . . " for tourism. ***That statement comes out of thin air, is not supported by any evidence in this section and is exactly opposite the conclusion of the study they reference. Again, this type of unsubstantiated subject statement re-enforces the impression that this is a pro-fracking report.***

Section 4 of the Report

Section 4 identifies impacts of special interest to residents of Western Maryland. These impacts were not identified by "residents" but by "stakeholder" interviews. Half of the "stakeholders" interviewed included representatives from Garrett County Government, the Chamber of Commerce, Allegany County Government, the Greater Cumberland Committee – all of which have been strong proponents of fracking. No effort was made to get input from the most important stakeholders in the county – the citizens who are going to be impacted by fracking. In spite of these limitations, the issues raised in the summary are important issues to be considered in this analysis of the community and economic consequences of fracking for Garrett County.

Stakeholder concerns were grouped into 8 topic areas: agriculture, education and schools, environmental protection, housing availability and land values, infrastructure and investment, economic and fiscal sustainability, property rights, and overarching perceptions of each should drilling occur. The authors claim that "The insights that RESI gained from interviews acted as a guide for the research and analysis provided within this report." ***This link is not apparent in the remainder of the report.***

Section 5 of the Report

Section 5 lays out assumptions and scenarios that form the foundation for empirical estimates in the report. While the authors accept at face value estimates of the number of wells provided by MDE, it seems that the number of wells and well pads for extraction assumed for each scenario may be significantly under-estimated. The actual number of wells to be drilled may be significantly greater than assumed by the authors once Cove Point LNG export port is completed. There is no mention of Cove Point in the report and how it might impact the likelihood of the very conservative estimates of the number of wells that will be fracked in the two scenarios posited by the authors.

Section 6 of the Report

Section 6 addresses the community impacts of fracking in Garrett County. The scope of work indicates that the community impact assessment will include

1. Document review
2. Data collection and existing conditions evaluation

3. Spatial and qualitative analysis
4. Stakeholder engagement.

In conducting the community impact analysis, the contractor was supposed to "perform spatial and qualitative analyses to complement the economic impact analyses." [p. 3, Section 3.2.3]. This spatial and qualitative analysis was to produce maps depicting the following characteristics and their relationship to potential economic and community impacts:

- Location of wells and other notable features related to gas drilling
- Major transit routes
- Land use patterns and potential land use conflicts
- Home locations and home values
- Natural resources
- Rural character and viewsheds
- Recreation/tourism areas
- Habitat and wildlife corridors.

In addition, to complete this section of the community analysis, the scope of work says "RESI will document and summarize factors such as potential conflicts and synergies with other local industries, compatibility with local economic development strategies, and the potential influence on land use patterns and community character as part of the final summary report." [p 4]

Nowhere in the report could I find a discussion of any aspects of the analysis described in Section 3.2.3 of the scope of work.

The authors indicate that while "research is readily available [about the impact of fracking on a community], the industry has changed over the years and has therefore created demand for a continuous supply of new studies and findings…and ***companies have worked harder to improve community perceptions***." [p. 52, emphasis added to highlight another unsubstantiated, subjective assertion so characteristic of this report, which re-enforces the impression left after reading the report that it is a pro-fracking report focused on *perceptions*, not the reality of fracking's impact on the community].

The authors report that "In a survey conducted by RESI over three-quarters of nearly 800 total viable survey respondents, and roughly 80.6 percent of the 377 respondents not currently residing in either county, state the presence of drilling would deter them from moving into Western Maryland." Unfortunately, these important findings are not utilized in efforts to estimate the impact of fracking on land values and on the tourism/recreation/second home markets in Garrett County.

The section then provides a 13 page discussion of housing demand/supply and rents over the period 2017 to 2026. The authors indicate that RESI "created a baseline" of housing supply and demand over 2017 to 2026 period. They then produced projections of housing needs with and without drilling. There is no discussion of how these projections are actually made and the methodology used to make them other than the projections

were "derived from total population projects from the REMI PI+ model used in RESI analysis." The Garrett County Realtors Association has submitted comments to MDE raising serious questions about how these numbers were generated. ***In this type of empirical analysis, with projections 20 years into the future, the devil is in the detail and what is put into the model in the beginning determines what comes out of the model in the end. As a result, since there is no description of the inputs into the design of the model or the data analyzed, it is difficult for the reader to interpret these numbers.***

Section 7 of the Report

Section 7 addresses tourism impacts and other impacts to the existing economy resulting from fracking. The first section is 7.1 Existing Research. There are two paragraphs referencing a 1992 book and a 2009 study of drilling in Pennsylvania. ***This is not a comprehensive or thorough review of existing literature.***

The next section describes the potential tourism impacts from fracking in Western Maryland. A Frequently Asked Questions about the Economic Study page posted on the MDE website[3], says that "RESI is reviewing existing tourism studies and gathering visitation figures pre- and post-drilling for regions similar to Western Maryland, which includes interviewing communities in Pennsylvania and West Virginia to quantify the potential impacts of gas development activity on visitations. RESI will determine the change in tourism associated with shale drilling using statistical techniques." ***While this type of analysis is critical to discussing the impact of fracking on tourism, no such analysis is reported or discussed in the RESI report. In addition, there is a wealth of data available on tourism in Garrett County from DNR, the county Heritage Plan, and other sources. There is no indication the authors were aware of these data, they are not discussed or presented in this discussion.***

The authors do report data describing the impact of tourism on the economy of Garrett County from a 2010 study commissioned by the Garrett Chamber of Commerce. The report estimated that the overall economic impact of visitor spending in Garrett County was $347.7 million in sales, generation of more than 5,000 jobs and contributed $193.4 million to value added (p. 74 of the report). Those owning second homes in Garrett County contributed $156.6 million in sales, nearly 2,300 jobs and $81.5 million in value added. [p. 75] The authors then summarize some of the concerns of the stakeholders they interviewed including the fact that "a sewage leak contained within a small section of Deep Creek Lake proved enough to prompt visitors to cancel rentals and other reservations with tourism businesses in the area…" [p. 75]

That is followed by a discussion of the magnitude of impacts of fracking on tourism. The authors claim that "Quantifying the magnitude of tourism impacts proved challenging due to the lack of data on the impacts on tourism from drilling activities in comparable areas." [p. 78] ***It is unfortunate that the authors did not utilize data in their own report to make a lower-bound estimate of these impacts in Garrett County.***

[3] http://www.mde.state.md.us/programs/Land/mining/marcellus/Documents/economicStudy_FAQ.pdf.

For example, on page 53 the authors report the results of their survey that indicates 75 to 80 percent of respondents said fracking would deter them from moving to Western Maryland. On page 38 the authors reference media coverage of a sewage spill near Deep Creek Lake that deterred tourism and may have deterred potential residents wanting to live in Western Maryland. Similarly, a sewage leak contained within a small section of Deep Creek Lake proved enough to prompt visitors to cancel rentals and other reservations with tourism businesses in the area. ***In other words, empirical and anecdotal data contained in the report indicate that second home ownership and consumption of rental properties and tourism related businesses are very sensitive to real and perceived changes in environmental quality in the county.***

While it is difficult to precisely interpret or extrapolate these data, the results make it clear demand for tourist and second home related activities are very sensitive to real and perceived environmental conditions in the county. One can conservatively estimate that fracking in the county might reduce tourism and second home market by about a third.

If second home prices at Deep Creek Lake fell by a third, the county would lose something in the neighborhood of $3 million in property tax revenues annually. Data in Figure 43 [p. 107, the figure title is incorrect, it is data for Scenario 2] indicate the authors project that over the peak ten years of drilling [2017 to 2026], under the most aggressive drilling scenario used by the researchers, Garrett County would receive an annual average increase in property tax revenues of $1.2 million.[4] ***Thus, under this scenario, fracking would result in <u>a net loss</u> of $1.8 million in property tax revenues to the county annually over this ten year period.***

The authors report Chamber of Commerce data on the impact of visitors on the Garrett County economy, for 2010, the worst year in the recent recession. These data are in column 2 of the following table and reflect the minimum impact of tourism/recreation/second homes on the economy of Garrett County. Assuming a modest decline of one-third in tourism and second home activity as a result of fracking suggests a loss to the county of $115.6 million in economic impact, $64.5 million in value added and 1,667 jobs [column 3 of the following table].

Impact of Fracking on Tourism in Garrett County Economy		
	Tourism in Garrett County	Reductions in Tourism due to Fracking
Economic impact/output	$347.7	$115.9
Value added/output*	$193.4	$64.5
Jobs	5,000	1,667

[4] We do not know if the estimated increase in property tax revenues in Figure 43 represent increases in real or personal property taxes. More on that topic is below. Regardless, however, the modest loss in real property values by second homes at Deep Creek Lake assumed in this example more than offsets any anticipated increase in property taxes whether from real or personal property taxes.

According to data on the economic impact of fracking in Garrett County estimated by RESI and presented in Figure 35 [p. 98] fracking in Garrett County, under the most aggressive fracking scenario estimated by the researchers, would increase employment over the peak ten years (2017 to 2026) by an average of 2,093 annually, ***resulting in a net gain in employment of just 426 jobs annually.***

Similarly, over this ten year period, under the most aggressive fracking scenario estimated by the researchers, output in Garrett County would, on average, increase by $255.4 million annually. I don't know if this measure of increased output is equivalent to increased sales or value added from tourism and second homes, but it is clear the ***net*** impact of fracking would be reduced by between 25 and 45 percent as a result of a modest decline in tourism and second homes (if one accepts at face value the estimates in the report).

These estimates are essentially back of the envelop estimates based on data in the RESI report and conservative estimates of the impact of fracking on tourism and second homes given the findings of the RESI survey and anecdotal evidence. Some will argue the impact would be somewhat less, while others will argue it should be significantly more. ***The concern is that the authors implicitly assume the negative consequences of fracking in on the economy in Garrett County are essentially zero. The critical point is the NET impact of fracking on the economy of Garrett County will be significantly less than the questionable estimates presented by the authors.*** And this is based only on information in their report.

The authors do not address the issue of the NET impact of fracking on tourism. They say it is too hard. Alternatively, the authors break down the impact of fracking on the economy of Garrett county by focusing on the impact of fracking on the tourism workforce. The authors reference a Cornell University study that found a "severe decline [of tourism related employment] in rural counties."

The Frequently Asked Question material on the MDE web site indicates RESI will perform the promised analysis on regions similar to Garrett County. The authors assert that Somerset County in Pennsylvania and Lewis County in West Virginia, where Marcellus Shale drilling is already occurring, are counties comparable to Garrett County in terms of their tourism industry. These two counties were selected by the authors as comparable to Garrett County "through communication with stakeholders and tourism bureaus within and outside Maryland and a comparison of the USDA rural-urban designations."

I don't know what the USDA designations represent and they are not explained in the report and there is no justification why these designations are used to identify counties comparable to Garrett County. There are more than 3,000 counties nationally classified by this USDA designation. We don't know how many fall into the same classification as Garrett County, but there will be several hundred at least and they cannot all be comparable to Garrett County. ***One would expect the selection of comparable counties***

for this type of critical analysis would have been more scientific and rigorous and not be based on hearsay from people that have a stake in the outcome of the analysis.

I selected some descriptive data from QuickFacts which is presented in the table below and the comparability between Garrett, Somerset and Lewis counties is not clear. Garrett County is in the middle with regard to population, housing units, private non-farm employment, land area and persons per square mile. Alternatively, ***Garrett has the highest median owner occupied house value, the highest per capita money income, the highest median household income and the highest retail sales per capita.*** Could that be because of the important role of tourism, recreation and high-end second home market in the county? We don't know, but we don't know in what way the authors believe these counties are comparable to Garrett County; they simply assert comparability.

This is not really that important in the analysis of the impact of fracking on tourism because the authors note "RESI did not find reliable data to perform an independent analysis of drilling activity's impact on local tourism and recreation in comparable counties." The analysis described in the Frequently Asked Question page on the MDE web site was apparently not conducted – it is not reported or described in the final report. The reader is left asking rhetorically What is the point?

QuickFacts Data	Garrett County	Somerset County	Lewis County
Population (2013)	29,889	76,520	16,452
Housing Units (2012)	18,959	38,045	7,882
Median Owner Occupied House Value	$169,500	$95,100	$90,000
Per capita money income	$24,904	$21,585	$20,920
Median household income	$45,354	$42,424	$35,179
Private non-farm employment, 2011	11,092	20,104	5,167
Retail sales per capita 2007	$14,550*	$9,838	$12,426*
Land area (square miles)	647.1	1,074.4	384.9
Persons per square mile	46.5	72.4	42.5
* Garrett and Lewis counties had retail sales per capita in 2007 higher than the average for their respective state. Garrett's figure is 8.3% higher than retail sales per capita in the state of Maryland and Lewis's figure is 9.6% higher than the state average.			

There is then a discussion of hotel occupancy rates and taxes and the impact of fracking on water resources. The discussion acknowledges that these could be problems but provides no data on the potential impact in Garrett County. The authors conclude "Tourism impacts alone are difficult to accurately quantify . . . the variance of impacts indicates a need for more detailed analysis."

The discussion is superficial, incomplete and does not even utilize the information in the report. The omission of a discussion of the impact of fracking on tourism and second homes, utilizing data in the report, reinforces the perception that the report tends to be pro-fracking.

Section 8 of the Report

Section 3.3 of the scope of work lays out the framework the researchers are to use in estimating the economic and fiscal impact of fracking on Garrett County. A separate 3 page description of the economic modeling RESI will use is available on the MDE web site, albeit it was not included in the report. It says that "Academic journal research and industry research will facilitate the data collection and inform on best methods when determining employment levels and costs." ***Most independent researchers would not rely on "industry research" to inform how they analyzed the issues of concern.***

In addition, the scope of work for this section says that "… specific economic and environmental consequences [of fracking for property values] that will be considered include but are not limited to changes in the following:

- Property value from chemical and/or methane contamination;
- Property value due to perceived loss in value (due to "stigma');
- Property value due to complete loss of potable water access;
- Value of recreational activities due to the extraction, processing, and/or transport of shale-based fuel;
- Property rights associated with the underground storage of shale-based fuel production materials; and
- Other use-based and nonuse-based values such as scenic vistas, recreational/tourism opportunities, and rural character."

There is no reference to or discussion of this analysis in the report.

In addition, this investigation of the impact of fracking on property values is further elaborated in the Frequently Asked Question discussion on the MDE web site. Specifically, "RESI is using data on existing well locations, data from past permit applications for Marcellus wells (since withdrawn), lease information, and geographic analysis to determine the net change in property values under the scenarios." Elaborating further, the 3 page description of modeling used by RESI indicates that the contingent valuation exercise from which RESI will "collect variables on valuation of streams, parks, scenic viewsheds, rental community variables, and expectations by individuals should drilling take place in the region. The variables will then feed into the third model, a hedonic model, to determine the potential loss to housing values that may result from drilling within the region.

There is no discussion or other evidence that these analyses and these variables and data were used in the hedonic pricing model described in Appendix C Section C.2. The equation included in that section does not include variables for any of the variables identified in the previous paragraph. Based on material in the report, this analysis simply was not done.

Section 8 of the report addresses the economic and fiscal impacts of fracking on Garrett County. These impacts were estimated using "several economic modeling tools including a dynamic input/output model, a WTP model, and a hedonic pricing model." [p. 85] Nowhere in the report are these models described, how they were constructed/modified by RESI and what data were used in the analysis (especially the 20 year projections) and how those data were constructed and how these models were integrated to produce the projections of output, jobs and wages. Personally, I know nothing about the private REMI PI+ model used by the authors and the report provides no information on what they did or how they did it. I assume most policy makers will be similarly uninformed about this specific analytic tool.

Economic Impacts

The description in the paper of what was done to estimate the economic impact of fracking seems to be somewhat at odds with what is written in the scope of work for this project.[5] The scope of work says "RESI will provide an analysis using the IMPLAN input/output model." [p. 4] This is confirmed by RESI's 3 page description of the modeling they use, "The collection of results from the three models presented above will be run in both IMPLAN and REMI PI+. ***The authors do not mention IMPLAN in the report. This results in confusion of how this empirical analysis of the economic impact of fracking on Garrett County was actually conducted.***

The scope of work continues "RESI will use the REMI PI+ model to provide revised findings for the final report…The REMI PI+ model is a dynamic modeling tool…With REMI, RESI can build a sophisticated model …"[p. 5] There is no discussion of how this was done in the paper***. It is the proverbial "black box."***

The scope of work also says "REMI will account for 169 industry sectors at approximately the same level of detail as four-digit NAICS codes." [p. 5] ***There is no discussion in the scope of work or the report on where these data will come from, but it is impossible to have that level of detail at the county level, especially for a rural county like Garrett County.***

The authors indicate that they use the REMI PI+ model to analyze the results for employment, output and wages over a twenty-year period. They indicate they "created a baseline economic forecast" for each county and compared that baseline with their two scenarios of how many wells will be drilled. ***There is nothing in the report that sheds any light on how these baselines were created.***

The authors indicate that "More detailed impacts reporting the direct, spinoff and total impacts for employment, output, and wages for each scenario can be found in Appendix D." Appendix D is 14 pages of additional tables. Nowhere is there any documentation of what was done to generate these numbers. ***Without a better understanding of how the numbers were generated it is hard to interpret the Economic Impacts estimated in***

[5] Given the amount of detail in the scope of work it seems that the scope of work was written by RESI.

Section 8.2.1. The reader has little confidence in the numbers and, as a result, they cannot be used to inform policy making.

Further, there is no indication from the authors that these estimates are for the NET impact of fracking on the economy. For example, given the importance of tourism and second homes to the economy of Garrett County, there will be negative repercussions for tourism and the second home market. There will be a loss in sales, a loss in employment in tourism and a loss in tax revenues from tourism. Does this modeling effort consider these negative impacts and incorporate them into the analysis?

Because of the absence of any documentation of what was done in this area, or what data were used and their source, the reader is reminded of the old adages that "the devil is in the details" and with any modeling effort "garbage in garbage out" pertain here. Without knowing what the inputs are the reader cannot make a judgment about how credible the output of these models is. If you have the wrong model, you are going to get the wrong results every time. Without more information on what was actually done, the reader can have no confidence in the results.

Fiscal Impacts

Section 8.2.2 estimates the fiscal impact of fracking for Garrett County. The section is 9 pages of tables on the estimated fiscal impacts associated with fracking under the two scenarios posited by the authors. For example, in Figure 41 [p. 105] the authors estimate that in 2025 under scenario 1 Garrett County will receive an additional $164,668 in local income tax revenues and $594,531 in additional property taxes as a result of fracking. Tax revenues resulting from fracking in 2025 are estimated to increase to $341,009 and $1,231,204 respectively under scenario 2.

