

Minutes of August 18, 2014, meeting of the Marcellus Shale Safe Drilling Initiative Advisory Commission

Approved: September 15, 2014

The Commission held its 31st meeting on August 18, 2014, at Frostburg State University. In attendance were Chairman David Vanko and Commission members Senator George Edwards, Delegate Heather Mizeur, Commissioner James Raley, Ann Bristow, Jeff Kupfer, Cliff Mitchell, Paul Roberts, Nick Weber and Harry Weiss. Commission staff Dr. Christine Conn and Brigid Kenney were present, as well as other agency personnel and members of the public.

Chairman Vanko called the meeting to order. The draft minutes of the July meeting were approved unanimously.

The next agenda item was a presentation by Darius Irani, Ph.D. of the Regional Economic Studies Institute (RESI). His colleague Susan Steward was also present. Dr. Irani explained that the purpose of the presentation was to respond to public comments and entertain questions from the Commission and the audience. He acknowledged the helpfulness of the public comments and said that RESI will rewrite the report so that the flow is better and it is more readable.

He acknowledged that certain topics were not covered in the economic report because they were being addressed elsewhere. For example, a public health report was being prepared by others, as is a study of the costs associated with increased road traffic.

In response to questions about the choice of the REMI PI+ model, Dr. Irani explained that this model is one of three industry-standard accepted models, and the only one capable of handling forecasted impacts while simultaneously adjusting for price and wage changes over time. . It is widely used by large companies and institutions.

Dr. Irani explained how RESI estimated the impact on property values. Because there has been no unconventional gas development in Maryland, there is no information on the influence of those wells on property values. Therefore, RESI used the existing conventional wells in Garrett County. RESI evaluated properties within a half-mile, one mile, and two mile radius of the existing wells. The properties within a half-mile were valued at 35 percent to 36 percent less than properties located two miles away; proximity to the well site considered as a single factor indicated a decline of 8 percent to 9 percent. That is, if a property is within a half-mile of a well, and all else remains equal, the property values are 8 to 9 percent lower than the value of those properties that are located more than two miles from the well. He noted that this indicated a long lasting impact on property values, because the conventional wells had been drilled decades ago. He also noted Dr. Lucija Muehlenbachs reviewed this section of the report and concluded that, within Dr. Muehlenbachs' analyses of homes in Pennsylvania, those analyses found that households concerned about groundwater contamination risk

within a mile-and-a-quarter radius from a well could potentially lose 13 percent of their property values. The impacts are comparable, and RESI used this net impact within its analysis. He acknowledged that either assessed value or actual sales values could be used in this type of analysis, as long as the choice was consistent.

He explained the use of national statistics for employment and noted that RESI cross-referenced that with additional information, some of it local. RESI confirmed that the model results were reasonable estimates for the scenarios that RESI used.

Dr. Irani agreed with commenters who said that it was difficult to determine the inputs used in the model. He said that the information is in the report, but not collected in one table. The revised report will include a table.

With respect to what percent of jobs and royalty payments would remain in the County, Dr. Irani said that some stakeholders had insisted that the local workforce could fill the positions, but he understands that jobs will also be filled by out of state workers. It was not possible to estimate how the jobs would divide. Similarly, there was no data for determining whether royalty payments would be made to County residents, Maryland residents, or people who live elsewhere. RESI assumed that 100 percent of the jobs and 100 percent of the royalty payments would remain in the counties. When RESI reran the model with 0 percent of the royalties remaining in the county, there were 300 fewer jobs generated.

He explained that the principal difference between the RESI report and the SAGE Policy Group Report is that RESI considered both the supply side and the demand side of drilling policy. The SAGE report focused solely on the supply side. RESI used scenarios to simulate the boom and bust cycle common to resource extraction. He said that he considered gas drilling an opportunity for western Maryland that should be weighed against the potential adverse impacts. He did not agree with the authors of the SAGE report, which concluded that Marcellus shale drilling in western Maryland would have transformative economic and fiscal impacts.

Dr. Irani explained what tourism data were available and why they were not sufficiently “granular” to determine quantitatively the impact on Western Maryland’s tourism sector. The concerns about the effect of gas production on tourism were identified based partly on stakeholder input. These concerns were researched in existing literature and in data where available. He noted that a 2013 study in Utah indicated that tourism and oil and gas development can coexist in a county if they are geographically separate.