There is no discussion of what these numbers represent and no documentation of how these numbers were generated. As a result it is difficult to interpret these numbers. For example, how were the increases in income taxes estimated? Were they based on the wage estimates generated by the REMI PI+ model? If so, what adjustments were made to reflect the fact that a majority of workers will be from out of state and Maryland has a personal income tax based on place of residence, not employment? Or is the increase in income tax revenue a result of lease and royalty income to land owners in the county? Also, are these estimated revenues net of income tax revenues that will be lost in tourism and second homes as a result of fracking? ***There is no way to know how these numbers were generated and what they represent. They cannot be used to inform a policy discussion of the fiscal impact of fracking on Garrett County.***

There are similar difficulties interpreting the estimated increase in property tax revenues to the county. For example, are these estimates of increases in property tax revenues a result of increases in real, or personal, property taxes? The authors do not tell us. We do know that the current real property tax rate in the county is $0.99 per $100 assessed value, or about one percent of market value. The additional property tax evenue under scenario 2 is $1,231,204 in 2025 suggesting that new investment in land and buildings

that year is approximately $123,120,400. In that year, the authors estimate that total output from fracking will increase by $260,437,012 [Figure 35, p. 98]. In other words, the data in the report suggest, if I understand it, that half of the increase in output in 2025 will be plowed back into the county in the form of investment in land and buildings. Does this seem likely or reasonable?

Maybe the increase in property tax revenues reflects increases in business personal property taxes paid to the county. There will be a lot of personal property associated with fracking. The problem is that the county does not have a business personal property tax and according to current law business personal property of fracking companies would pay no property taxes.

Where do these numbers come from and what do they mean? There is no discussion or documentation of these issues in the report. The reader, for example, has no idea of whether or not these numbers are reporting the NET impact of fracking or only the gross impact. It seems unlikely since the authors do not estimate the impact of fracking on tourism. ***If the revenue estimates are only gross revenues expected from fracking, then the report is clearly a pro-fracking report. NET impacts on revenues must be estimated to give a more complete picture of the fiscal impact of fracking in Garrett County. As a result the numbers cannot be relied on to inform a public discussion of the fiscal impact of fracking on Garrett County.***

It is also a misnomer to suggest the analysis presented by the authors in the report is a "fiscal" analysis of the impact of fracking on Garrett County. First, as mentioned above, it is not an analysis of the NET impact of fracking on tax revenues. Second, and perhaps more importantly, the authors totally ignore any consideration of the impact of fracking on increased government spending. For example, the authors recognize that fracking can lead to increases in social problems like crime and substance abuse, but experience shows it will also increase rates of sexual transmitted diseases, depression and other social problems. There is no effort to review literature on the impact such problems have on a community's spending needs. ***As a result of these problems, there will be increased pressure on the public health infrastructure in Garrett County which will result in either more expenditures by the county or a lower level and quality of services to citizens in the county.***

The authors reference a 2012 Wall Street Journal article that discusses infrastructure impacts in Texas around the Eagle Ford shale play. The chief administrator of one of the impacted counties estimated that the "cost of building up the county's 230 miles of rudimentary roads to withstand the inflow of drilling-related traffic exceeds $100 million" [p. 27]. ***Such costs were ignored in the "fiscal analysis' presented by the authors. As a result of omitting estimates in additional local spending and not looking at the NET impact of fracking on revenues, this discussion furthers the impression that the report is sympathetic to fracking.***

The scope of work also makes reference to a contingent valuation analysis to be performed by the contractor. The scope of work says "RESI will employ CV techniques to estimate the willingness-to-pay of residents in Allegany and Garrett Counties for avoiding the

environmental damage resulting from shale-based fuel production and exploration." ***No discussion of this is in the body of the report.***

In addition, the scope of work says "To complement the contingent valuation technique, RESI will perform hedonic price analysis with the focus on property value effects from shale-based fuel production. Using the data available from DataQuick RESI will use residential property values to generate these effects for Western Maryland ***using appropriate and defensible benefits transfer techniques***." ***[emphasis added because it is not clear what this means]. Nowhere in the body of the report do the authors discuss what this means and how it was done.***

The scope of work also indicates that there will be a contingent valuation analysis and a hedonic pricing model estimated as part of the economic impact analysis. These studies/analyses are not described or discussed in the body of the report.

There are several Appendices to the report that purport to discuss these issues. These are examined below.

Appendix A – Hedonic Pricing Analysis

The discussion of the hedonic model used by the authors is complicated because some of it appears here and some of it appears in Appendix C – Model development. I discuss both sections dealing with the hedonic pricing model here.

The portion of the discussion in Appendix A focuses on Existing Literature and The Data. The existing literature section is 4 paragraphs – not a comprehensive review of existing literature. It mentions 3 recent studies of the impact of fracking on land values

- Gopalakrishnan and Klaiber (2014) find home values decline by 22 percent when near a fracking well
- Muehlenbachs, Spiller and Timmins (2012) find home values decline by 26.6 percent when near a fracking well
- Muehlenbachs, Spiller and Timmins (2013) find properties relying on private drinking wells were negatively affected by being close to a fracking well.

The data section lists 8 variables measuring housing attributes used in the hedonic model by RESI. The actual equation estimated by RESI is shown in Appendix C, Section 2. It includes all but one of these 8 variables – it does not include square footage of building, but it does include square footage of land. The equation also includes a variable to indicate if the property was on well water or public water and then there were three variables indicating distance from the property to a well site. It says the equation is trying to explain variation in "home market value" but it does not say whether that is the actual sales price or not.

Conceptually, the hedonic pricing model as described in the appendix is fatally flawed. To isolate the value of an individual attribute or characteristic of a property (e.g., distance to a fracking well) the model must hold constant all the other attributes that affect value.

There is an extensive economic literature on such hedonic pricing models and they typically include variables capturing differences in housing attributes (both quantity and quality variations), neighborhood characteristics, measures of the quantity and quality of public services available, measures of local taxes (specifically the effective local property tax rate) and variables to capture differences across time and to capture the effect of unobservable variables that will affect value.

Based on the superficial description of the model estimated by RESI, the model seems to be of the most naïve specification of a hedonic model because it only looks at prices of housing near wells and not near wells, adjusting for a couple of housing characteristics. ***Given all the information about attributes that might impact value that are omitted from the model, the results are suspect because they could be reflecting influences of variables not included in the model.*** For example, you could have two identical houses with all the same attributes except one is a mile from an existing well in Garrett County and the other house is located on Deep Creek Lake. There is nothing in the model described by the authors to capture the difference in value of being on Deep Creek Lake. As a result the variables actually in the model reflect, to some degree, the variation in market value resulting from factors not reflected in the model, thereby over estimating the effect of the variables actually included.

The presentation and documentation of the model are also deficient. Standard professional practice is to include a list of the variables, how they are defined, how they are measured and reporting basic/standard summary statistics for each variable, e.g., number of observations, maximum and minimum values, mean and median, etc. ***The authors provide none of that information.***

There are other questions about the data used that raise questions about the empirical results. The authors say they use data from DataQuick Property Data, but they give no information about what data is used. Are they trying to explain "actual sales prices" or estimates of market value by the assessor? Do they look at just residential property, or do they include agricultural, vacant, and commercial property? How many properties are included in the analysis? What sort of data cleaning, which is always necessary when analyzing large data sets, did the authors undertake? The reader simply does not know.

The 2012 study by Muehlenbachs, Spiller and Timmins referenced by the authors uses DataQuick information in their hedonic model exploring the impact of fracking wells on property values in Washington County, PA. Their presentation conforms to basic professional standards in such analysis by describing what they are doing, providing data description and the cleaning they did, and reporting of results. They state explicitly that they are using sales values. They started with 41,266 observations provided by DataQuick. They removed properties that did not have a transaction (sales) price and properties with only land sales value. As a result of this "cleaning process" they ended up using 19,055 observations in their analysis, just 46 percent of the data initially provided by DataQuick. Describing the data used in such a hedonic model is standard professional practice. ***There is no similar basic discussion of the data used in the RESI***

report. As a result the reader has little confidence in the numbers and they are useless for informing a policy debate about these issues.

Also, it is interesting to note that Figure 81, which presents the results of the analysis, does not include traditional measures of how well the equation explains differences in housing prices. I suspect that given the flawed specification of the equation it explains very little of the variation because of the significant amount of information omitted from the analysis. There are statistical techniques that can be used to overcome problems resulting for significant omitted variables (see the discussion of these issues in the 2012 study by Muehlenbachs, Spiller and Timmins referenced by the authors) but there is no indication in this report that the authors were aware of or considered how to deal with significant omitted variables.

In addition, Garrett County does not have any fracking wells at this time. The authors use 2005 data on the location of traditional vertical wells as their measure of distance from a gas well. What was the date of the other variables used in the hedonic pricing model? Were they all 2005 values also? Or where they 2011 or 2012 values? ***If the later, then there are other trends that affect different properties and different areas of the county differently. To the extent these impact the value of a property, they are not adjusted for in the model described by the authors.***

The results of the hedonic pricing analysis reported by the authors conclude that properties within a half mile to a mile of a 2005 vertical well in Allegany and Garrett County experience a decline in property values of between 35 and 36 percent. This is significantly more than the declines reported by the authors in the studies mentioned above, which raises further questions about the integrity of the model and the results presented by the authors.

Appendix B – Contingent Valuation Analysis

Appendix B details the results of survey responses collected by RESI. Two survey techniques were used – in person interviews and a web survey instrument. The authors claim survey participation was random, but 645 surveys were completed via the web and just 157 were conducted in person, less than 20 percent of the surveys completed. The authors say in the report that the web survey instrument was only available through the Garrett County website [p. 126], but a power point presentation by the authors on August 26, 2013 says the survey was also available through a hyperlink prepared by RESI. ***There is no information on how many web responses came through which link.***

The County survey link was promoted through various county twitter, facebook and linkedin pages and 3 other places on the county's web site. The people finding the survey on line either have to know ahead of time it was there or be very regular visitors to the site. People not members of these social networking sites would not have seen the questionnaire.

Similarly, it was not clear how the locations for the in-person interviews were selected. Typically, such a survey would identify the targeted population the researchers wanted to survey and that would determine where and how the surveys were administered. There is no discussion of these issues in the report or the appendix. In fact, one place the survey was administered was at the Oakland Farmers market in September or October so who was the target population they wanted to survey? Also, they explicitly left out administering survey to all of the farmers and other vendors selling things at the market. That seems to be a serious omission. Again, who was their target group(s) they wanted to survey? There is no discussion of these issues in the report and no evidence that they survey responses were in fact random and statistically represented the intended populations they wanted to suvey.

In either case the web survey respondents and the in-person interviews were self-selected and they are not random. There is a significant selection-bias in these responses.

RESI analyzed survey responses to estimate the willingness-to-pay for environmental protection. The only question relevant to this issue in the survey instrument was question 16 which asked how much the respondent would be willing to pay into a conservation fund to mitigate the environmental costs caused by fracking. Forty-eight percent of respondents said they were willing to pay "nothing at all" into an annual conservation fund. Of those, 72 percent said the frackers should provide funding to mitigate the environmental damage caused by fracking.

Section B.5 discusses in more detail the efforts RESI pursued to "clean" data for the contingent valuation model. Primarily this "cleaning" evolved around how to treat what are described by the authors as "protest bids." Protest bids are those where the respondent felt that the money for the conservation fund should come from the drilling companies or respondents who felt the money should come from the somewhere else. These "protest bids" are generally omitted from the analysis. In response to reviewer comments, RESI did some statistical manipulation and decided to include some of these responses as "true zero bids" and dropped those determined by RESI to be "true protest bids." We don't know how many of the "protest bids" fell into each group.

The results of this analysis are reported in Appendix C – again a disjointed presentation that duplicates some discussion and makes it difficult to link the various sections. The results do not appear in the body of the report, only Appendix C, Section C.4.

There is no discussion of the policy relevance of these findings or how they were used in the other analysis in the report. Again, the reader is left with the question, What is the point?

In this general area there are different model specifications to analyze different questions. There are contingent valuation, willingness-to-pay and willingness-to-accept models. The choice of approach of the authors asks the wrong question and the analysis is suspect because up to 277 of the 802 survey responses (36 percent) were simply omitted as

"protest bids" because respondents didn't think they should pay to clean up the pollution from frackers.

Alternatively, the authors could have taken the approach in a 2013 study by Throupe, Simons and Mao. They used a contingent valuation survey administered through random telephone calls to potential buyers asking a series of questions about buying property, including acquisition of property located near fracking wells. Of 194 Texas respondents to the scenario with heavy fracking, only 26 percent said they would bid on land near the fracking well. These researchers consider the zero bid option not as a "protest bid" to be omitted, but as important information which reflects the reduction in the market demand for this type of property. This seems a more relevant response to the issues associated with fracking in Garrett County.

Brigid Kenney -MDE- <brigid.kenney@maryland.gov>

RE: Economic study

1 message

Eric Robison <xmedic@hughes.net> Sun, Jun 1, 2014 at 2:11 PM
To: Brigid Kenney -MDE- <brigid.kenney@maryland.gov>
Cc: David Vanko <dvanko@towson.edu>, Nadine Grabania <paulr@deepcreekcellars.com>, Christine Conn -DNR- <christine.conn@maryland.gov>

Brigid,

Thank you for finally asking… had the conversation occurred during the "public" meeting, the area of concern would have had a little more daylight in front of the commission. I hope you can understand my frustration at having to chase down presenters in the hallway to ask questions about their presentation and missing portions of the next presentation. Chairman Vanko has made it abundantly clear that he wants to stick to the letter of the law regarding the Open Meetings Act, while missing the spirit of the act for true public participation. Hopefully he will never have to sit passionately by for 6 hours for his 3 minutes in front of a committee that is reviewing something he feels strongly about.

Dr. Arani and a gentleman from Ohio were talking in the hallway and the gentleman was applauding the report and commented that the business personal property tax would be a boom for Garrett County when the drilling began, Dr. Arani agreed in referencing the slides from his presentation (page 26). I pointed out to Dr. Arani that Garrett County does not have a business personal property tax and that the drillers would be exempt from paying that tax. Dr. Arani's response was a questioning look to his assistant and verbal "oh". He said that the full report would clarify some of those issues…. just as you have alluded to in your email.

I have review much of the report and paid particular attention to the areas covering the Fiscal Impacts Associated with Drilling in Garrett County – Scenario 1, 25 % Extraction (page 104) and Scenario 2, 75% Extraction (page 106) and using the scenarios (page 100 and 102) presented for Allegany County as a comparison because they have a business personal property tax, I was able to see that the outcomes for Garrett County used a business personal property tax as Dr. Arani suggested during the hallway meeting.

The full report does not have any of the data sets used for input, so there is no clear way to analyze the input data.

I know you have been very particular when it came to the public supplying references for any materials or recommendations we supplied. It would seem only professional to have access to all of the reference materials RESI has used for their data sources. We have had multiple conversations regarding data input for studies and the accuracy of the data supplied, to include baselines, the same applies for these studies. Data omissions are just as important as the data used when determining the final output for these type of

reports. If data was not available and projections were used to fill data gaps, it would be very important to see how the data was compiled and the what the criteria was for inclusion in the study.

The bibliography was not referenced for the individual studies and several of the links within the bio are dead links (DBED, DLLR, Wisp Resort and Hedonic Prices and Implicit Markets are examples)

During a bathroom break of the SGAC, I spoke to Commissioner Valentine and he was also questioning the data for the report. He stated that the baseline numbers were very inaccurate and if they were correct he would win the upcoming election. I asked if he or Allegany County had supplied input for the data used in the report. Commissioner Valentine stated, "No, we were never contacted by the study group". I asked if he knew where the data had come from and said he thought the data was supplied by the state on some kind of projected numbers…

A second issue may just need clarification, but when reviewing those same charts there was a column labeled "other". The endnote number is 218 and reads as follows: *Other taxes include other forms of fees and taxes such as licenses, permits, etc.*

With MDE not as yet establishing the permit process, nor Garrett County, how was RESI able to determine a permit fee structure? Will this funding cover the inspection and needed permit requirements, such as the CGDP process? When reviewing the number of wells to be permitted under each scenario and the funding that will be apportioned to the state and county there appears to be, again, a lack of funding to support those programs. It would seem that the BMP's would have to be finalized and then adopted into either COMAR or the regulatory process to determine the final fee structures.

A final side note; I asked about the Transportation impacts and you stated you were waiting for RESI to release their report to determine truck trips for the study you plan on doing in house. After reviewing the report from RESI regarding Truck Trips section 6.3 on page 68-69, RESI reports they are "*Using the estimates compiled by MDE for estimated truck trips as well as RESI's projections for well pad and well build out, RESI calculated figures for the potential increase in the number of truck trips in Western Maryland attributable to Marcellus Shale drilling."*

Under the Methodology section 6.3.2, *RESI utilized the truck estimates calculated by MDE as the basis for the truck trip analysis*. In this section it was determined and in my opinion, underestimated that there would be 5 million gallons of water used per well. (I believe the report from Downstream Strategies showed higher truck trips and water usage in West Virginia and Pennsylvania.) If we used the "MDE estimates" for round trips and with the recommended/suggested pad development of 6 wells per pad you would have 22,848 trips per pad and if we used 2017 scenario of 4 new pads, we would have 91,392 truck trips in Garrett County that first year. The tables as shown are very misleading as to the true number of truck trips and the tables should reflect the actual roundtrip numbers. I feel that the impact from truck traffic has been down played and this should be further discussed at the County level to help develop a system to protect our infrastructure.

This was my first glance at the report, I may have additional questions after reading a little more in depth into the report.

Any information or insight would be greatly appreciated,

Eric Robison

From: Brigid Kenney -MDE- [mailto:brigid.kenney@maryland.gov]
Sent: Friday, May 30, 2014 11:28 AM
To: Eric and Caroline Robison
Cc: David Vanko; Nadine Grabania; Christine Conn -DNR-
Subject: Economic study

Eric, if you still think there is a significant flaw in the economic study after reviewing the full report, please let me know what it is. If there is a problem, we will address it.

Thank you.