Comments from the public suggested that second-home units in the Deep Creek Lake area may not be defined appropriately by the American Community Survey and should be excluded from the housing analysis. In the revised report, RESI will provide an alternative figure for the Garrett County housing analysis. This alternative figure will exclude all housing units within census tract 5, which encompasses Deep Creek Lake. The original analysis, including for-sale and for-rent units in Garrett County, will remain,

and the additional analysis excluding Deep Creek Lake will be added as a separate figure. Without the Deep Creek Land housing, the model predicts a shortage occurring by in Garrett County by 2020. RESI relied on census data to determine whether a unit of housing was habitable.

Only anecdotal information was available on the question whether landlords would prefer to rent to transient workers or to permanent residents. These reports were cited. Workers' preferences for housing would probably depend on the share of local versus out-of-state workers.

The report did not project added housing blight from drilling activity, but offered ideas for alternatives to building new permanent units for a transient workforce.

The source of data for estimating the number of truck trips was the New York Department of Environmental Conservation Draft Supplemental Generic Environmental Impact Statement. During the preparation of the report, MDE's Science Services Administration informed RESI that those numbers needed to be adjusted for the scenarios under consideration. RESI noted the problem and corrected the estimates prior to release of the report.

In the question and answer period that followed, the following points were made:

- Dr. Bristow asked about the Utah report. She asked that the report be sent to her for review.
- The revised report will be available in the early part of September. If the Commission wishes, they can discuss the report at a future meeting.
- RESI made the assumption that well pads would not be located in the Deep Creek Lake district. It was pointed out that the zoning for that district allows gas drilling. Dr. Irani said RESI assumed that no drilling would be done in the Deep Creek Lake area because the County would put it off limits to protect tourism.
- Commissioner Roberts made the point that the RESI study failed to answer the critical question of the impact drilling will have on tourism. Dr. Irani said that the study incorporated a contingent valuation element to capture the tourism impact. RESI communicated to MDE the fact that data were not available to quantitatively assess the impact.
- When asked how he recommended the State use the information on the decline on property values and unacceptable risk, Dr. Irani said that it is difficult to say how that would play out for the individual homeowner. RESI is not making a recommendation whether drilling should be allowed. The State will make that determination. His study provides information to the State. He said that the analysis suggests that you not put gas wells near houses.

- Chairman Vanko noted that the study assumed that the drilling proceeded without serious accidents, spills or contamination. The decline in property values could be greater if things go wrong.
- Delegate Mizeur noted that the studies were underfunded. The Commission should identify knowledge gaps such as what percentage of the jobs would be filled by out of state workers. Commissioner Roberts said that we could get information from Pennsylvania and West Virginia.
- Commissioner Kupfer asked if the decline in property values could be offset by royalty payments.
- Commissioner Bristow noted that the hedonic study was based on conventional wells that are very different from unconventional wells, which have a higher level of disturbance. She stated for the record that, in addition to tourism, she wanted a consideration of the cost to the health care infrastructure, the high rate of injuries to workers in this field, injuries from catastrophes, the cost of air and water monitoring and the cost to the agricultural economy.
- Commissioner Roberts said that the recommended setback from private drinking water wells and property lines is less than the half mile radius within which property values declined.
- Senator Edwards said that data are available on in-commuting workers versus out-commuting workers. Pennsylvania has data on jobs filled locally versus out of state. He said that new housing would be more likely to be located in Pennsylvania or West Virginia because it is less expensive to build there; for example, Maryland mandates fire sprinkler systems in new homes, which is expensive. He said there are three legs to Garrett’s economy: tourism/ agriculture/ and other businesses. Tourism generates sales taxes, but business jobs may be higher paying and generate more income tax. Dr. Irani said that the revised report will include a table of severance taxes. Dr. Irani was not sure if the analysis of property values included houses over the Accident Gas Storage Field. RESI proceeded on the assumption that Marcellus shale wells would not be located in the Accident Field. Senator Edwards said that houses over the Accident field would reflect the impact of proximity to conventional wells, and that there should be some data in West Virginia, too.