Brigid E. Kenney
Senior Policy Advisor
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230
Office: 410 537 3085
Fax: 410 537 3888
brigid.kenney@maryland.gov

MARCELLUS ADVISORY -MDE- <marcellus.advisory@maryland.gov>

Economic Study

1 message

Marcia <m_tirocke@yahoo.com> Mon, Jul 14, 2014 at 8:30 AM
Reply-To: Marcia <m_tirocke@yahoo.com>
To: "marcellus.advisory@maryland.gov" <marcellus.advisory@maryland.gov>

As was mentioned by numerous people at the last advisory meeting this report was a bit difficult to get through and process. That said, here are the comments that came to mind while struggling through it:

1. The economic "boom" will begin in 2021 and start to decline in 2027, meaning that this "boom" will last only about seven (7) years. These are not permanent jobs and certainly not a permanent boost to the economy.

2. Too many of those "new" jobs will be taken by out of state employees. As mentioned above the "boom" is only seven years long, drilling companies will not be willing to train new people, as they already have out of state trained employees on their payroll, for this short term project and will most likely be hiring only low paying menial hazardous worker jobs.

3. Query, how much of the reported millions of dollars of revenue will have to be spent on shoring up Garrett County's under served health care, fire & rescue and law enforcement?

4. It has always been my understanding that Tourism and Agriculture were this county's biggest sources of revenue, that they were left out of the report due to insufficient data seems absurd.

Marcia Tirocke and Derek Johnson
326 Sherman Hare Road
Grantsville, MD 21536
301.895.5305

Marcia Tirocke

Marcia Tirocke

War does not determine who is right, it determines who is left.

Insanity: *doing the same thing over* and over again and expecting different results.~ Albert Einstein

This country will not be a good place for any of us to live in unless we make it a good place for all of us to live in. ~Theodore Roosevelt

"We cannot solve our problems with the same thinking we used when we created them."
~Einstein

Brigid Kenney -MDE- <brigid.kenney@maryland.gov>

Towson study of economic/fiscal impacts of fracking in Garrett County

1 message

Michael Bell <mebassociates2@gmail.com> Sun, Jun 1, 2014 at 6:04 PM
To: Brigid Kenney -MDE- <brigid.kenney@maryland.gov>

Brigid

I just today received a link to the final report from Towson on the economic/fiscal impacts of fracking on Garrett County.

I understand this report was presented to the Governor's advisory committee, but that the author did not stay around to answer any questions. That is very unprofessional and raises serious questions about the report.

I have not had time to read it closely, but a couple of things jump out at me that raise serious concerns in my mind about the overall credibility of the report.

I am not talking about the overall tone of the report which seems to be pro-fracking. While some, but by no means all of the, problems associated with fracking are raised, too often they are dismissed without any factual justification. This is illustrated by the last paragraph in the report that

Extensive research indicates that the potential community, tourism-related, and economic and fiscal impacts—including but not limited to impacts to agriculture, schools, environmental amenities, health and safety, housing, traffic and roads, tourism and recreation—of shale gas drilling vary depending on numerous factors, ranging from well pad build out to royalty payments. Although RESI's literature review revealed that natural gas extraction activities typically follow a "boom and bust" cycle, most other states that are considering or currently allow shale gas drilling expect that such activity will generate positive economic impacts, at least during peak drilling activity.

In other words, in spite of a whole host of potential problems, which are not really explored in depth in this report, and in spite of the "boom and bust" cycle of the industry, "most other states that are considering or currently allow shale gas drilling expect that such activity will generate positive economic impacts." So that is the final thought and there is no documentation of what other states, what their expectations are based on, and how any offsetting damage to the

economy relates to these "expected" benefits. This sounds like something written by the frackers themselves. This sort of unsubstantiated pro-fracking conclusions proliferate throughout the entire study.

But this is in part an editorial issue, albeit it makes it seem the report is an advocacy piece, not an objective analysis that is supposed to inform some of these issues and expectations.

But I have other, more serious, concerns with the parts of the report I have looked at.

For example, I found the discussion of the hedonic pricing "model" lacking. First, there is no model. It is simply a regression run with a hand full of variables and no "model" to suggest what variable might be important to include in such an analysis. Second, there are serious issues with the numbers used in the analysis and reporting the results in the section dealing with the hedonic model. For example, the paper does not tell us if the left hand variable is sales price or assessed value. Did they use assessed value as it seems, or do they have data on actual sales in the county? No credible/professional hedonic analysis like this would use assessed value because the assessment/sales ratio varies across individual properties and would influence the results. This is really very unprofessional. There is no discussion of the data used in the analysis. For what year is the data? How many properties were used in the analysis? What types of properties? Residential only? Residential and ag? Are commercial properties used also? How does DataQuick get their information? Were there any problems with the data? The report provides no information at all as far as I can tell. They don't report only selected statistical results and don't report the degree of variation explained by their variables or any other summary data describing the data used. This is important to determine whether or not the variables they look at are really important or not. Are the right hand variables correlated with each other? We don't know. I could go on, but the point is the numbers simply are not believable and should not be referenced until we know some of these things. And if there are significant omitted variables and if they use assessed value then the results are meaningless.

A second example comes from the section estimating the fiscal impact of fracking. First, the tables with estimate revenues resulting from fracking seem to be gross numbers and there is no effort, or even recognition, that other tax revenues might fall if the county's image as a recreation and tourism destination is ruined and we get a reputation as a county based on energy development and fracking. What if the property values at the lake decreased by 50 percent? What if half the tourist based businesses in the county go out of business as tourism declines. That is a reduction in income, in the room tax, etc. There is no mention of this possibility at all in the report. If this was an objective professional analysis the estimates should be estimates of the NET impact of fracking, not just the positive impact.

But the bigger issue is the numbers in the table. Again, I could not find anywhere in the report where they describe how these revenues estimates are generated. For example, what does the

column on property taxes represent? Are those real property tax revenues, or personal property tax revenues? The report doesn't say. If they are real property tax revenues what is the base and why does it fluctuate depending on where in the drilling cycle we are? That makes it seem more likely that the estimates are for personal property taxes. The problem is that Garrett County does not tax business personal property and the author of the report did not seem aware of that when Eric Robison asked him about it in the hall after his presentation. Also, what is the basis for the income tax estimates? I assume that is personal income tax, not corporate income tax, right? Does that reflect the increase in wages they forecast earlier? If so how do they treat the fact that most of the workers will be temporary workers and Maryland's income tax is resident based? That is the state cannot tax the wages of transient workers. How is that figured in? Or is the tax estimate based solely on the anticipated income to landowners' lease and royalty payments? There is no documentation in the report on what these numbers represent and how they were calculated. Also, what about severance tax revenues to the state and the county? Where are those estimates.

Again, the reporting and documentation are non-existent and leave the reader wondering how to interpret these numbers. Again, the point is the numbers simply are not believable and should not be referenced until we know more about what they represent and how they were calculated.

I have similar concerns about the estimates of the baseline economy and how the variables of interest vary under Scenario 1 and 2. I just have not had time to look at it in more detail, but I did not see anything about methodology or data used.

Finally, I am puzzled about the contingent valuation section. What is the point of this section? What relevance does it have for analyzing the impact of fracking on the economy and fiscal health of Garrett County. And I am very troubles by the discussion about the vast majority of responses that said the oil companies should clean up any environmental damage and should bear the cost of using best practices to protect the pristine environment in the county which attracts tourists. It seems they initially simply left out those observations but, in response to someone's comments, included some of them (how many and how do you decide which ones to include) but not others. This seems to be a major distortion of the results of their survey. A more logical conclusion would be that the questionnaire and answers, which reflect peoples' attitudes, are not appropriate for this type of analysis. And I really don't see how this analysis fits in and there is no effort in the report to tie it back to the issues that are supposed to be addressed.

I would like to have time to go through the report in more detail because I think these issues only scratch the surface of the lack of documentation in the report. Without that documentation the numbers are not credible and should be used by the task force to inform anything. In fact, until these issues are addressed adequately, I think the report should be withdrawn from the advisory committee. The report is sophomoric in its presentation, superficial and, in my view,

totally unprofessional and should not be used in the deliberations of the advisory group until these issues are addressed and we can interpret what these numbers mean and how they were calculated.

I have been in this business for over 25 years including 9 years at Johns Hopkins University and the last 11 years at George Washington University. If had turned in a report like this I would not have received payment for the work because it would be unacceptable. As a taxpayer, I want my money back.

I look forward to your response on how you are going to proceed with this matter. I just don't understand how the advisory group would have this dropped on them without the opportunity for questions.

Thanks for your patience with my long response, but as we discussed earlier I think this is the most important report for the Governor's Advisory Committee to consider and I am very frustrated, and a bit angry, that this report is so lacking in basic professional standards yet it is the only information the advisory committee will consider.

Mike

Dr. Michael Bell

Research Professor

George Washington University

301-387-9030

MARCELLUS ADVISORY -MDE- <marcellus.advisory@maryland.gov>

Property Values

1 message

Tom Rosser -DHR- Garrett County <tom.rosser@maryland.gov> Mon, Jun 30, 2014 at 11:20 AM
To: marcellus.advisory@maryland.gov

If I am reading the report correctly (Section 8), properties that are within one-half mile of a drilling rig will lose approximately 35% of their real estate value. If my memory is correct, it is projected that about 100 wells will be drilled in Garrett county. This means that all the properties within a half mile of these rigs will lose 35% of their value. Did the study look at how many of these properties there are, and what the total loss in value could be? The loss in value of these properties will also affect the amount of property taxes paid, and available to the county. This should be included in the study.

Did the study do any research to determine whether real estate mortgage lenders are willing to make mortgage loans to new buyers of these properties?

Thanks.

Tom Rosser
88 Accident-Friendsville Rd.
Accident, MD 21520

Work phone:301-533-3081
tom.rosser@maryland.gov

~~~~~~~~~~~
~~~~~~~~~~~

MARCELLUS ADVISORY -MDE- <marcellus.advisory@maryland.gov>

Economic Study

1 message

Paul Durham <pdurham@shentel.net> Thu, Jul 10, 2014 at 9:47 AM
To: marcellus.advisory@maryland.gov

Question regarding the reports of a peer review of the RESI study:

Appendix E reports out on the "peer review" as it pertains to the issue of " inclusion of protest bids" and using a "Turnbull Lower Bound Estimator".

Were there any peer review comments on the rest of the report?

"*RESI elicited two peer reviewers to comment on the analysis*." - the whole report or just the contingent valuation?

Paul Durham
Garrett County Board of REALTORS

July 14, 2014

Brigid E. Kenney
Senior Policy Advisor
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

RE: Impact Analysis of the Marcellus Shale Safe Drilling Initiative

Dear Ms. Kenney:

America's Natural Gas Alliance (ANGA) appreciates the opportunity to comment on the Impact Analysis of the Marcellus Shale Safe Drilling Initiative report that was prepared for the Maryland Department of the Environment.

Representing North America's leading independent natural gas exploration and production companies, America's Natural Gas Alliance (ANGA) works with industry, government and customer stakeholders to promote increased demand for and continued availability of our nation's abundant natural gas resource for a cleaner and more secure energy future.

ANGA has been supportive of the Marcellus Shale Safe Drilling Initiative and has appreciated the opportunity to provide input throughout the process. Additionally, ANGA looks forward to the issuance of the Advisory Commission's final report later this summer.

Our nation is faced with an unprecedented opportunity that can advance our environment, our economy and our energy security. Modern technology is now unlocking vast supplies of clean natural gas-right here in America-that can power our nation for generations to come. Natural gas companies understand that with this opportunity comes the responsibility to be dedicated stewards of local land, air and water. We are committed to helping communities where we conduct our operations understand the proven, scientific safeguards and vigilant regulatory oversight that is in place today to help ensure that natural gas continues to be produced in harmony with the local environment. Communities should not have to choose between advancing their economic interests and safeguarding their natural resources. With responsible natural gas production, our nation can advance both priorities together.

Within this context, ANGA would like to submit the following specific comments to the Department on the RESI study:

Agriculture: Page 22
Water is a precious natural resource. A big part of our industry's commitment to

environmental stewardship revolves around our ability to use water wisely and to be attuned to community water needs. It is not unusual for a typical deep shale gas well stimulation to require between 2 million and 4 million gallons of water. These numbers are significant, but they are small relative to the amount of water continually required to generate power from other energy sources.

Innovative technology is what brought us this great opportunity for a better energy future, and our industry continues to innovate in ways that significantly reduce water usage, increase water recycling, minimize truck traffic, reduce air emissions and limit local impacts.

For many ANGA member companies that are active in the Marcellus shale, water recycling is an employed best management practice. Cabot Oil and Gas has recognized that processes such as water recycling are essential to the long-term viability of modern natural gas and oil production. In its Marcellus Shale operations, which accounted for 60% of Cabot's wells drilled in 2012, they currently recycle virtually all of the water generated through drilling, completion and production operations. See more at: http://www.cabotog.com/social-responsibility/water/#sthash.wxF4WLxq.dpuf
Also, in the Marcellus Shale, Anadarko's water-management and well-completion strategies strive to reduce truck traffic and associated emissions, while minimizing earth disturbance and conserving available water resources. Additionally, a piping system using two lines, one for natural gas and one for fresh water (located in the same trench to reduce surface disturbance), provides water to well sites for the completion process. The closed-loop system moves water from a pre-determined and approved source through pipelines to containment facilities for use in the hydraulic fracturing process. Anadarko has employed the use of temporary earthen impoundments and portable, above-ground holding ponds (PortaDams) to store water required for completion operations. The flowback water from operations is produced into steel tanks and treated on site using newly developed water filtration and recycling technologies. The recovered flowback water is then recycled and reused in future operations. Additionally, we collect drill cuttings, or pieces of earth that return to the surface in the drilling operations, in steel containers until they can be properly tested and disposed of in accordance with all regulations.
http://www.anadarko.com/Operations/Pages/SafeguardingWater.aspx

To reclaim produced water as a way to conserve water, Chesapeake Energy developed Aqua Renew® in 2006 as a logical evolution of its involvement with the Barnett Shale Water Conservation and Management Committee in North Texas.

Chesapeake's Marcellus and Utica Shale districts now treat and recycle a vast majority of the produced water from their operations. At each Marcellus and Utica wellsite, produced water is collected and stored in on-site holding tanks before being transferred to central locations where suspended particles are removed through either gravitational separation or through filtration. The water is tested for salt and other mineral content

to determine the rate at which it can be blended with freshwater to ensure proper quality and quantity for reuse by Chesapeake operations. It is then stored in on-site tanks or transported to the next well scheduled for hydraulic fracturing. This process has allowed the company to filter and reuse 97% of the wastewater associated with its operations in the Marcellus North, 52% of the wastewater in the Marcellus South and 89% of the wastewater in the Utica district. http://www.chk.com/corporate-responsibility/ehs/environment/water/pages/aqua-renew.aspx

Schools: Page 23 –
Besides potential economic benefits derived by some school districts and institutions of higher education from direct lease and production payments, there are countless examples of direct benefits to schools through natural gas development within both their communities and the states as a whole. What is most easy to articulate is the increase in tax revenue derived from natural gas development. According to the Marcellus Shale Coalition, the natural gas industry in Pennsylvania has generated more than $2.1 billion in various taxes across the state; produced $630 million in additional tax revenues through impact fee payments; helped create and support nearly 245,000 good-paying Pennsylvania jobs; and has been part of a natural gas manufacturing renaissance in Pennsylvania and has also led to the development of new natural gas distribution systems in the state – all of which play a vital role in both funding local educational systems and ensuring employment opportunities for our young men and women who are just entering the workforce.

There are more specific examples of our member companies' direct involvement with educational institutions. Noble Energy has become a founding partner, with the Community and Technical College System of West Virginia (WVCTCS), of the new West Virginia Community College Petroleum Tech Program. As a founding partner, Noble Energy will invest $250,000 as a one-time donation to the institutions one-year certifications and two-year degree programs focused on shale exploration and production.

To ensure Lackawanna College's School of Petroleum & Naturals Gas grows to a nationally recognized institution, Cabot Oil & Gas Corporation is endowing the school with a $2.5 million package consisting of cash and in-kind considerations over the next 5 years. http://www.lackawanna.edu/falcon-headline/lackawanna-college-2-5-million-gift-cabot-oil-and-gas/

Health and Safety: Page 24-26
As the Advisory Commission is well aware, currently, states lead the day-to-day oversight of natural gas development because they have the on-the-ground personnel and expertise to safeguard local air, land and water. State-level enforcement is considered critical because drilling practices are customized to the unique geological characteristics of different parts of the country. ANGA member companies support appropriate state oversight and recognize the role they play in helping ensure safe and

responsible development.

The geology of natural gas formations can vary greatly from region to region - even wellsite to wellsite in some areas. For example, Texas' Eagle Ford Shale and the surrounding environment is vastly different than the geology in Texas' Barnett Shale to the north, just as it is different from Pennsylvania's Marcellus Shale. Each shale, and even different parts of the same shale, possesses unique geological characteristics that require specialized approaches to developing the natural gas found there. Well design, location, spacing, operation, water management and disposal, waste management and disposal, wildlife impacts and surface disturbance are all variables that differ and are accounted for by state-led regulation.

Diversified Geography:

Louisiana - Surface water sources are abundant, so companies strive to use this source of water in place of aquifers used by many of the residents in the rural sections of the Haynesville Shale.

Texas - A significant portion of Texas' Barnett Shale is produced in urban areas. Producers working in this region must be more sensitive to water consumption, noise, air emissions and produced water disposal.

Texas - The Eagle Ford Shale is found in an arid part of Texas. Water recycling is not an option here because the rock is so dry that very little of it returns to the surface. Companies operating in this location are adapting through a variety of innovative measures, including systems that use substantially less water, and/or by relying on non-potable water sources. Where feasible, companies take advantage of seasonal precipitation, and reuse water from industrial processing plants and city wastewater plants.

Arkansas and **Pennsylvania**: The industry is moving aggressively toward 100% recycling of the water used in its operations because underground disposal options are limited in these areas.

Federal Regulations:

In addition to their own regulations, state regulatory agencies enforce existing federal laws, which include:

- The **Clean Water Act** regulates surface water discharges and storm-water runoff.
- The **Clean Air Act** sets rules for air emissions from engines, gas processing equipment and other sources associated with drilling and production activities.
- The **Safe Drinking Water Act** regulates the disposal of fluid waste deep underground (far below fresh water supplies and separated by approximately one mile of impermeable rock).
- The **National Environmental Policy Act** requires permits and environmental impact assessments for drilling on federal lands.
- The **Occupational Safety and Health Act** (administered by OSHA) sets

standards to help keep workers safe. These include requiring Material Safety Data Sheets be maintained and readily available onsite for any chemicals used by workers at that location.

- The **Emergency Planning & Community Right-to-Know Act** requires storage of regulated chemicals in certain quantities to be reported annually to local and state emergency responders.

Roads: Page 28

The transportation of materials, water and equipment is a vital component of natural gas production. ANGA members have demonstrated a commitment to minimizing the community impact in our operating areas.

The issue of truck traffic and impact on road infrastructure had been addressed proactively in many shale development areas through the utilization of a road maintenance agreement (RUMA) or state approved road management plans. A RUMA is an agreement between a governing body, typically at the local level such as county or a township, and gas exploration company. RUMA are entered into prior to the development of well pad sites and any actually drilling or hydraulic fracturing take place. In many jurisdictions, a RUMA is required to be obtained prior to the issuance of any permits associated with development activities.

RUMAs establish the parameters by which a gas producer will use the local road infrastructure. Typically, the agreements between a producer and a locality that cover road repairs, upgrades, bonding and often stipulates designated travel routes for heavy equipment to ensure safety and minimize impact. These agreements also take into account school bus routes and travel schedules, as well as other issues of local concern that can be mitigated through effective transportation planning and government/operator collaboration.

An example of this agreement can be found on the Ohio County Engineer's Association website. http://www.ceao.org/aws/CEAO/pt/sp/home_page

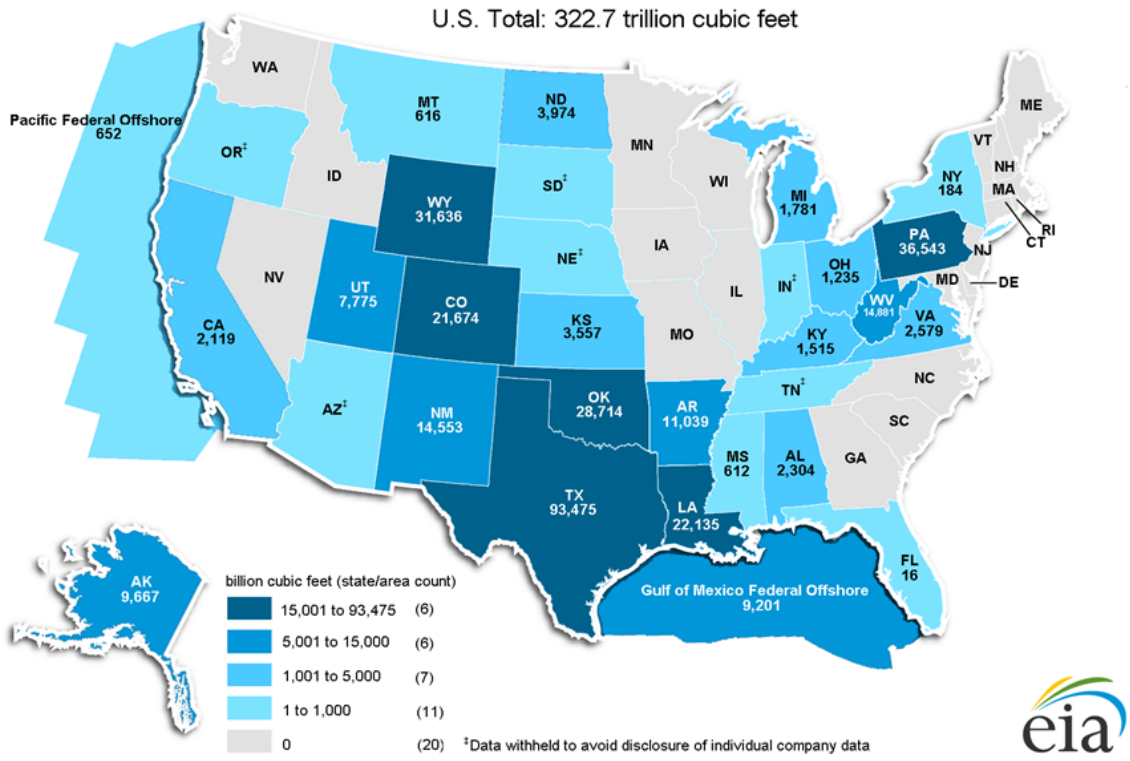
Additionally, the advent and wide utilization of water recycling and reuse programs has dramatically reduced truck traffic. The construction of centralized fresh water impoundments and temporary over surface water lines that deliver water for well stimulation without the need for vehicular transport is further minimizing impacts on local transportation infrastructure. In Pennsylvania alone, between 2008 and 2011 according to a Marcellus Shale Coalition operator survey, gas producers invested over $411 million on construction of new roadways, upgrades and repairs since development began in earnest. http://marcelluscoalition.org/2011/06/msc-member-companies-invest-411-million-in-local-state-roads/

Louisiana: Page 32

The data contained within the report regarding the Haynesville Shale is several years old. ANGA would recommend a review of the 2012 analysis by IHS Global Insight, which highlighted that unconventional gas in Louisiana is responsible for: 81,022 total jobs in 2010, projected to increase to 200,555 by 2035; $5.4 billion in total labor income in 2010, projected to increase to $16.3 billion for Louisiana workers by 2035; $11 billion in value-added economic output in 2010, projected to increase to $37.7 billion by 2035.

Ohio: Page 33 –
In the description of Ohio's gas characture, the report mistakenly indicates that the Marcellus Shale play does not contain natural gas liquids.
http://www.eia.gov/naturalgas/crudeoilreserves/pdf/uscrudeoil.pdf

Figure 16. Wet natural gas proved reserves by state/area, 2012



Source: U.S. Energy Information Administration, Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves."

Tourism & Recreation: Page 38
There is a speculative impact on local tourism assets that "stakeholders" have expressed concern about as per the report. The overall industry track record in the dozens of states in which there are active oil and gas development operations should be taken into account in respect to tourism – which is an economic driver in most states. An effective analysis of tourism resources in areas of both temporal and long-term oil/gas operations will yield a better view of the opportunities and challenges that increased oil/gas development in a given region will produce.

ANGA appreciates this opportunity to provide specific comments to the Department on this economic analysis. We support the Department's efforts and that the Advisory Commission to review and assess the aspects of prospective impacts of natural gas development in Maryland. ANGA would like to again extend itself as a resource to the Commission and Department throughout this process. Our member companies look forward to the issuance of the final report later this summer.

Should you have any questions about these comments, please do not hesitate to contact me at 518-366-2642.

Sincerely,

Paul Hartman
Regional Director, State Affairs
America's Natural Gas Alliance

MARCELLUS ADVISORY -MDE- <marcellus.advisory@maryland.gov>

RESI Study - questions about housing

1 message

Paul Durham <pdurham@shentel.net> Tue, Jun 24, 2014 at 10:17 AM
To: marcellus.advisory@maryland.gov

The Garrett County Board of REALTORS® (GCBR) is reviewing the RESI report with a focus on the elements in it that deal with impacts to housing and real estate.

We have some questions that deal with the projected availability of rental housing for workers during the period of gas development. It appears that the report concludes that there is and will be a surplus of housing available in Garrett County (primarily rentals) that will meet the demand from the influx of gas field workers.

The report indicates that more than 1500 housing units in Garrett County are available for rental to gas workers ("surplus" – page 59 RESI projects "surplus of vacant units" housing available - 1523 in Garrett County and 2638 in Allegany County).

On page 60 RESI concludes that the drilling boom will add more than 3200 new residents to the counties (scenario 2 - Baseline change to housing population). RESI also concludes that the existing/projected housing supply will accommodate the temporary influx of workers (rental units).

The GCBR is concerned that RESI's analysis of the availability of rental housing does not seem to match our experience on the ground. Our observations, while not quantified, do not reflect RESI's conclusion that more than 10% of our housing supply is available for rental.

When we exclude vacation and seasonal housing, we simply do not see one in 10 homes in Garrett County being vacant or available for new workers. In fact, we often hear about a shortage of rental properties in the county and the ads in the newspapers do not reflect the availability of the hundreds of homes that RESI seems to suggest are available.

Total housing supply Garrett County (page 58) = 14, 152.

RESI conclusion on available units for rental or sale to influx of workers (page 59) = 1,523, or 10.7% of the housing supply.

RESI concludes this inventory and projected growth in inventory will accommodate the influx of workers

1. Please clarify or explain further the specific methodology that was used to arrive at the total number of "surplus of vacant units" in Garrett County that would be available for rental.

2. Of these units, how did RESI determine how many would in fact be available for rental to the influx of gas workers?

3. What evidence or analysis shows the willingness of unit owners to rent units to gas workers versus selling

them or keeping them off the market/unavailable?

4. What methodology was used to determine whether the type of available housing (i.e. for sale or for rent) would match the demand from the influx of transient workers? For example, of the 3200 new residents, how many will require a rental home, how many will purchase a home, and how many will live elsewhere and commute to Garrett County?

5. What investigation was made about these “available” properties in terms of fitness for rental? What percentage of the number of units are possibly unfit for occupation?

6. Perhaps RESI’s inventory included second homes that are not classified as “vacation or seasonal” but which would still not be available for rent or sale to workers. These kinds of homes are very common in Garrett County. What did RESI do to exclude these homes from the inventory?

7. Were government sponsored low income and subsidized housing units excluded from the inventory?

8. GCBR, during our stakeholder interview, discussed the issue of “displacement” in tourism housing and accommodations. What percentage of the influx of workers will prefer or be required to occupy a hotel/motel and how does that affect the availability of that housing for tourists and visitors? Consider the current occupancy rates, seasons, and number of units available. Will there be a displacement effect and for how long?

9. Of those workers that choose or are forced to reside in hotel/motel accommodations, what effect will that have on the vacation home rental inventory if their rental needs are not met by hotels/motels and the demand spills over into that market?

10. RESI concluded that rents would not change significantly. This depended on the conclusion that the surplus of housing would absorb the influx of gas workers. Assuming RESI is correct, what conclusion would they draw about the effect on other workers moving into the county during the same time period that work in other industries and businesses unrelated to gas development? Does not the absorption of rental properties into the gas worker population create a competitive environment for others which would result in increased rental rates? RESI seems to assume that the growth in rental unit demand will be mostly from gas workers. However, other workers in unrelated industries will also require housing during the same time period. How does RESI reconcile this?

11. What does RESI conclude about the value and inventory of housing when the bust phenomenon occurs?

Paul Durham

Government Affairs Director

Garrett County Board of REALTORS®

(301) 616-5704

THE BOARD OF GARRETT COUNTY COMMISSIONERS
203 South Fourth Street - Courthouse - Room 207 Oakland, Maryland 21550
www.garrettcounty.org countycommissioners@garrettcounty.org
301-334-8970 301-895-3188 FAX 301-334-5000

Board of Commissioners
Gregan T. Crawford
Robert G. Gatto
James M. Raley

County Administrator
R. Lamont Pagenhardt

County Attorney
Gorman E. Getty III

July 14, 2014

Brigid E. Kenney
Senior Policy Advisor
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Ms. Kenney:

Thank you for offering the opportunity for the public to share comments, concerns and questions about the "Impact Analysis of the Marcellus Shale Safe Drilling Initiative" released May 23, 2014 by the Regional Economic Studies Institute of Towson University.

The Board of Garrett County Commissioners recently asked their Shale Gas Advisory Committee to review the Draft Detailed Scoping Report. After much discussion and debate, the committee members summarized the concerns, questions, and suggestions in the attached document.

It should be noted that the Board of Garrett County Commissioners are not endorsing the comments at this time, rather, we believe the comments to be potentially helpful to the process.

Again, thank you for allowing comments on the report. Should you require additional information, please feel free to contact Cheryl DeBerry at cdeberry@garrettcounty.org.

On Behalf of the Board,

R. Lamont Pagenhardt
County Administrator

To: **Board of Garrett County Commissioners**
CC: **Monty Pagenhardt; Mike Koch**
From: **Garrett County Shale Gas Advisory Committee**
Subject: **Comments and Recommendations – RESI Impact Analysis of the Marcellus Shale Safe Drilling Initiative Report**
Date: **July 7, 2014**

Dear Commissioners:

Our committee has reviewed the Impact Analysis of the Marcellus Shale Safe Drilling Initiative by the Regional Economic Studies Institute (RESI) at Towson University, conducted as part of the state's Marcellus Shale Safe Drilling Initiative (MSSDI). This report has been viewed as a key input to the state-level decision-making process and to the planned MSSDI final report in particular. As we understand it, the analysis was designed and tasked to provide primary input characterizing economic and community impacts of potential shale gas development on the affected counties and Maryland.

We found substantial information in the report helpful for understanding some of the potential impacts of Marcellus Shale gas drilling in Garrett County. More specifically, we found a rich set of both quantitative information and qualitative discussion, generally balanced, in several topic areas. We particularly note useful baseline information, a valuable compilation of information/discussion capturing the experience of other states, and a useful discussion of concerns raised in both stakeholder interviews and citizen surveys.

However, our review also resulted in a number of serious concerns. The RESI report fully acknowledged but did not completely investigate some of the more unique aspects of our local economy, specifically in the areas of tourism, recreational use, and impact on property investment. We understand that satisfying analysis in these areas is often data-limited, but it seems that further penetration would have been possible. In addition, a fuller accounting of community and infrastructure impacts, fiscal impacts to local government, and the full net economic effect of gas development were not provided. Again, these topics are complicated, but even a structured delineation of potential economic gains (e.g., county revenues, business revenues, individual property owner royalties/fees and their derivatives) vs. the full range of costs or potential downsides (e.g., costs to the counties ranging from infrastructure support to necessary services like permitting) would have been useful. Lastly, there is a recurring theme from commenters that – in certain key areas – the report itself does not provide sufficient information on assumptions made, data used, etc. to support a full understanding of findings. This seems critical to both credibility and support of a satisfying public review.

Given both the SGAC charter and the interest expressed by the public in this matter, we have provided some summary comments below and assembled a list of specific public comments for your review. The latter are provided in the appendix, noting links to the full set of comments submitted by the identified individuals or organizations. Our goal is not to weigh the relative merits of these comments, but to provide you with a more holistic community-wide picture of how the RESI report has been received locally.

We understand that the report has been completed and that there is a short time frame for public review and questions. The ability to have the report expanded upon or modified may be very limited.

Based on the comments below and in the attachment, we feel obligated to express several concerns---hopefully constructively and in selected areas--- about the report's representation of a number of key impacts on Garrett County as part of the state's MSSDI process. This letter is intended to provide input to the Commissioners in support of any County response regarding the RESI report and its use as a potentially key input to the state's decision-making process.

Summary Observations in Selected Critical Areas

We offer the following summary observations:

1. **Tourism and recreation** – One of the things that makes Garrett County unique is its extensive recreation, tourism, and second-home economy. The RESI report was intended to be "a comprehensive and context-sensitive understanding of potential impacts of natural gas exploration and extraction…." Despite useful report discussion, we find that the information it provides about the economic and fiscal impacts on tourism is incomplete particularly in terms of the economic ripple effects of negative impacts. More work needs to be done to determine to what extent our tourism economy is at risk and the best ways we can mitigate those risks at the local level.
2. **Job and Related Wage Projections** – Reviewers had difficulty penetrating the job projection numbers in terms of: (1) more detailed scenario information is needed, which would drive the projections (e.g., number of drilling rigs operating simultaneously), (2) the kinds and salary levels of jobs built into the overall projections, and (3) the extent of real opportunities for local hires as opposed to already-trained/experienced transient workers. We understand that analyses at the next level down are challenging, but there seem to be empirical data available from neighboring states. For instance, the study did review Somerset County, PA's experience as related to tourism, but did not report on employment

demographics in that same County or in nearby Fayette County. We note also that an industry-experienced reviewer found the job projections to be high and the average wage projections to be low, and could not find sufficient backup to validate (or not) his concern.

3. **Housing** – Questions have been raised as to whether RESI's evaluation of available housing is accurate. Closely linked to this is whether gas company employees will place additional demands on our tourist accommodations – hotels, motels and rental properties. The study does not provide enough detail or data to allow the county and local real estate, hospitality, or housing organizations the opportunity to compare RESI's conclusions with local information and experience. The availability of housing and lodging could be a critical issue once gas drilling starts. This issue raises questions of a possible displacement effect for tourists and visitors, low income residents, and workers in other industries or businesses. A more thorough understanding of housing impacts is needed, perhaps supported by RESI data/analysis that is not captured in the report itself.
4. **Roads and infrastructure** – Garrett County's significant investment in county road infrastructure is at risk from the anticipated damage from concentrated heavy truck traffic associated with each drilling pad. RESI's analysis does not seem to include projected costs to the county and local jurisdictions for repairing road damage, although other sources provide useful experience-based planning factors such as maintenance costs per mile. The indirect costs of managing both the increased truck traffic and conflicts are also not included (e.g. route/timing constraints as imposed in PA apparently through a local permitting process). We note that the concern about road maintenance costs would largely disappear if explicit, adequate, and enforceable local bonding authorities and mechanisms were in place. However, this is not currently the case in Garrett County.
5. **Real property values** – RESI concludes that Garrett County would experience more than a 30% reduction in property values for properties in close proximity (half mile to a mile) to a gas well. Unfortunately, RESI's conclusion was buried in an appendix and barely discussed in the body of the report. It would have been useful to conduct a simple a data analysis of what this might mean in terms of reductions in the Garrett County tax base and derivative impacts on county revenue, i.e. the net effect. While the percentage is slightly higher than other peer reviewed studies, the negative effect is now well-documented and experienced across the Marcellus and other shale plays. This is a significant finding and has serious community, investment and county revenue implications.
6. **Fiscal impacts** – RESI provides extensive details on positive impacts in the areas of jobs, wages, and county severance tax revenue. RESI fails to provide a complete analysis weighing these positive benefits against costs in order to provide a comprehensive *net* economic effect to policy makers. It implies that some of these costs, such as the loss of real property tax revenue, might be compensated for by the increase in severance tax revenues, but does not provide a complete examination of this conclusion. A follow-up report is

needed that properly examines the net economic effects of Marcellus Shale development to our local economy, including a fuller analysis of taxation and fee strategies (e.g., potential "impact-type" fees as well as severance tax revenues)**.**

7. **Impacts of royalty payments on the local economy** – Royalty and gas lease payments to participating mineral rights owners are a positive economic outcome of Marcellus Shale development. When taken together, these payments are projected to create a positive cash flow to many local residents. However, even though this issue was pointed out by stakeholders to RESI before the study started, the study does not project how much of that cash flow would stay resident and how much of it would "leak" from the local economy. In light of the boom/bust nature of resource extraction and natural gas development, it may be only a portion of the royalty monies that will stay resident and invested in the local economy as a net long term positive economic benefit to our community. This needs to be further examined.
8. **Public health costs** – While these costs are indeed relevant, RESI does not provide a summary of the fiscal implications to local government nor the costs to people living in the county. This impact has been viewed as out-of-scope for the RESI effort, but is an important subset of the infrastructure impact projection as related to net benefits/costs. Any further analysis of health infrastructure cost impact would, of course, have to be calibrated by recognition of other "temporary"/seasonal demands on the system (e.g., tourism).
9. **Boom/bust cycle** -The RESI report recognizes and discusses this phenomenon, but fails to provide predictions on the economic effects of the bust phase of the gas extraction cycle. Many studies exist that have examined this effect in other areas. Some even suggest that the net result after the bust effect is an economy that is less diverse and less vibrant than when the boom began. The bust effect has policy implications and Garrett County should establish policies, such as how severance taxes might be used, that help us to prepare for or mitigate potential negative impacts. Perhaps there are lessons to be learned from analyzing the boom/"quasi-bust" cycle relative to the coal industry.