Public comment followed.

Cheryl DeBerry from Garrett County’s Office of Economic Development said that data is available on in- and out-migration of workers. She said that only about 50 percent of the Garrett County residents work in Maryland. The County has been working hard to diversify the economy.

Megan Spindler asked whether RESI had considered the interplay of rising rent due to a housing shortage, lower housing values, and mortgage affordability. Dr. Irani said that RESI did not include those interactions, and that the model did not project rent increases.

Michael Bell said he runs a tourism-related business and his house is his most important asset. He is frustrated that the study does not answer his questions about his livelihood or his ability to retire. He criticized several aspects of the study. He said the contingent valuation study is flawed because it did not appropriately identify and sample the survey groups. In this, he agreed with the criticism of the Maryland Petroleum Council. He said the hedonic assessment is not accurate because conventional gas wells are so different from Marcellus shale gas wells. How could one be used to gauge the other? Dr. Irani said that there was no Maryland data on unconventional wells, but that the analysis of conventional wells was informative. He noted that the decline in home values was similar to the decline Muehlenbachs found when studying unconventional wells in Pennsylvania. Dr. Bell said that ignoring second homes for purposes of the housing supply but not from the hedonic model was an error; proximity to the lake affects housing values and to omit that variable distorts the effect of the variables RESI included. The hedonic model should use sales prices, not assessed values, because sales prices are the best indicator of what people are willing to pay. Dr. Irani said that some hedonic studies use assessed values and other sales prices; as long as one is consistent, the difference is the important result. Dr. Bell also questioned the basis for the calculations of property taxes, income taxes and other taxes. Dr. Irani said the job estimates are total and the income tax is figured on what the Maryland residents receive as income. In summary, Dr. Bell said that the empirical and conceptual problems make the report less useful.

James “Smokey” Stanton said that the report does not answer the community’s questions. It can’t be used to make decisions. Will more work be done? Dr. Irani said that RESI had completed the work they committed to do, and that the time to refine and rewrite the report is RESI’s own time.

Eric Robison said that it is not realistic to assume that no drilling will be done in the Deep Creek Lake area. We need to consider that as well as the impacts on roads from truck trips. The report is not as inclusive as it should be; it should clearly address the impacts on a tourism-driven economy. There must be data somewhere, for example, on the impact of wind turbines. He said Muehlenbachs found that property values declined 22 percent. Susan Steward said that Muehlenbachs found a decline of 13 percent, not 22 percent.

Ken Braitman said that the study is woefully inadequate to inform the decisions that need to be made. In Garrett County, schools are being closed; Texas counties with drilling are having their resources drained because of the health costs. The County is powerless because it has no comprehensive zoning. Much of the county was under

lease, and even State parks may not be off limits because the state may not own all the mineral rights.

Kathelene Koscianski said that she had great expectations for the report and was very disappointed. How could the housing need be projected without knowing whether the jobs will be filled by local residents or out-of-state workers? Dr. Irani said that RESI uses assessments of existing stock and population projections. RESI looked at the number of units that would be available but did not look at demand. He promised to consider the comments and provide clarity regarding the assumptions used, and what is and is not feasible to evaluate. Ms. Koscianski said that if you review the list of lease holders, you can see who they are and where they pay taxes.

Paul Durham asked if the growth of other sectors was considered; this could create competition for the housing supply. Dr. Irani said that RESI considered population growth and did not assume that the demand for housing would otherwise rise. The baseline (no drilling) shows the demand from population growth. The surplus housing would be consumed by workers in the gas industry. Mr. Durham pointed out that the hedonic analysis was based on conventional wells drilled in the 1950's. Muehlenbachs merged the data from three different studies and found a 10 percent to 13 percent decline in property values. The houses on municipal water saw a small rise in value, while those on well water lost value. Susan Steward pointed out that in RESI's study, the difference in value due to the source of drinking water turned out to be insignificant. RESI ran assessed values from the 1970's forward, but this did not capture the 1950's when the conventional wells were drilled. Mr. Durham said that some other studies show a greater impact. He also said that it may be possible to quantify the money generated in Garrett or Allegany Counties lost to the economies of other counties or states, a concept called leakage. He said he had seen a study of some Pennsylvania counties that showed royalty leakage of up to 70 percent in some Pennsylvania counties.