Appendix:

Excerpts and links to Full Comments used in drafting this response

Public comments appendix for the Regional Economic Studies Institute
"*Impact Analysis of the Marcellus Shale Safe Drilling Initiative*"

The following are excerpts of comments from community sources regarding the analysis from RESI and concerns raised regarding outcomes within the report.

Excerpt of Comments from Kathelene Koscianski MS, Community and Economic Development to GC Shale Gas Advisory Committee:
"In the Executive Summary, page 10 it is stated that the Impact Analysis of the Marcellus Safe Drilling Initiative Study by Towson University RESI is "a comprehensive impact analysis for informed policymaking." Although the study does present some useful information to help characterize the proposed development, many critical components needed to adequately project the economic, fiscal, community, and tourism-related impacts of natural gas exploration and extraction in the Marcellus Shale (both positive and negative) are missing and/or significantly incomplete.

"In addition, the referenced RESI Impact Analysis study does not adequately address several of the specific areas called out for analysis in Section F-4 of Executive Order 01.01.2001.11 The Marcellus Shale Safe Drilling Initiative. These include short-term, long-term, and cumulative effects of natural gas exploration and production in the Marcellus shale related to:

1. *(F-4h) …damages to roads and bridges from truck traffic related to drilling operations*
2. *(F-4i) impacts to local land use patterns and the character of rural areas and towns*
3. *(F-4k) impacts to state resources and recreation lands*

"Because of the extensive omission of critical data and the incomplete analysis of the projected positive and negative impacts of hydraulic fracturing activities— the Impact Analysis of the Marcellus Safe Drilling Initiative Study by Towson University RESI is significantly flawed in its present form. Substantial revisions are recommended (and are described in more detail in the sections that follow). With this in mind, the authors and sponsors of this study are strongly urged to address the myriad of deficiencies identified and to make comprehensive revisions before the RESI study is used or relied upon for policy-making or other related decision-making at the local, regional, or state level."

Full Comments from Ms. Koscianski are available at this link:
http://marcellusshale.garrettcounty.org/images/documents/SRWAComments.pdf

---

Excerpt of Comments from Heritage Resources, LLC to GC Shale Gas Advisory Committee:
"RESI concludes that "Due to a lack of data regarding the coexistence of tourism and drilling, the possible impacts to tourism activity in Western Maryland were difficult to quantify." This points to one of the shortfalls of a data driven economic study; there are qualitative and quantitative aspects to understanding a recreation and tourism economy."

"Local studies prepared by DBED, our own Chamber of Commerce, and DNR point to a resilient tourism economy that actually remained stable or in fact grew in some areas during the recent recession. Our tourism economy is fairly recession resistant. RESI's approach should have included an analysis of why this economy sustained itself during the recession and whether any of those reasons are at risk by gas development."
"Chamber officials and industry interests have advocated that gas development can co-exist with our recreation and tourism product. The question that remains unanswered is what needs to happen for that to remain true. Intuition suggests otherwise unless there is evidence to support the idea that nothing needs to change. RESI's report does not provide these answers and this part of our economy remains at risk as long as those answers are not forthcoming."

Full Comments from Heritage Resources, LLC are available at this link:
http://marcellusshale.garrettcounty.org/images/documents/heritage_resources.pdf

---

Excerpt of Comments from SGAC Committee member Shawn Bender to SGAC Committee Chair John Quilty:
"There doesn't seem to be much supporting documentation relating to the job estimates shown and it is somewhat difficult to follow. Admittedly, however, arriving at any number would certainly be challenging. It would be great to have some details such as: estimated number of drilling rigs, crew breakdowns, support services, etc."
"The wages shown for the associated jobs are also difficult for me to understand. My initial impression is that the wages seem low, but then again I may just be missing where they are showing them... … I would consider this a very conservative wage projection that could easily be doubled."

Full Comments from SGAC Committee member Shawn Bender are available at this link:
http://marcellusshale.garrettcounty.org/images/documents/Bender Comments.pdf

---

Excerpt of Comments from the GC Board of Realtors to the Marcellus Shale Advisory Committee:
"… concern that RESI's analysis of the availability of rental housing does not seem to match our experience on the ground. Our observations, while not quantified, do not reflect RESI's conclusion that more than 10% of our housing supply is available for rental.
When we exclude vacation and seasonal housing, we simply do not see one in 10 homes in Garrett County being vacant or available for new workers."

Full Comments from the GC Board of Realtors are available at this link:
http://marcellusshale.garrettcounty.org/images/documents/GCBOR comments.pdf

Excerpt of Comments from Eric Robison to MDE Senior Advisor Brigid Kenney:

"I know you have been very {strict} …when it came to the public supplying references for any materials or recommendations we (the public) supplied. {And it would be equally important}…to have access to all of the reference materials RESI has used for their data sources. We have had multiple conversations regarding data input for studies and the accuracy of the data supplied, to include baselines, the same applies for these studies.
Data omissions are just as important as the data used when determining the final output for these types of reports. If data was not available and projections were used to fill data gaps, it would be very important to see how the data was compiled and what the criterion was for inclusion in the study."

Full Comments from Eric Robison are available at this link:
http://marcellusshale.garrettcounty.org/images/documents/Robison Comments to MDE.pdf

---

Full Comments from Dr. Michael Bell to GC Shale Gas Advisory Committee are available at this link:
http://marcellusshale.garrettcounty.org/images/documents/Critique of RESI Study - MBell.pdf

July 14, 2014

Brigid E. Kenney
Senior Policy Advisor
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Ms. Kenney:

Thank you for offering the opportunity for the public to share comments, concerns and questions about the "Impact Analysis of the Marcellus Shale Safe Drilling Initiative" released May 23, 2014 by the Regional Economic Studies Institute of Towson University.

The Garrett County Community Planning & Development Department staff members, particularly those in the Office of Economic Development, have reviewed the study. The Garrett County Shale Gas Advisory Committee shared their comments and concerns raised by committee members and the public about the study with our office. After review of these comments and concerns, we have found that we agree with these points and wish to reiterate the importance of having clear data and conclusions.

In particular, as you can see in the committee's comments: "The RESI report fully acknowledged but did not completely investigate some of the more unique aspects of our local economy, specifically in the areas of tourism, recreational use, and impact on property investment." Though we work to diversify Garrett County's economy, several of our core industries do rely on our rural nature, scenic beauty, and outdoor amenities.

Finally, the labor housing issue is of particular concern. The study found adequate housing stock, but assuming workers displace visitors in those units, what impact would that have on our restaurants, retailers, amusements?

Sincerely,

Michael W. Koch

Executive Director

Garrett County Department of Community Planning & Development ● Office of Economic Development
203 South Fourth Street, Room 208 ● Oakland, Maryland 21550
Phone: (301) 334-1921 ● Fax: (301) 334-1985
economicdevelopment@garrettcounty.org ● www.gcedonline.com

Brigid Kenney, Senior Policy Advisor
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Dear Ms. Kenney,

I appreciate the opportunity to comment on the Economic Study ***Impact Analysis of the Marcellus Shale Safe Drilling Initiative*** prepared for Maryland's Department of the Environment by the Regional Economic Studies Initiative at Towson University.

As a small business owner in the tourism sector, I had high hopes that this report would provide some definitive information for both local and state policy makers to use in decision making about allowing industrial shale gas development (broadly, "fracking") in our region. I also serve on Garrett County's Shale Gas Advisory Committee, where my most recent assignment was an analysis of the Multi-State Shale Research Initiative's study of local impacts of Marcellus Shale development on four counties in Pennsylvania, Ohio and West Virginia (http://www.multistateshale.org/).

My familiarity with the study findings for these counties—many of which included specific information about economic benefits and costs in areas such as housing, roads, tourism, public safety, hospital needs and social services—contributed to my expectations that the RESI study would build on such data and provide policy makers with reliable information about economic benefits (especially jobs projections and potential tourism impacts) as well as economic costs to our community. Although the RESI study does do a good job identifying issues and concerns that, to its credit, parallel those raised in the M-SSRI and other studies, **it fails to demonstrate, describe and quantify the full economic impact** (on the cost side) of these issues in calculated outcomes.

•The study suggests that **property value declines** can be offset by income from severance taxes. If a landowner's property is devalued by 26% (Muehlenbachs, Spiller and Timmins, 2012) to 30% (RESI Appendix, 2014), his family's personal economic loss (should the landowner attempt to sell the property) cannot directly be remedied by the collection of County or State severance taxes. There is a cost to both individual families as well as to our tax base, and the study touches on these incongruities, but fails to address them when projecting the economic gains. Ultimately, some percent of the projected loss to county property tax revenue and appraised values (that would result from property devaluation near development) should be calculated against projected gross economic gain to arrive at a net figure.

•The RESI study also fails to provide a robust analysis of **jobs projections**. Once again the study cites factors that influence numbers, but does not fully explain staffing estimates for projected wells. Though the study looked at Somerset County, PA for its comparisons to tourism-based economies, it failed to include what might be considered low-hanging fruit—an analysis of employment demographics on Chevron's wells in Addison, PA (Somerset County) and nearby Fayette County, PA or Preston County, WV.

Understanding the staffing and employment associated with these wells should provide useful information about the composition of the workforce we could expect for drilling in western Maryland. How many local residents work on these wells? How many itinerant workers are employed on the drill site? Since Garrett companies Beitzel, Pillar and Byco are cited as sending workers to out-of-state wells, how many of their employees are already working on these particular out-of-state sites? Did they work on the Addison sites? Given that the number of rigs available is finite (Baker Hughes provides weekly counts and locations of active available rigs), would rigs brought into the state from adjoining counties bring full staff with them already working regionally, or will these workers be reassigned in order to hire Marylanders? Were Beitzel, Pillar and Byco asked to provide numbers of current staff working in the drilling sector?

It's impossible to underestimate the value that a full accounting and analysis of pad-site staffing would provide to policymakers, and to the citizens of Maryland who may not be willing to sacrifice our natural resources, our existing tourism economy and our quality of life if a State-funded study demonstrated that we might not expect a boom in job creation or made clear that fracking might create less than several hundred full-time, but temporary jobs. To date, no one has proven that it will be otherwise, despite the reality that there are fully staffed drilling sites operating on our immediate borders. If RESI had visited these nearby drilling counties, would they have even noted a boom? We do not have this information, because the study failed to provide it.

Although I commend the study for its consideration of the impacts of boom-bust cycles in drilling economies (also confirmed in M-SSRI studies), again, it would be even more useful if RESI had factored in the loss of jobs and economic benefit in the tourism and second-home realty sectors. Again, I did not find useful projections about ***net*** numbers of jobs created in the boom, when a decline in tourism jobs is factored in.

•The RESI study speculates that an influx of workers may impact school demographics and impose limited demands on housing. However, without a clearer projection of job creation numbers, it's difficult to speculate on housing needs and the impact of gas development on our local schools. 2 of the 4 counties studied by M-SSRI documented **school enrollment declines** (but expanded need for special education) despite their drilling "booms," so a policy takeaway might be to not count on drilling to help educational funding issues. Again, RESI is inconclusive in this area.

•In its extensive discussion of **Trucking Impacts** (p. 72), RESI rightly recommends further investigation into the impacts to communities and costs to those responsible for maintenance of roads. But once again, there is no attempt to gather information about the cost of traffic delays, traffic accidents (including public and private health costs that result) and traffic's impact on tourism (driving and enjoying viewsheds is cited in a 2009 Chamber of Commerce study as a favored tourism activity.) It is fair to assume that truck traffic will have economic costs; this is verified in the M-SSRI studies, in which all four studied counties identified traffic congestion and accidents as a major concern. The State has promised a traffic study for western Maryland to better understand these impacts here; it should be noted that RESI has also identified the need for more information on

western Maryland's road use. [A minor technical question regarding traffic: it's not clear why RESI considers trucking a tourism sector occupation (p. 12).]

•I greatly appreciate the thorough and nuanced discussion of **Perceptions and Risks of Shale Development** (p. 53), but again, a discussion and acknowledgement of the potential social costs of industrializing western Maryland does not go far enough to inform policy. We would benefit if RESI attempted to translate these costs into projected economic impacts. The four risks RESI cites, of industrialization, corrosion, contamination, and disruption, "can be more damaging than environmental risks, as residents begin to distrust government, become disconnected, and eventually disinvest physically, emotionally, and financially from their communities." I wholeheartedly agree. A full analysis of these potential outcomes is merited, since some of this disruption has already begun before a dime of projected revenue has come to the region. The prospect of fracking for shale gas has created a stressed and divided community before the industry has even arrived. The study scratches the surface but falls short by not attempting to attach an economic cost to declines in public health and quality of life, or to the loss of community cohesion and irreplaceable natural resources.

•The lack of data, analysis and projections of fracking's outcomes for the local **tourism, recreation and second-home economy** is a great disappointment. The M-SSRI study of Tioga and Carroll counties sites concerns about declines in tourism. A 2009 visitor survey in Garrett County (Garrett COC) included many comments urging preservation of the area's natural beauty and peaceful, quiet nature; several survey participants noted the county was already at a "tipping point" of commercial development detracting from the natural appeal. Anecdotal comments received from visitors at my own business range from a Baltimore motorcyclist's refusal to drive to Williamsport, PA because of heavy industrialization from fracking to frequent concerns about changes to our view shed, our ability to farm sustainably and to provide a relaxing place to visit. Information is available that confirms that leisure travelers do not want to visit areas with fracking and heavy industrial traffic. Clearly, a more complete consideration of fracking's impacts to our region's sustainable tourism economy is needed in order to make informed policy decisions.

•Others more qualified than myself have noted that RESI's study does not consider nor address the healthcare costs borne by either residents suffering exposures in proximity to fracking or by the local community in terms of demands on healthcare services and infrastructure. Likewise, the Garrett County Board of Realtors has noted discrepancies in regard to available housing units in the discussion of housing demands.

•A top priority impact identified by the M-SSRI studies (all 4 studied counties) was that communities were overwhelmed because impacts occur the moment drilling and development begins (in the Development Phase), yet reliance on mineral severance taxes for funds means the counties must wait until the Production Phase—when wells are connected to pipeline and processing infrastructure—to reap the economic benefits of an extraction tax. These funds come too late to address costs incurred during the Development Phase for additional police, emergency services, road damage, social

services and shortages of affordable housing. A follow-up report is needed that properly examines the net economic effects of Marcellus Shale development to our local economy, including a fuller analysis of taxation strategies that includes a comparison of the benefits of drilling impact fees, taxation of mineral property and severance taxes.

Admittedly the subject of shale development's economic outcomes is complex, convoluted and daunting. Unfortunately, so is RESI's final product. The study is not organized in a way that makes it easy to follow or to reference; many subject areas are repeated and revisited in different sections, making it difficult to use. These formal issues, coupled with the shortcomings in content listed above, put its usefulness for informed policy-making in question. Given the importance of Garrett County's tourism and second home sectors to its overall economy, I hope the state and Maryland's Marcellus Shale Advisory Commission will demand a more complete and comprehensive document on which to base its final decisions.

Thank you, as ever, for extending an opportunity for the public to comment.

Sincerely,

Nadine Grabania
177 Frazee Ridge Road
Friendsville, MD 21531
301.746.4287

cc: Governor Martin O'Malley
Del. Wendell Beitzel
Sen. George Edwards
Garrett County Commissioner James Raley
Mike Koch, Garrett County Director of Economic Development

MARCELLUS ADVISORY -MDE- <marcellus.advisory@maryland.gov>

Economic Study

1 message

Paul Durham <pdurham@shentel.net> Mon, Jul 14, 2014 at 10:00 AM
To: marcellus.advisory@maryland.gov

The following are personal comments/questions on the RESI report as it pertains to tourism in Garrett County.

Paul Durham

****

As we all know, recreation and tourism is a prime economic engine that drives a positive Garrett County economy. The social and economic benefits of recreation and tourism are well known and well studied. Quantity and quality of life converge in recreational experiences here. The most distinctive economic benefit is that this economy can be sustainable and reliable. However, it can also be fragile should the basis for the recreation and tourism economy be threatened, or even perceived to be so.

This portion of our county economy is not focused entirely at Deep Creek lake. It takes in the entire aesthetic and natural resource character of Garrett County, including an economic and quality of life component. Recreation and tourism economies and aesthetics are put at risk by Marcellus Shale gas drilling. Therefore, a proper local and state response is vital in order to mitigate any negative consequences that would occur.

Neither the RESI report, nor the work of the state's shale gas commission, properly address the negative impacts and risks to recreation and tourism in Garrett County, or how to properly mitigate those effects.

1. The RESI report is designed to capture and report data-driven impacts and benefits for selected aspects of gas development and to project positive or negative impacts using input/output modeling. Discussion is provided in the report about potential negative impacts to recreation and tourism and RESI acknowledges those areas of the report are more of a qualitative nature. RESI noted that it searched for empirical data, however it was difficult to find and RESI encouraged further research.

2. RESI concludes that "*Due to a lack of data regarding the coexistence of tourism and drilling,*

the possible impacts to tourism activity in Western Maryland were difficult to quantify." This points to one of the shortfalls of a data driven economic study. There are *qualitative* and *quantitative* aspects to understanding a recreation and tourism economy.

Local studies prepared by DBED, our own Chamber of Commerce, and DNR point to a resilient tourism economy that actually remained stable or in fact grew in some areas during the recent recession. Our tourism economy is fairly recession resistant. RESI's approach should have included an analysis of why this economy sustained itself during the recession and whether any of those reasons are at risk by gas development.

3. Recreation and tourism is more a social science than an economic one. We like to examine it from a "heads in beds" or dollars and cents perspective because this information makes for good barometers. This data does not provide good forecasting when significant changes occur, they simply allow us to look back and understand what is at risk.

   The data driven economic discussion is helpful to define what is at risk, in terms of dollars and cents. However, a fuller understanding of the behavioral and emotional motivation for visitors desiring an outdoor natural resource experience is required before one can achieve a better understanding of how Marcellus Shale development will affect tourism. A social or recreational scientist's contribution to the study would have been helpful and provided better insight into understanding the risks to recreation and tourism.

4. Chamber officials and industry interests have advocated that gas development can co-exist with our recreation and tourism product. The question that remains unanswered is what needs to happen for that to remain true. Intuition suggests otherwise unless there is evidence to support the idea that nothing needs to change. RESI's report does not provide these answers and this part of our economy remains at risk as long as those answers are not forthcoming.

5. RESI does provide some discussion on the issue of how environmental incidents affect tourism, concluding on page 38 "*The quality of the experience of recreational activities on other lakes and rivers could also be compromised*." This comment was within the context of how perceptions change when a negative environmental incident occurs, such as a sewage spill on Deep Creek Lake.

   Inherent to gas development is a known and predictable risk (failure rates) for environmental and industrial incidents and accidents. The facts show that with the number of gas wells that we will have, we will experience a small but certain percentage of negative incidents after gas development starts. If this small percentage of serious incidents occurs (drinking water well contamination, a well or compressor fire, pipeline explosion, or death) we can predict a negative effect on visitation. What we cannot predict is the duration of that effect or the overall change in perception of Garrett County.

6. RESI discussed road impacts and the number of truck trips per well that we can anticipate.

This effect will last for the duration of the drilling phase, perhaps as long as 20 or more years (future refracking). If the negative aspects of this kind of trucking (backups, road damage, road crowding, accidents) intersects with visitor experiences, we can anticipate a long term diminution in tourist appeal for the county.

7. RESI's conclusions regarding the diminution of real estate values for property near gas wells is supported by other recent studies (*Muelenbachs et al, Duke University, December 2013 and Throupe et al, University of Denver, December 2013*). One of Garrett County's most successful marketing and economic development models has been improving and maintaining the attraction of Garrett County to out-of-county property investors. This model typically plays itself out in the Deep Creek Lake market, but there is no reason to suspect that its principles cannot be applied countywide.

   Essentially, the model is that we attract visitors to Garrett County through our natural environment, aesthetic, and natural resources. They return and eventually some of them invest in a property here to make Garrett County their preferred travel destination. For some, this pattern of behavior becomes generational as children and relatives make their recreation in Garrett County a tradition.

   If the appeal of Garrett County to property investors is at risk, particularly when we now know that shale gas production diminishes property values, then we can correctly assume that our resort property appeal is also at risk. The RESI study is silent on this effect.

8. A majority of RESI survey respondents identified themselves as first time visitors. This indicates that Garrett County attracts hundreds of thousands of visitors on a "try us out" visit. Unlike traditional lake property owners and returning customers, these types of visitors have other options available to them. We happened to be this year's option. When they plan their visits they look at the totality of the experience that they can anticipate. Understanding whether Marcellus Shale gas development will have a negative effect on that pre-trip perception is important.

In my opinion the RESI report should not be relied on by policy makers as the final source of information on this subject. Policy makers need a social science understanding of what factors drive our recreation and tourism economy. What perceptions and desires cause people to want to be here and what might threaten those perceptions and desires after gas development starts?

The recreation and tourism sector remains at risk from shale gas development. Community driven discussion should fall within the context of whether the risk is acceptable, and why, and whether all of the risks have been properly mitigated in order to minimize negative impacts to tourism.

A critique of the below referenced report

by

Peter Versteegen

July 14, 2014

Impact Analysis of the Marcellus Shale Safe Drilling Initiative

Prepared for

Maryland Department of the Environment

May 23, 2014

Regional Economic Studies Institute

TOWSON UNIVERSITY

Towson, Maryland 21252 | 410-704-3326 | www.towson.edu/resi

Introduction

To put my comments in context, one should understand who I am and where I'm coming from.

My name is Peter Versteegen and I live in Garrett County. I'm not an economist. I'm a graduate mechanical engineer with primary interests in thermal processes and mathematics. I'v been retired since 2000, and live full-time in Garrett County near Deep Creek Lake. My professional career of 33 years, 27 with SAIC, dealt mostly in contract R&D in all kinds of scientific areas. I did a lot of computer modeling and also extensive experimentation with high temperature processes. Most of my work was Defense Department related.

Aside from my college class in economics, I provided, at one point in time, computer assistance to a co-worker who had a contract to examine the economic impacts on the nation's economy of a change of price in a barrel of oil from $10 to $100. I don't recall the name of the model that we used, except that it had some proprietary constraints, and that it was a sophisticated representation of the US economy. It seemed that all I had to do was to change certain coefficients. That was my extent of involvement with the discipline of macro- and microeconomics. However, I did a lot of cost estimating and cost-benefit analyses, but that I guess that doesn't count.

I'm vice-chair on the Steering Committee that was tasked to develop a watershed management plan for the Deep Creek watershed. We have just completed the draft of the management plan which is going out for public comment on 9 August. I'm currently exploring the feasibility of an economic model for Garrett County to look at issues such as Marcellus Shale and many others.

Much of this I do to help the County and to protect our personal investments in the area.

Given this context, the remainder of this document are comments on the above referenced RESI study.

General Impression

First, this is a difficult report to read for a 'layman.' It seemed to have been written for an economist and not even for an audience that has a science background. It is indigestible for the layman. It's readable, but there are no answers to questions that pop up constantly, at least in my head, as I read the report.

My engineering background forces me to ask the following questions:

- "Why should I believe the results?" Perhaps in the minds of economists RESI Towson University is a very reputable organization and can be relied on to provide 'correct' interpretations. If that's the case, then I feel inclined

to ask: "How did their tools that are used in the current study fair in predicting the 2007/2008 economic downturn or other economic forcings?" At both the micro and the macro level it's all about understanding the behavior of people and convert that knowhow into multi-variable correlations to data. Unfortunately, such processes often have unintended consequences because of the inadequacy of the data for the situation at hand. I don't see how any of this is done.

- "Why should I believe that RESI has the capability to define Marcellus Shale drilling scenarios?" The report states the RESI defined the scenarios. What gives them that knowledge? The scenarios are described in words but nowhere is there a schematic or a discussion of how these would layout in the geography of Garrett County. Where are the pads? Where are the roads that carry the traffic? Where are the pipelines to transport the gas? Nor is shown a time sequence and well production rate. It would appear, to me, that this is necessary to determine environmental impacts.
- "Why should I believe the survey results?" I know how difficult it is to structure a survey and do the analysis subsequently, but it is extremely important to do this right. This is fundamental to a good economic study. The Marcellus Shale issue is a very serious issues that, in Garrett County, pits two industry sectors against each other, Agriculture vs Tourism, where Agriculture has the land but Tourism has the people. The people surveyed appear to be the leaders of various stakeholder organizations rather than 'Joe Public.' Leaders have distinct agendas and do not necessarily reflect the real opinions of Joe Public. I cannot believe the survey results.
- "Can some other party reproduce these results (exactly)?" This is an important consideration because it minimizes subjectivity and allows the removal or modification of assumptions that some other party may have believe to be important to examine. Having delved into economic theory recently this is probably not possible. Given that, a total disclosure of everything becomes very important. I don't see that in this report.

- "Has the model been tested and verified with some baseline scenarios? To sell the capability of a model I would have thought that this would be an important 'sales' point to justify using the modeling methods. A good example would be the impact of the real estate collapse or forecasting the collapse or the introduction of wind energy systems into Garrett County. This is again important to assess whether the model can actually deal with the proposed scenarios in a sufficiently accurate way. I can't judge that from the report.
- "Realistic time line?" This is probably the worst part of the whole analysis. The world is undergoing major changes, and probably sooner then one might think. The analysis assumes that the world in 2032 (the last date of the analysis, I believe) is the same as it is today. I doubt this very, very much. Every economist should read the book "2052: A Global Forecast for the Next Forty Years"[1] to better understand the issues the world is facing and how they may get resolved, and find someway to incorporate such changes in these long-term forecasts.

Overall, the answers to these questions, if given at all, are highly unsatisfactory.

Furthermore, very little is reported to suggest that they have an understanding of Garrett County. We're generally lumped with other 'rural counties' but we do have characteristics that are significantly different.

Attempts at checking some of the references provided was only partially successful. Many references are unverifiable. For example, referencing an individual's email response is not traceable.

Reference 28 on p.28 is incomplete, although a search with Google revealed it to be an article by TRACY IDELL HAMILTON in the July 2 issue of the SanAntonio Express-News, Updated: July 3, 2011 12:54am

What are the qualification of Dr. Lucija Muehlenbachs and Dr. Clifford Lipscomb as peer reviewers, and are their detailed comments available?

---

[1] 2052: A Global Forecast for the Next Forty Years: Jorgen Randers: 9781603584210: Amazon.com: Books [Accessed July 10, 2014]

Specific Comments

(P.10) "1.3 Community Impacts." "RESI conducted a thorough review of relevant literature" Yet on p.22 only a single reference to a Texas paper was mentioned. I Googled "marcellus shale agriculture impact" (without the quotes) and came up with 156,000 listings. On page one of the results there were four relevant listings to the present study. These[2] should have been examined. Also on this page was a listing of research report[3] by the Multi-State Shale Research Collaborative on the topics of Community, Economy, Housing, Infrastructure, Crime, Education, Local Government, Workforce, Tax policy, and Future Fund.

(p.11) "Housing Impacts". The bullet points pertaining to Garrett County are completely wrong. They do not reflect reality. A distinction should be made between housing for permanent residents and housing that people purchase as an investment (and some of the permanent residents do it as an investment also). The vast majority of expensive housing are investment or personal vacation properties. Many of these properties lie idle during the year, but that does not mean they represent "available or surplus housing." Such housing is way too expensive for a temporary workforce. The statement under bullet 2 "this shortage could be reversed if more vacant housing were put back on the market to meet new demand" reflects a misunderstanding of ownership and why the ownership is not willing to enter the market today. They can afford to wait until prices are to their liking; they are looking for higher prices.

---

[2] Found on 7/6/2014:

1. www.cce.cornell.edu/EnergyClimateChange/NaturalGasDev/Documents/PDFs/2-21-11_Assoc_Towns_Impacts.pdf
2. Marcellus Shale: Electronic Field Guide
3. courses.washington.edu/envir300/papers/Finkel_et_al_2013.pdf
4. https://blackberrymeadows.files.wordpress.com/2012/06/risk-to-farmers-who-frack.pdf

[3] Found on 7/6/2014: Impacts of Drilling - Multi-State Shale Research Collaborative

Affordable housing, the type that one looks for for migratory or temporary workers is very scarce; there is a sign along RT 219, near McHenry, requesting 'rental housing.'

Bullet 2, 3 and 5 reflect a misunderstanding of the housing market in Garrett County as discussed above.

(p.11) "Trucking Impacts" Without a scenario showing locations of roads used and requiring construction how can one determine an impact?

(p.12) 1.4 Tourism Related Impacts. Bullet 1. Given that the statement is true, the question "what is the impact?" has not been answered.

Bullet 2: The impact would be disastrous for the second home owner. There will not be any flexibility. It would be nearly impossible to sell second homes!

Bullet 3: That's an opinion. One could have shown results of back-of-the envelope estimates. How does one factor the cost of recovery of the tourism business, if it can be recovered at all.

"1.5 Economic and Fiscal Impacts" A lot of magic wand waving; not justifying why the tools are suitable for this task. References to prior studies? What are the "key economic drivers" ? A "twenty year period" What are the assumptions for economic growth or leveling off during this period? This is a very dangerous, error prone, area. Assuming a change in economy restricted to just the two Counties would generate highly questionable results. Not knowing how the 20 years are modeled, the results of the two scenarios presented on this page and on p. 13 and 14 are totally meaningless and possibly totally misleading.

(p.13) When discussing tax revenues, is this a net increase of revenues after expenses have been paid to accommodate the additional influx of people with respect to education expenses and other infrastructure expenses? When jobs go away, but people stay, are those welfare expenses accounted for?

(p.15) First paragraph. It would be nice to quantify the last sentence with figures.

(p.20) Reference to an email from Brigid Kenny regarding the history of energy development in Western Maryland is insufficient. How were those results obtained?

(p.21) 2nd paragraph from bottom. AU is not defined. Since when is Brigid Kenney a geologist or hydraulic fracturing engineer? (ref.25)"; "RESI Estimated…" how determined?

(p.22) "3.0 Impacts of Shale…by Other States" "...completed a review of the literature…" I expected to see how different States experienced the same issue (I would expect to see at least 3 different States discussed). One shouldn't pick and choose. Review of Agriculture involves only 1 reference in Texas; Schools (p.23) only one reference, Pennsylvania. Could not find Ref. 32.

(p.24) "Psychological stress…" What kind? Reference to study missing.

(p.28) "Tourism and Recreation" "A 2011 analysis found…" Where is the reference?

(p.29) Couldn't locate references 61, 63 and 66 with the URLs provided.

(p.30) Analysis of West Virginia, Pennsylvania,… Having reviewed that material, I would have like to see an paragraph or two of how relevant that review is to the issues in Western MD. These reviews are otherwise pointless.

(p.33, 34) Inputs from local stakeholders… As I mentioned earlier, local stakeholders were NOT interviewed. You interviewed those that manage stakeholder groups and as a result you get views of organizations. I would suggest that, in general, a member of an organization has always something they don;t like about the organization. Hence your results are going to be biased.

(p.34) 3rd paragraph "Factual accuracy was not verified" So how would that impact the results?

(p.34, 35) "...farmers have begun taking jobs out of state to work on shale development…" Here is where 'factual accuracy' is important. Yes some farmers have, but so have non-farmers. Out-of-state jobs is not restricted to gas development, it's any higher paying job one can get. It should be noted that farmers have large tracts of land and deriving income from leases is highly

welcome because the return on investment in farming is small. It should also be noted that the number of people working in the farming industry is probably significantly less that those that depend on the tourism industry.

(p.35) Schools - "Drilling is expected to bring a significant number of jobs into Maryland" How true is this? What's significant? How many are families with children vis-a-vis 'temporary labor'?

(p.36) first paragraph. This is a local political issue. From my standpoint, if everyone is forced to live within the means available so should the School Board. The School Board should count itself lucky that this is the fifth wealthiest county because the wealth is die to absent owners who only contribute to the Board's budget and are no burden on them.

(p.36) 4th paragraph - graduates leave to work in other than natural gas industry jobs.

(p.39) 3rd paragraph. How long is long term? There are no "recent developments of hydroelectric power."

(p.40-110) Comments made above apply to these pages in general. One of the most significant skewing factor is how the world changes in 20 years and how that would affect Garrett County.

I ran out of 'oomph' to review the rest in detail. I see repeated themes that I already addressed in prior comments.

I hope these comments are useful.

Respectfully,

Peter L Versteegen
144 Lake Pointe Drive
McHenry MD 21541
Phone: 301-387-4867
Email: pitiur@gmail.com

Savage River Watershed Association, Inc.

PO Box 355, Frostburg, MD 21532

814-442-2530

July 10, 2014

TO: The Marcellus Shale Safe Drilling Initiative Advisory Commission:

RE: Economic Study

Dear Commissioners:

On behalf of the Savage River Watershed Association, we are writing to share comments on the economic impact study that was recently completed by Regional Economic Studies Institute (RESI) - Towson University as part of the state's Marcellus Shale Safe Drilling Initiative (MSSDI).

Although the study does present some useful information to help characterize the proposed development, we are very concerned because it appears that many critical components needed to adequately project the economic, fiscal, community, and tourism-related impacts of natural gas exploration and extraction in the Marcellus Shale (both positive and negative) are missing and/or significantly incomplete.

In addition, the referenced RESI economic impact study does not adequately address several of the specific areas called out for analysis in Section F-4 of Executive Order 01.01.2001.11 The Marcellus Shale Safe Drilling Initiative. These include short-term, long-term, and cumulative effects of natural gas exploration and production in the Marcellus shale related to:

1. *(F-4h) …damages to roads and bridges from truck traffic related to drilling operations*
2. *(F-4i) impacts to local land use patterns and the character of rural areas and towns*
3. *(F-4k) impacts to state resources and recreation lands*

We are very concerned about the extensive omissions and deficiencies in the study presently and feel obligated to share this input with you with the hope that you will take the necessary action. We strongly urge you and the authors to make comprehensive revisions before the RESI economic impact study is used or relied upon for policy-making or other related decision-making at the local, regional, or state level.

To assist you in identifying some of the significant deficiencies that compromise the value and utility of the RESI study in its present form, a detailed review of the study is attached for your reference. Please feel free to contact us by e-mail at srwadirector@gmail.com or by phone at (814) 442-2530 if you have questions or would like additional information or input from our organization.

Respectfully,

Savage River Watershed Association
Board of Directors

attachments (1)

REVIEW: IMPACT ANALYSIS OF THE MARCELLUS SAFE DRILLING INITIATIVE STUDY
Prepared for the Maryland Department of the Environment by
Towson University - Regional Economic Studies Institute (RESI)
May 23, 2014

Comments by Kathelene Bisko Koscianski
B.S., Architectural Engineering; M.S. Community and Economic Development
Prepared for: Savage River Watershed Association, July 2014

GENERAL REVIEW AND COMMENTS:

In the Executive Summary, page 10 it is stated that the Impact Analysis of the Marcellus Safe Drilling Initiative Study by Towson University RESI is "a comprehensive impact analysis for informed policymaking." Although the study does present some useful information to help characterize the proposed development, many critical components needed to adequately project the economic, fiscal, community, and tourism-related impacts of natural gas exploration and extraction in the Marcellus Shale (both positive and negative) are missing and/or significantly incomplete.