Mr. Durham said that he had done a back of the envelope calculation of the amount of real estate that would be affected under the 75 percent drilling scenario. He said that 235 square miles of real estate would be affected and that was about 40 percent of the privately owned land. He said that the Garrett County Board of Realtors advocated putting the Deep Creek Lake watershed off limits to well pads because of the tax revenue at risk.

Following a lunch break, Dr. Cliff Mitchell gave a presentation on the public health report, Potential Public Health Impacts of Natural Gas Development and Production in the Marcellus Shale in Western Maryland, by the Maryland Institute for Applied Environmental Health, School of Public Health at the University of Maryland, College Park (MIAEH). The authors relied on a comprehensive literature review and collected original data on noise levels around a compressor station in West Virginia. Dr. Mitchell provided background, a description of the project, a summary of the report and the

recommendations, and information on the independent reviewers. He announced a public comment period that will close on October 3.

The report includes a baseline assessment and an impact assessment. Dr. Mitchell explained the scoring system the authors used to rank the hazards, which included an evaluation of whether there were vulnerable populations, the duration and frequency of exposure, the likelihood of health effects and their magnitude/severity, whether the impact was localized or community-wide, and whether a setback would minimize the exposure. The hazards were ranked as having a low, moderately high, or high likelihood of having a negative impact on public health if unconventional gas development and production are allowed in Western Maryland.

Dr. Mitchell noted that in the Executive Summary of the MIAEH report, the authors state: “The impact assessment is based on available data from other states with ongoing UNGDP [unconventional natural gas development and production] regarding exposure and health outcomes and on epidemiologic and toxicologic data from other contexts that are relevant to potential UNGDP related exposures. Our assessments of potential health impacts are not predictions that these effects will necessarily occur in Maryland, where regulation is likely to be stricter than in some states where UNGDP is already underway. Rather, we provide assessments of the impacts that could occur and that need to be addressed by preventive public health measures if and when drilling is allowed.”

Dr. Mitchell summarized the impact assessment in the report on each of the hazards, and the hazard rank. There were 4 high risks: air quality, social determinants of health, healthcare infrastructure, and occupational health; there were 3 moderately high risks: flowback and production water related issues, noise, and cumulative exposure; and 1 low risk hazard: earthquakes.

Dr. Mitchell then reviewed each of the 52 recommendations made by the MIAEH authors. These preventive public health measures were recommended to address the impacts that could occur if and when drilling is allowed.

Dr. Mitchell then explained the three independent reviewers of the MIAEH report, all nationally recognized experts. Each offered constructive criticism, and agreed that this is a solid report that provides important insight for decision makers.

During the question and answer period, the following points were made:

- Questions about methods should be addressed to MIAEH.
- For some hazards there was a dearth of information generally as well as linking exposures to health outcomes.

- In response to a question from Commissioner Weiss, Dr. Mitchell said that the authors do not specify how much the hazard would be reduced by adopting their recommendations.
- Commissioner Kupfer asked if the report clearly reflects the data on which the authors rely and the practices that were being used – since the evolving use of best practices, which are now widely used in other states and will be used in Maryland – would have a significant impact on any projected health impacts. Dr. Mitchell said that some studies are discussed in detail but others more generally. The reader will have a sense of how the recommendations will reduce risk.
- Commissioner Weiss suggested that the Commission concentrate on recommendations that are not already addressed through best practices. Chairman Vanko noted two immediate examples – no land application and no open pits except for fresh water. Dr. Mitchell and staff to the Commission will review the list with that in mind.
- Commissioner Bristow noted that industry can remove data from FracFocus and that the database is not useful for research. We should not rely on FracFocus. Dr. Mitchell agrees.
- Commissioner Bristow said that it would be helpful to compare the scope of work with the report. The scope called for estimates of the health consequences of allowing horizontal drilling and high volume hydraulic fracturing, under a range of realistic economic and regulatory scenarios, but there are no scenarios. Dr. Mitchell said that, as a matter of practicality, the team could not evaluate numerous scenarios, nor would that have been helpful. Commissioner Bristow said that the CGDP was designed to address land use, not public health. She thinks the health impacts of concentrated versus distributed development should be evaluated. Dr. Mitchell said that the MIAEH team was informed by but not bound by the CGDP.
- Commissioner Bristow asked about recommendation 34 and other recommendations that are not within MDE's permitting authority. Dr. Mitchell said that the departments, including DHMH, will consider all the recommendations. Dr. Mitchell noted that local Health Departments have Local Health Improvement Coalitions – these could be a forum for discussing those issues. Commissioner Bristow noted that there are a lot of unfunded mandates in the recommendations. New initiatives require resources.
- Commissioner Roberts asked if Dr. Mitchell knew anything about a recent RFP issued by API for a health study. He said no. Commissioner Roberts asked why the release of the health report had been delayed. Dr. Mitchell said time was needed to review it and that some delay was occasioned by the vacations of key people, including himself, Ms. Kenney and Dr. Milton. Dr. Mitchell said that he