In addition, the referenced RESI Impact Analysis study does not adequately address several of the specific areas called out for analysis in Section F-4 of Executive Order 01.01.2001.11 The Marcellus Shale Safe Drilling Initiative. These include short-term, long-term, and cumulative effects of natural gas exploration and production in the Marcellus shale related to:

1. *(F-4h) …damages to roads and bridges from truck traffic related to drilling operations*
2. *(F-4i) impacts to local land use patterns and the character of rural areas and towns*
3. *(F-4k) impacts to state resources and recreation lands*

Because of the extensive omission of critical data and the incomplete analysis of the projected positive and negative impacts of hydraulic fracturing activities— the Impact Analysis of the Marcellus Safe Drilling Initiative Study by Towson University RESI is significantly flawed in its present form. Substantial revisions are recommended (and are described in more detail in the sections that follow). With this in mind, the authors and sponsors of this study are strongly urged to address the myriad of deficiencies identified and to make comprehensive revisions before the RESI study is used or relied upon for policy-making or other related decision-making at the local, regional, or state level.

In addition to concerns related to the content, the organization of information and presentation of findings also need significant improvement in order for the RESI study to be a useful tool for decision-makers. The executive summary, the document contents, and the study conclusions are extremely difficult to follow, several unsubstantiated “subjective” and “anecdotal” and potentially misleading statements are included, and findings are presented without clear statement of priority, relevance, or importance. In addition, the document structure also includes redundant sections which make it difficult to effectively evaluate, integrate, or compile relevant information.

Another significant concern is the omission of reference data. Because the data utilized for a significant portion of the analysis are not included or adequately described, it is not possible to complete a substantive review of the study in terms of accuracy and completeness. This absence of data also makes it difficult or impossible for decision-makers to adequately validate or interpret the study’s findings.

More details on these concerns and issues are included below in the following summary.

SUMMARY OF IDENTIFIED AREAS OF DEFICIENCY:

ECONOMIC AND FISCAL IMPACTS: REMI PI+ Model Inputs and Outputs

Although an economic impact analysis is not generally defined to include the same things as a financial impact analysis, a risk-adjusted analysis, or a cost-benefit analysis, it is typically recommended that the impact analysis of a proposed development activity include an assessment of net costs and net revenues—particularly for industrial, extractive, and natural resource based industries.

Unless net revenues are incorporated, economic impact studies (and related forms of input-output analysis) are not a good measure or representation of the long term implications of a development decision. Some of the specific deficiencies in the RESI Economic Impact Analysis study related to the input and output analysis include:

Missing, Inadequate, and/or Unqualified Quantification of Economic Leakage

Input-Output analysis and related models typically incorporate direct effects on an economy, indirect effects of the development in question, and induced effects on the economy (typically factored in using a selection of different multipliers). For data generated from this type of analysis to be accurate and adequate for decision-making purposes, the analysis should also accurately incorporate economic leakages in terms of both jobs and income.

When the development opportunity involves an industry that is principally non-local and has a work-force that typically includes a significant number of non-local workers and/or transient workers—the adjustment for spending that leaves the region is especially critical.

Jobs

- The projection of output in terms of jobs should include a quantification of the portion of jobs that will be local and those that will not be local, where the wages paid will "leak" from the local economy to other places. (This would reflect the portion of jobs and job related income paid to transient or short-term non-local workers who would primarily spend their earned wages at their actual home—out of the county, out of the region, out of the state, or out of the country).
- The same type of quantification should be done for the local and state income taxes (which are also typically "leaked" from the local economy to the workers' home communities).

Income

- A quantification of the amount of industry income that will remain local (i.e., land lease payments, equipment rental payments, contractor payments, etc.) and the amount of industry income that will be "leaked" back to the industry source office(s) (i.e., net income generated from actual production, equipment and materials purchased out of state and brought in, etc) is also critical.
- Quantification of the amount of industry tax payments that will remain local and the amount of tax payments that will be "leaked" back to the owners source office(s) is also necessary.

This type of comprehensive, realistic analysis does not appear to be included in the RESI study. A breakdown of the findings in terms of gross versus net impacts for jobs and income has not been included, a description of this critical component of the analysis is not provided in the description of the model development, and the data needed to derive the net impact on jobs and income is not presented or referenced.

Omission of Quantitative Analysis of Spending Realignment and Substitution Effects

In order to generate accurate projections, it is also necessary to account for "spending realignment and substitution effects." This occurs when spending on one activity (i.e., shale drilling) substitutes for other spending (i.e., tourism, vacation rentals, outdoor recreation, etc.).

The expected impacts of spending realignment and substitution effects with respect to tourism are referenced in the study as a very important concern expressed by those interviewed locally. This concern is further mentioned in the section on tourism. However, no information is included to specifically quantify or project the impact of possible displacement of tourism spending.

<u>IMPACT ON TOURISM</u>

- Although in the Executive Summary, RESI implies that they developed "*a comprehensive and context-sensitive understanding of potential impacts of natural gas exploration and extraction*…" including community impacts, tourism-related impacts, economic impacts, and fiscal impact, the actual study falls quite short of this. Even though it is not conveyed in the Executive Summary or the document conclusions, the content of the study itself consistently indicates that the RESI analysis of impacts on tourism is incomplete. Statements are included indicating that there is a "need for more detailed analysis" and that "more accurate and robust data on tourism and visitation are necessary."
- In addition, although the RESI study indicates that there could be an increasing number of non-locals who may chose not to visit, there is no quantification of the lost income, lost real estate market value, or other impacts that would result from this choice.
- The income and jobs projections are not adjusted to reflect this actual, "net" impact of possible and expected losses in tourism, a significant local economic sector.
- Although a number of studies address areas where tourism and natural gas drilling co-exist, and areas where tourism has been affected by drilling in other states (i.e., Pennsylvania, Texas, Wyoming, with similar impacts in New York) the section on the tourism impact essentially seems to state that there is not adequate existing data to reference, and therefore they cannot quantify this (even though it is a likely and expected impact).
- Although a broad range of current data may not exist yet on the actual impacts on tourism due to drilling, this does not eliminate the need to incorporate useful and meaningful analysis of impacts on other sectors of the local and state economy, like tourism, which may be significantly impacted by drilling. This is an especially significant omission in analysis when it is noted that $243 million in visitor expenditures and 3, 851 jobs are estimated for Garrett County (Source: Garrett County Market Survey by West Virginia University) and $111.5 million in visitor expenditures and 1, 573 jobs are estimated for Allegany County (Source: Maryland Association of Destination Marketing Organizations, 2011).
    - Several studies do exist that could have been used as meaningful resources to help construct a data set for analysis and to utilize to generate estimated modifications and adjustments to the "input-output" quantitative projections for jobs and income. These studies include quantification of value of natural resources, state and county level tourism data, the economic value of outdoor recreation activities, and a study on impacts on real property values was completed in January 2014 by L. Muchlenbachs, University of Calgary.
    - In addition, there is a type of economic impact analysis called Counterfactual Analysis. In policy modeling, the term "counterfactual" is defined as "contrary to the present situation." More specifically, counterfactual simulations model the effect upon a regional or state economy by removing an organization or business from the economy. Typical counterfactual questions that can be modeled include: "What would be the effect on XXX

community if the YYY Corporation closed and had to lay off 250 employees?" Using this type of analysis of the counterfactual it can be reasonably assumed that other questions can also be modeled, such as "What if XXX number of typical visitors to Garrett County cancelled their trip due to gas development concerns or issues?"

- The section on tourism also implies that the impact on local recreation spending will be nominal (although there is no data or resources cited to substantiate this statement).
- Another questionable component in the section on tourism is the significant emphasis on the analysis of trucking activity and employment—and the implied classification of trucking and heavy trucking as relevant tourism sector occupations for Garrett and Allegany Counties. This assumption is not clarified, the data presented on the number of jobs and wages are a summary of national data, and a comparable and relevant data set for Garrett and Allegany Counties is not presented. Without an actual or projected subset of local data to reference, the wage analysis and evaluation presented on the potential impact of trucking related job opportunities (positive and negative) is not adequate or meaningful.
- In addition there is a statement about offsetting negative tourism impacts by the effective utilization of hotel tax. Again, there is no quantification or documentation of the data related to this statement. No calculation of projected increases in hotel tax is included. No calculation of the negative impact that this could have on tourism is included. No actual or estimated data is presented for the total income generated through tourism or the percentage of income generated through hotel tax (or other related taxes including personal income tax, indirect business tax, etc). Without this information, there is no way to evaluate the overall net impact of this recommendation, resulting in an "anecdotal" rather than analytical review of this topic.
- In addition, in a previous section, it was indicated that the existing regulatory structure for collection of hotel tax in a neighboring state was significantly limiting and that many hotel stays for many of the employees of the Shale gas industry did not generate tax revenue because they were considered short term residents not hotel guests. Again, only a primarily "anecdotal" discussion of this topic was included. Data to help decision-makers understand the implications and limitations of this type of revenue source were significantly omitted.

IMPACT ON AGRICULTURE

No specific or detailed analysis of potential impacts on agriculture—or even a meaningful quantification of current estimated value of this economic sector in Garrett County—is included. Even the sections that relate to this significant sector of the local economy that are included are of questionable value and relevance. For example, in one section on agriculture, issues involving a drought situation in Texas are discussed. Although concerns about water availability are relevant, the utility of this example is questionable—especially when the significant differences in the agricultural environment, the climate, and socio-economic situation in Texas from that of Western Maryland are considered.

Missing, Inadequate, and/or Unqualified Quantification of Economic Externalities

To provide adequate and realistic representations of the impact of a proposed development activity the results of an economic impact analysis should also be significantly clarified and adjusted for "externalities," impacts and damages associated with the development activity that are borne by the community as a whole—which are not reflected in market transactions. These include impacts to the environment, public health, public safety and natural resources which have further indirect impacts on such things as real-estate values, emergency services, road maintenance and repair, etc.

Once again, a critical component of quantitative analysis needed for sound decision-making has been significantly omitted. A breakdown of the findings in terms of gross versus net economic impacts has

not been included, a description of this critical component of the analysis is not provided in the description of the model development, and the data needed to adjust the projected gross income and account for significant costs that would be incurred as a direct or indirect result of the proposed development (several of which could be significantly quantified) are not included.

Although arguments can be made that these types of costs are too complicated, too variable, and too uncertain to analyze comprehensively, "To not incorporate externalities in prices is to implicitly assign a value of zero, a number that is demonstrably wrong." (Koomey and Krause, CRC Handbook on Energy Efficiency, 1997)

Significant Omission of Data And Analysis Related to Economic "Externalities":

PUBLIC HEALTH
Public health impacts (and the related local, regional, and state costs that may be incurred) are barely even mentioned in the study.

NATURAL RESOURCES AND ECOSYSTEM SERVICES
No valuation or other quantification of the potential loss of irreplaceable natural areas (or even an estimated value of these areas in term of agriculture, tourism, and local recreation spending) is included.

No significant quantified analysis or discussion of the impacts to state resources and recreation lands is included—although several studies and data sources exist for this type of information within the state of Maryland and elsewhere. (There is a particularly rich collection of data on the use, social value, and economic value of recreational areas and recreation-based economic activity in the neighboring state of Pennsylvania, which also is experiencing impacts related to Marcellus shale extraction activities).

The costs of these external impacts on the environment are real and significant. Dr. Pavan Sukhdev, author of *The Economics of Ecosystems and Biodiversity* and *Corporation 2020*, claims that these "externalities"—or costs to society from carbon emissions, water use, pollutants, and other byproducts of business activities—are more than $2 trillion.

Furthermore, there is no quantification of possible or projected costs in terms of abatement, remediation, mitigation or damages included in the RESI study. References to specific standards of liability for damages caused by gas exploration and production are also not included—even though in Section E-1b of Executive Order 01.01.2001.11 The Marcellus Shale Safe Drilling Initiative, one of the initial tasks of the Advisory Commission was to investigate enacting State legislation to establish such standards.

INFRASTURCTURE IMPACTS:

- Detailed analysis of truck trips and increased truck traffic is included but this data is not translated into projected damages to roads and bridges from truck traffic related to drilling operations—even though this was also specifically called for in Section F-4h of Executive Order 01.01.2001.11. Estimated costs that would result from these damages, due to the need for additional road maintenance and repair, are also not quantified in the study.
- In addition to lack of attention to costs related to the dramatic increase projected for truck traffic, the report also makes no effort to identify which bridges and roads (local, state highways, interstates, etc.) would be affected by the increases in truck trips associated with shale gas development activities. Since maintenance and repairs are funded differently, it is important to differentiate these to the extent possible. Significant data that could be used to make such projections should be available and accessible for neighboring states where drilling is presently occurring (e.g., Pennsylvania and West Virginia).

- Costs associated with the indirect impacts of increased truck traffic are also not documented in the study including costs for increased patrols, local and regional costs incurred to respond to accidents, costs associated with the management and regulation of trucks carrying hazardous materials, etc.

IMPACT ON LOCAL LAND USE PATTERNS AND CHARACTER OF RURAL AREAS AND TOWNS

- In several areas of the study general, qualitative, and descriptive information is included that emphasizes the significance of potential impacts on local land use and community character. However, there is no quantitative analysis or projection of these types of impacts. Considering the large scale, industrial nature of the proposed development activity and the rural, undeveloped, densely forested, outdoor-recreation based nature of the region currently—this omission is another significant deficiency. (This is also another area for analysis that was specifically called for in Section F-4 of Executive Order 01.01.2001.11.)
- In addition, the quantification of possible impacts on property values is not included in the study—although a detailed study on the impact of drilling on real estate was recently completed in January 2014 for areas in Pennsylvania by L. Muchlenbachs of the University of Calgary. This relevant study however was not incorporated into the analysis.

IMPACT ON SCHOOLS

- In order to accurately predict the possible impact on schools, demographic data for the expected growth, change in the workforce, and anticipated changes in the population would be needed. This data does not appear to be included in the study. Without this, it is impossible to accurately project impact on the schools, social services, health services and other community resources.
- Furthermore, the information that is included in the report on the subject of schools can also be called into question. For example, a statement in the report indicates that the Blackhawk School leased school property for drilling to make up $300,000 budget shortfall, which resulted from a 1% school budget reduction. The inclusion of this example (and the implications of this type of decision) is particularly questionable—especially in terms of public health and safety.

OTHER SIGNIFICANT OMISSIONS AND INADEQUACIES:

<u>Missing Demographic Information on Workforce and Drilling-Related Employers:</u>
Demographics of current county populations are reported however no comparable or even projected demographics related to the proposed Marcellus Shale development exploration or extraction activities are even mentioned (even though typical demographics related to drilling operations and employment are well documented). This data would be needed to accurately project impacts on schools, impacts on housing, impacts on hotel tax, impacts on income tax, job projections, and income leakages, etc.)

In addition, a characterization of ownership, employment, structure, etc. related to proposed development is also not included—even though significant data on the companies who have/had secured lease sites in the region and/or data on other similar drilling companies are documented and accessible. This data is critically needed to accurately project how much income would likely remain local, versus how much of the generated income would "leak" from community.

<u>Incomplete Discussion of Relevant Economic Trends related to Extractive Industries Incomplete</u>

- The information on the nature of the shale gas industry and the typical boom and bust cycle is very difficult to follow and errors in the tables describing the impact on taxes were found.
- Many relevant studies exist that provide contrasting views on the positive and negative impacts of these types of boom-bust cycles industries over the short and long term. One of the most significant

findings is that communities that experience boom/bust cycles due to natural resource extraction often under-perform economically over the long-term (and sometime even in the short term) in terms of median household income, family poverty (higher), and health outcomes (negative). Communities that experience boom/bust cycles have also been found to be at-risk or distressed communities and typically lack the economic diversity needed for sustainability, etc.

- Although this would be a critical piece of information for local, regional, and state decision-makers to consider, the RESI study does not quantify or describe with significant detail the typical impact of boom-bust cycle or the broad and extensive impacts (many negative) that this type of development may have on regional economies or community welfare.

Disconnected Data and Analysis of Impacts on Housing and Jobs:

- The RESI economic impact study consistently emphasizes the need for temporary, short term housing, and the number of new "residents" that will result from the drilling activity.

> As shown in Figure 16, Scenario 1 will add nearly 1,900 new residents to Western Maryland's baseline housed population (not including those in group quarters) within a single year based on projected employment added by drilling activity. Scenario 2 will add over 3,200 new residents to Western Maryland within a single year. For more information regarding these drilling scenarios, please refer to Section 5.0 of this report. For more information regarding employment and other impacts, please refer to Section 8.0 of this report.

However the implications of this assessment, in terms of the number of jobs that will go to those who are not local, are not included. This is a very significant omission.

- The statements in the section on jobs indicated that for Scenario 1, in the boom years there will be addition of 1,840 jobs in Allegany and Garret Counties combined (546+1,294). For Scenario 2, in the boom years there will be addition of 3,695 jobs in Allegany and Garret Counties combined (952+2743). If you try to integrate this data with the housing numbers to get an idea of how many jobs may be "local" versus non-local it suggests that for Scenario 1, 0% of the jobs would go to local residents (1,840-1,900) and in Scenario 2, the potential for 13% (3,695 – 3,200 = 495) of jobs to go to local residents. IMPORTANT NOTE: These numbers should not be relied upon or referenced because it is not clear how the data in the report was generated and the housing data is not integrated with the jobs data by RESI. This information is only included here to give an indication and scale of the significance of qualifying (and adjusting) the jobs data to reflect the significant number of non-local jobs as suggested by the data presented on housing. Even a very crude integration of this data illustrates how incomplete and misleading the data presented in the study is with respect to the number of potential jobs—and how inadequate and inappropriate it would be to use this study to make decisions related to drilling in Western Maryland.

CONCLUSION:

This review highlights some of the more extensive and significant deficiencies that characterize the Impact Analysis of the Marcellus Safe Drilling Initiative Study by Towson University RESI. Many more examples could be identified and numerous references and citations could be included to further substantiate this summary of the study's inadequacies.

Because of the extensive omission of critical data and the incomplete analysis of the projected positive and negative impacts of hydraulic fracturing activities— the Impact Analysis of the Marcellus Safe Drilling Initiative Study by Towson University RESI is significantly flawed in its present form. Substantial revisions are recommended and critically needed. With this in mind, the authors and sponsors of this study are strongly urged to address the myriad of deficiencies identified and to make comprehensive revisions before the RESI study is used or relied upon for policy-making or other related decision-making at the local, regional, or state level.

July 9, 2014

Brigid E. Kenney
Senior Policy Advisor
Maryland Department of the Environment
1800 Washington Blvd.
Baltimore, MD 21230

Dear Ms. Kenney,

The Maryland Petroleum Council (MPC) appreciates the opportunity to comment on the recent study by the Regional Economic Studies Institute of Towson University (RESI) regarding the potential positive and negative economic impacts of natural gas exploration and production in the Marcellus shale formation underlying Garrett County and the western portion of Allegany County. The development of the Marcellus shale is providing significant economic benefits to the states in the region. Production of shale gas in Maryland has the potential to increase the economic benefits to the state, generate thousands of additional jobs and millions in state and local revenue. Maryland has the opportunity to experience these benefits with responsible development of the state's shale resources.

Key Findings

- An earlier report by the Sage Policy Group found that drilling in Western Maryland would provide significant economic and fiscal benefits, and that the industry would act as a driver of investment in the region and job creation. In the mid-case scenario from that report, natural gas drilling would support more than 1,800 jobs annually, with a labor income impact of more than $85 million dollars and value added to the economy of over $316 million. And it would support an additional $65 million in revenue to Allegany County and $162 million in revenue to Garrett County, in total from 2015 through 2045.[1]
- The economic and fiscal impacts projected by the RESI study are similar to those found in the Sage report. In the ten peak drilling years, under the most active drilling scenario, Garrett County could see an increase in employment of over 2,000 jobs on average and during the single biggest year, value added of $341.8 million and $80.2 million in added wages.[2]
- The two papers feature similar economic impacts, yet arrive at starkly disparate conclusions. The Sage report finds that "the utilization of Marcellus Shale formation in Western Maryland in order to produce natural gas would have transformative economic and fiscal impacts," and that the "development represents a way for both Allegany and Garrett counties to secure a key driver of business investment and future job creation."[3] The RESI study concludes that the impacts "vary depending on numerous factors," and "typically follow a 'boom and bust' cycle."[4]

[1] Sage Policy Group, "The Potential Economic & Fiscal Impacts of Natural Gas Production in Western Maryland," March 2012.
[2] Regional Economic Studies Institute, Towson University, "Impact Analysis of the Marcellus Shale Safe Drilling Initiative," May 23, 2014.
[3] Sage Policy Group, 2012.
[4] RESI, 2014.

This conclusion is reflective of the entire RESI study, which seemingly seeks to downplay the potential economic value of Marcellus Shale development by throwing up largely unsubstantiated adverse impacts of resource development.

- The RESI study loses its impartiality in its analysis of potential impacts of resource development on industries such as tourism. It relies on flawed methodologies, and "evidence" based on studies that have been discredited or are irrelevant to Western Maryland. This approach has led to highly questionable conclusions, the bulk of which would have the reader believe that introducing drilling to Alleghany and Garrett counties cannot be done without damaging the economy in the long-term, and leaving the region in worse condition than it is now.
- The RESI study relies heavily on "stakeholders" in its attempts to determine the impact of natural gas production in Western Maryland on areas such as tourism, agriculture, schools, housing availability, and truck trips. But, the "stakeholders" were "not intended to be representative of the populations of Allegany or Garret Counties or the state."[5]
- The study further loses its objectivity through the inclusion of anecdotes and reports that have been discredited or are irrelevant to the Western Maryland experience. For instance, the RESI study references a preliminary EPA document that followed an investigation into water-related issues in Dimock, Pennsylvania, and a 2012 University of Colorado report, both of which have been shown to be flawed. In both cases, the studies were flawed in either their methodology or assumptions.
- The study stresses the importance of a diverse economy, noting that economy of Western Maryland is not diverse. Given the recognition that a diverse economy is preferred, the study fails to make the point that the addition of oil and natural gas activity would improve local economic diversity, helping to create a more sustainable and stable economy
- The potential value of natural gas drilling as a job creator is apparent when considering the high unemployment rate of Western Maryland compared to the rest of Maryland, the level of education attained by nearly half of the residents of Western Maryland, and the proportion of blue collar jobs that the industry could supply.

Detailed Comments

The safe development of unconventional oil and natural gas, both without and within Maryland, can continue to support local jobs and economies. A report by the Sage Policy Group sought to determine the potential economic impacts of lifting the moratorium and producing natural gas from the Marcellus Shale in Western Maryland. The Sage report found that the economic impacts would be positive and sustained throughout the activity period – in a Mid-Case scenario, supporting more than 1,800 jobs annually, with a labor income impact of more than $85 million dollars and value added to the economy of over $316 million—landowners alone would receive $505 million in royalties.[6] The report further found that unconventional natural gas development in Western Maryland would support an additional $65 million in revenue to Allegany County and $162 million in revenue to Garrett County, in total from

[5] RESI, 2014.
[6] Sage Policy Group, 2012.

2015 through 2045.[7] The RESI report found similar economic benefits. In the ten peak drilling years under the most active drilling scenario, it found that Garrett County could see an increase in employment of over 2,000 jobs on average and during the single biggest year, value added of $341.8 million and $80.2 million in added wages.

Though the general economic impacts between the Sage report and RESI study are similar, the two papers do not arrive at the same conclusions: The Sage report finds that "the utilization of Marcellus Shale formation in Western Maryland in order to produce natural gas would have transformative economic and fiscal impacts," and that the "development represents a way for both Allegany and Garrett counties to secure a key driver of business investment and future job creation."[8] The RESI study, meanwhile, only concludes that the impacts "vary depending on numerous factors," and "typically follow a 'boom and bust' cycle."[9] This conclusion is reflective of the entire study, which seemingly seeks to downplay the potential economic value of Marcellus Shale development by relying on perceived risks, old and unrepresentative data, debunked and deficient studies, primarily negative anecdotes, and improperly applied assumptions.

The RESI study relies heavily on stakeholder responses to its survey in its attempts to determine the impact of natural gas production in Western Maryland on areas such as tourism, agriculture, schools, housing availability, and truck trips. Yet as the study readily admits, the survey "was not intended to be representative of the populations of Allegany or Garret Counties or the state."[10] In fact, these "stakeholder" survey respondents were not necessarily residents of Western Maryland, involved in the economy in any way, or really "stakeholders" of any kind. Permanent residents of Western Maryland, who should have been represented as the primary stakeholders, accounted for just 52% of respondents. As the stakeholder views presented in the study cannot be assumed to be the opinions of those who may actually be impacted by development, the survey (and the contingent valuation modeling dependent on it) should not have been included in the study or used in modeling economic and fiscal impacts. Including the survey and the CVM analysis negatively bias the modeling of the economic and fiscal impacts, and the study as a whole.

The authors further introduce bias into the study by including anecdotes and reports that have been discredited or are irrelevant to the Western Maryland experience. For instance, the RESI study references a preliminary EPA document that followed an investigation into water-related issues in Dimock, Pennsylvania, despite the fact that the document was not peer-reviewed and other research found no connection between drilling and the water issues.[11] Similarly, the authors cite a 2012 University of Colorado report as evidence of air emissions posing a health risk, despite the fact that the

[7] *Ibid*.
[8] *Ibid.*
[9] RESI, 2014.
[10] *Ibid*.
[11] Mark Drajem, "EPA official links fracking and drinking water issues in Dimock, Pa." The Washington Post, July 29, 2013, http://www.washingtonpost.com/politics/epa-official-links-fracking-and-drinking-water-issues-in-dimock-pa/2013/07/29/7d8b34b2-f8a1-11e2-afc1-c850c6ee5af8_story.html.

report has been widely criticized for issues as simple as using out of date data and inflating the time needed to drill and complete a well.[12]

On a smaller scale, the study includes information that is irrelevant to the Western Maryland experience as presented by the scenarios in the study. With respect to housing impacts, for instance, the study finds that there would be sufficient housing, both rental and permanent, for new employees seeking to move to Western Maryland. However, the authors inject the danger of a housing shortage should "intense" drilling occur, even though the amount of drilling anticipated in the study is far less than the activity needed to be considered "intense" by the study's own measures. Similarly, the study takes pains to discuss research which sought to identify the risks to communities from shale gas development. RESI includes some of the material, but does a poor job explaining complicated terminology, and completely ignores the presenter's admission that we have "very little knowledge of community impacts of shale energy in particular."[13]

RESI's most egregious errors lie in its handling of the impacts that natural gas development could have on the tourism industry and the economy of Western Maryland on the whole. Overall, RESI determined that community impacts from natural gas activity would be overwhelmingly negative, a principal assumption of the study that is consistently wrong – that the positive impacts of drilling will be short-term, while the negative impacts will be long term. The study provides little evidence to support this, though attempts to by frequently referring to the "boom and bust" cycle of natural resource extraction.

RESI relies on qualitative data and comments by survey respondents to reveal the impacts on tourism from drilling. But, the survey responses are unreliable due to RESI's flawed methodology as explained above, and the resultant conclusions are based on perception rather than actual impacts. With respect to tourism, the study cites negative impacts caused by the perception of environmental quality degradation, fewer available hotel rooms, and increased wages due to competition for similar jobs in the oil and natural gas industry.

The study stresses the importance of a diverse economy, and includes a review of existing research that "focuses on the importance of economic diversity and sustainability."[14] Despite this, the economies of Allegany and Garrett Counties are described as "not diverse" with "each [having] a few industries employing the majority of area residents."[15] In particular, the study cites Western Maryland's economy as "reliant on tourism and related industries."[16] Given the counties' strong reliance on tourism and despite recognizing that a diverse economy is preferred, the study fails to connect the obvious—that for these two local communities reliant on tourism, the addition of oil and natural gas activity would improve local economic diversity and create a more sustainable and stable economy.

---

[12] Steve Everley, "Eight Worst Inputs Used in Colorado Health Study." Energy In Depth, May 16, 2012. http://energyindepth.org/mtn-states/non-elite-eight-worst-inputs-used-in-new-colorado-health-study-2/
[13] Jeffrey B. Jacquet, "Risk to Communities from Shale Gas Development," South Dakota University, presentation at the National Research Council Workshop on Risks from Shale Gas Development, May 31, 2013, http://sites.nationalacademies.org/xpedio/groups/dbassesite/documents/webpage/dbasse_083401.pdf
[14] RESI, 2014.
[15] *Ibid*.
[16] *Ibid.*

Krannich and Petrzelka (2004) explain that "[tourism] jobs often are highly volatile, due to the inherent seasonality of tourism-based activity and second-home residency in many settings. Indeed, the magnitude of seasonal fluctuations can rival that of traditional extractive industries, but with a far greater frequency of upswing and downturns."[17] Keith, Fawson, and Chang (1996) offer similar findings: "Our results appear to present a preponderance of evidence that, in general, the economies of the tourism-dependent counties are subject to annual variances which are relatively large and appear to be increasing in absolute value. This kind of employment cycle may be difficult to deal with from an annual planning perspective."[18] While the RESI authors express concern about the boom-bust cycle for extractive industries, when paired with the cyclical and economically-sensitive tourism industry, oil and gas activity can help diversify the local economy and mediate potential downturns in other industries, like tourism. This in turn creates a more stable and vibrant local economy, and is more likely to provide long-term economic security than tourism alone.

Yonk and Simmons (2013) note the potential cyclical nature of both energy extraction and tourism, and find that because they tend to follow different cycles, "by developing both resources, communities can be more resilient to cyclical downturns in either type of development."[19] Keith, Fawson, and Chang concur, explaining that "Alternative paths to less volatile long-term growth [for communities dependent upon tourism] appear to lay in the direction of . . . diversified economies which include reliance on extractive industries."[20]

Drawing from the unrepresentative survey responses, the RESI study also expresses concern that introducing oil and natural gas activity will negatively impact the natural amenities in the area, driving away tourists. This concern, like others brought up in the study, is based on perceived harm to the area rather than on any actual impact. As an example, the authors cite a sewage leak in Deep Creek Lake that "proved enough to prompt visitors to cancel rentals and other reservations with tourism businesses in the area."[21] But, the authors never acknowledge the fact that there are zero confirmed cases of groundwater contamination from hydraulic fracturing itself in 1 million wells fractured over the past 60 years.[22] In fact, the incident presented highlights the sensitivity of the tourism industry to disruption, and illuminates the need for the county to diversify its economy beyond tourism. In contrast to the overwhelmingly negative presentation by the study, the reality is that "energy extraction and amenities both play integral roles in economic growth for county development."[23] Many counties across the

[17] Krannich, R.S., and Petrzelka, P. (2004) "Tourism and Natural Amenity Development: Real Opportunities?" In David L. Brown, Louis E. Swanson, and Alan W. Barton (Eds.) Challenges for Rural America in the Twenty First Century, 190-202. University Park, PA: The Pennsylvania State University Press.
[18] Keith, J., Fawson, C., Chang, T. (1996) ""Recreation as an Economic Development Strategy: Some Evidence From Utah." Economic Research Institute Study Papers. Paper 91.
[19] Yonk, R. and Simmons, R. (2013) The Role of Oil and Gas and Amenities in County Economic Development. Liberty Source, Inc.
[20] Keith, et al., 1996.
[21] RESI, 2014.
[22] API, "Hydraulic Fracturing: Unlocking America's Natural Gas Resources." April 2014. http://www.api.org/policy-and-issues/policy-items/hf/~/media/Files/Oil-and-Natural-Gas/Hydraulic-Fracturing-primer/Hydraulic-Fracturing-Primer-2014-highres.pdf
[23] Yonk, et al., 2013.

United States have successfully developed both energy and amenity resources to the benefit of the county as a whole. The executive director of the Colorado Department of Resources explained that "a balanced approach to development would allow for Moffat [County] . . . to experience significant economic benefits from gas development, and, at the same time, protect one of the most unique landscapes found anywhere in the state."[24] In fact, rather than being mutually exclusive, energy extraction "can directly advance the development of amenities," including agriculture and tourism based on the natural amenities in the county.[25] Yonk and Simmons report, "Many counties are currently enjoying the economic benefits of a strong oil and natural gas industry and use those benefits to advance their amenity offerings. For example, Bradford County in Pennsylvania, Moffat County in Colorado, and McKenzie County in North Dakota all use tax revenues related to the energy extraction industry to fund projects such as museum renovations, maintenance of recreational paths, and historic associations. In Uintah County [in Utah], money from mineral lease fees was used to construct a facility to store and display 30,000 dinosaur bones."[26]

One example of how the tourism and energy extraction industries can grow together to benefit the county is found in the potential for the industries to work in different cycles. As a result, the wages for a single employee could be year round rather than seasonal due to the ability to work in both industries. As the study notes, "Western Maryland's unemployment rate (expressed as an average between Allegany and Garrett Counties weighted by the total labor force for each county) has been historically higher than that for the state overall between 2002 and 2012."[27] When combined with data from the Census Bureau, which shows that 42.8 and 42.7 percent of the residents of Allegany and Garrett Counties, respectively, indicated high school as their highest level of completed education, the potential value of the oil and natural gas industry is brought into relief.[28] A recent study by IHS found that nearly 75% of the growth in the upstream oil and gas industry would be in blue-collar jobs, nationally between 2010 and 2030.[29] Using neighboring states that are engaged in drilling activity as an example, West Virginia shows that drilling can be a boon for employment and the communities in which current residents reside. As a result of drilling, the state's community and technical college system responded to the need for a new workforce by offering training certificates in programs related to the development of the Marcellus shale. Graduates of these certificate programs "got jobs and are making about $70,000 per year."[30] What's more is that "these jobs aren't fleeting,"[31] suggesting that the positive impacts are in fact, long term.

Finally, the study dramatically underreports the possible fiscal benefits from natural gas revenues, and ignores the ability of those revenues to offset potential negative impacts. For instance, the study cites

[24] *Ibid.*
[25] *Ibid*.
[26] *Ibid.*
[27] RESI, 2014.
[28] *Ibid*.
[29] IHS, "Minority and Female Employment in the Oil & Gas and Petrochemical Industries," March 2014.
[30] "Editorial: Marcellus Jobs for Newly Trained West Virginians." Charleston Daily Mail, June 19, 2014, http://www.charlestondailymail.com/article/20140619/DM04/140619178
[31] *Ibid*.

road degradation and lack of available classroom space as potential negative impacts, yet fails to acknowledge that tax revenues collected by the county can be used to alleviate these problems, should they exist at all. In the case of roads, the study notes that companies have voluntarily entered into bonding agreements with Garrett County, as a result of drilling in West Virginia. While it is not required, there is no reason to believe companies will not continue these arrangements should drilling take place in Garrett or Allegany counties. As noted, tax revenues can also be used to fund schools, so that classroom overcrowding can be alleviated, should employees move into Garrett County or Allegany County with young families. As for the training programs mentioned above, "the industry identified the needs and contributed financially to development of education programs."[32]

Despite these positive fiscal impacts, the study gives the reader the impression that fiscal impacts would not be significant. First, the study suggests that the county could not collect taxes relating to energy production, by misquoting a source that made this comment in reference only to Texas counties. Second, the study grossly undercounts the actual fiscal impacts. As noted above, the Sage report found that unconventional natural gas development in Western Maryland in a Mid-Case scenario would support an additional $65 million in revenue to Allegany County and $162 million in revenue to Garrett County, in total from 2015 through 2045. The RESI study found that tax revenues would increase in Allegany County by just $1.7 million annually during the ten peak drilling years, and in Garrett County by just $4.4 million. Fiscal revenues are higher in the Sage report findings, despite a lower well count.

In sum, the RESI study did not objectively consider the benefits and costs associated with energy development given its use of flawed methodologies, and "evidence" based on studies that have been discredited or are irrelevant to Western Maryland. These issues have led to highly questionable study conclusions, the bulk of which would have the reader believe that introducing drilling to Alleghany and Garrett counties cannot be done without damaging the economy in the long-term, and leaving the region in worse condition than it is now. The reality is that perception does not drive an economy, and that safe and responsible development of the Marcellus Shale in Western Maryland would lead to thousands of new jobs annually, higher wages, a stronger economy with greater output year round, and a stable source of additional revenue to the local and state government. Policymakers would do well to recognize the value of the oil and natural gas industry for these counties, particularly the industry's ability to diversify struggling economies and provide good, high-paying jobs for residents of the region over the long-term.

[32] Charleston Daily Mail Editorial, June 19, 2014.

Comments and responses regarding the economic study

1. The economic baseline and projections in the report are different from the projections used by the Maryland Department of Planning. Why?

2. Who were the outside reviewers of the study?

3. What are the "other taxes" RESI included in the fiscal impact? Did RESI assume revenue from a business personal property tax at the county level? Did it include a permit fee for the State gas well permit?

4. What data sets were used for the report?

5. The information on the number of truck trips is misleading and inaccurate.

6. It appears the hedonic pricing model used assessed values. This is improper; actual sales prices should have been used.

7. The report does not address the impact on the value of lake properties. The property taxes on lake properties is a large part of the Garrett County's revenue.

8. The impact on county tax revenue from a potential adverse impact on the recreation and tourism industry was not evaluated.

9. What is the relevance of contingent valuation?