and others noted some grammatical and typographic errors, the mislabeling of a picture, and other editorial items, but that no substantive changes were requested by the Administration and he thinks that no substantive changes were made between the original submission of the report to DHMH and the release of the report.

- Mr. Roberts then said that he has “heard from people in New York” that the MIAEH report is an inadequate Health Impact Assessment because it did not include original research or data collection except for some noise measurements. Maryland spent \$160,000 for this study; Colorado asked for \$750,000 to do a study. Dr. Mitchell said we could have spent ten times as much and not gotten a better report. Original research would be expensive and time consuming. The MIAEH team used all the data they had and made an informed judgment. Commissioner Roberts said that the health report failed to answer the question. Dr. Mitchell disagreed and said that the report answered the policy question: Given what we know, what are the anticipated consequences of HVHF in Western Maryland.
- Commissioner Weber asked if MIAEH considered exploratory wells. Dr. Mitchell said that question should be directed to MIAEH. Commissioner Weber said that mental health is a significant issue; were mental health needs considered in evaluating the health infrastructure? Dr. Mitchell said that western Maryland is probably a medically underserved area for mental health as it is for other medical needs.
- Commissioner Weber asked if the State or counties will collect data that could be used in an epidemiological study. Dr. Mitchell indicated that some data is already collected. To test whether there is a statistically significant association between an exposure and a health outcome, you need data from a very large number of people and over a period of years. The health of people in a community can be tracked. Commissioner Weber said that where fracturing is happening, we have the opportunity to track the data, do a study and publish it. It may be necessary to collect additional data; for example, place of employment.
- Commissioner Bristow said that the issue of our knowledge of the health effects of HVHF could be similar to that of tobacco. It took several decades for research findings to affect tobacco regulations because the industry actively suppressed research findings and critiqued correlational studies. However, federal research dollars were spent on tobacco, and the Surgeon General became actively involved in this issue; neither of which are true with the current situation regarding health effects research of UNGDP. Therefore, states should put pressure on the federal government to coordinate health research. Commissioner Bristow stated that she thinks non-disclosure agreements in settlements of lawsuits and the failure to disclose the identity of chemicals used

in hydraulic fracturing interfere with the ability of the public health community to evaluate the health effects of hydraulic fracturing.

Public comment followed.

Rebecca Ruggles said that other states that allow hydraulic fracturing are experimenting on their citizens without collecting data. She suggested that the health team should consider what the next phase of studies should be, what should be done at the national level, and what Maryland should do. She said the Departments should consider the cost to the local governments and the cost of surveillance and monitoring. She asked about worker health. Ms. Kenney said that worker health is not in the Executive Order as a topic, but that we could share the recommendations with MOSH or invite someone from MOSH to address the Commission. Ms. Ruggles asked about compressor stations. Dr. Mitchell said that is a FERC issue and addressing it would require a broader set of participants.

Tommy Landers said that the evidence we have just isn't enough. What will the final report say? Chairman Vanko said that the report will identify gaps in information and consider whether those uncertainties can be tolerated as acceptable risks.

Eric Robison asked whether, like the Ricardo risk assessment, the report will identify risks that the MIAEH team was not able to evaluate. He noted that the estimates of traffic trips are not consistent. Dr. Mitchell said that there are big error bars around everything, and that the precise number of truck trips is not the most important factor. The report should be judged on the strength of the data.

Woody Getz suggested that the Departments prepare an overlay of the health report recommendations and best practices to facilitate comparison.

James "Smokey" Stanton asked if the baseline study could pull out specific segments of the population that have an underlying health issue and address those specific risks. He said women in Garrett County have a higher incidence of breast cancer and address those specific risks? Dr. Mitchell said the health report identified vulnerable populations, but that the recommendations are generic: what could we do to reduce the risk if hydraulic fracturing is allowed.

Commissioner Bristow asked if the team evaluated existing compressor stations like those at the Accident Storage Field. Dr. Mitchell said she should ask MIAEH.

Ms. Kenney then advised the Commission of the status of the work. There is a complete first draft of the risk assessment which is undergoing internal review. Work is proceeding on the traffic issue. The Department is still looking at issues involving NORM, TENORM and the use of depleted uranium. In this regard, she noted that EPA had just published a new analytical method for alpha and beta activity concentration in flowback and produced water from hydraulic fracturing. ARMA will convene a stakeholder group

this fall to work on top-down BAT. She did not have an answer on the constitutionality of a waiver of the setback from a private drinking water well that depends on the consent of the landowner.

Commissioner Weber asked if there would be a comment period on the state risk assessment. Ms. Kenney said that it would be discussed at the September meeting.

Commissioner Roberts asked about the status of the ground water monitoring guidance. Ms. Kenney said that she had worked with MDE staff involved in landfill monitoring and ground water monitoring to develop a plan for detecting ground water contamination at an early stage. A draft protocol was sent to Dr. Fred Baldassare, a geologist with expertise in monitoring for stray methane. Dr. Baldassare provided some comments very recently.

Public comment followed.

Tommy Landers asked for a formal 30 day comment period for the risk assessment.

Nadine Grabania noted that the county has the authority to enact certain protective measures against hydraulic fracturing, but if the counties fail to act, how will the State and the Commission inform the Governor's office of the gap? Commissioner Bristow and Delegate Mizeur said that they hope to identify a list of specific issues that need to be studied. Commissioner Raley said that the current Garrett County Commissioners will pass on recommendations to the incoming Commissioners; all parties know that the counties have a role in protecting the environment and the public.

Eric Robison asked why there is no external review of the state's risk assessment. Ms. Kenney said that Dr. Yoe has agreed to review it, and that she would welcome suggestions for additional reviewers. Mr. Robison also asked for a formal public comment period for the risk assessment. He asked when the public will see the traffic study. Ms. Kenney said that elements of the traffic issue would appear in the risk assessment. Lastly, Mr. Robison expressed his concern about a lack of continuity if the incoming Garrett County Commissioners aren't committed to protecting the community. New Commissioners may not be familiar with the state's process.

John Quilty said he was gratified to hear more discussion of local issues and impacts. The Garrett County Shale Gas Advisory Committee was drafting a set of recommendations to present to the Commissioners for local regulations. He has been working on a chart of benefits and adverse impacts to provide the State as it prepares its third and final report. This could be done as a balance sheet for each set of stakeholders: the county, landowners, businesses, tourism. The State's report should include a balance sheet like that, as well as a summary of what we know and don't know.

Commissioner Weber said that there should be a risk analysis as well as a risk assessment. Recommendations should be made on reducing risks. The Ricardo risk assessment should address all the items in the Executive Order. There should be both outside review and public comment on the risk assessment. There is shale in other places in Maryland, and the impacts may be felt outside western Maryland.

Commissioner Roberts noted that some effects are not local. He urged citizens to vote in the upcoming election.

Paul Durham noted that tourism was part of the original MOU for the economic study. The Appalachian Regional Commission (ARC) reports document the importance of tourism. He asked if the Commission would ask the State not to make a decision until an adequate study of the effects of gas development on tourism is done.

Vanessa Cunningham asked for a public comment period on the risk assessment. She said fracking will not bring long term economic growth, except that more people might become sick and more money would flow into the healthcare infrastructure.

The meeting adjourned at about 4:00.