

Minutes of June 13, 2014, meeting of the Marcellus Shale Safe Drilling Initiative Advisory Commission

Approved: July 11, 2014

The Commission held its 29th meeting on June 13, 2014, at Allegany College beginning at 10:00 am. In attendance were Chairman David Vanko and Commission members Senator George Edwards, Commissioner James Raley, Mayor Peggy Jamison, Ann Bristow, Steve Bunker, Cliff Mitchell, Paul Roberts, Nick Weber and Harry Weiss. Attending by conference call was Commissioners Jeff Kupfer. Commissioner Valentine sent word that, because of severe flooding in Allegany County that necessitated his attention, he would not be able to attend the meeting. Secretary Bob Summers and staff of state agencies were present. Some members of the public also attended by conference call.

Chairman Vanko called the meeting to order. The revised draft minutes of the May meeting were approved as revised.

Before discussion of the best practices began, Commissioners Bristow and Roberts asked for clarification about revising the Best Practices report if modifications were made to recommendations based on additional studies. Commissioner Vanko noted that the Commission was not asked to continuously revise the report and that the Departments want to finalize the best practices report in June 2014. Secretary Summers and Ms. Kenney reminded the Commission that this report was initially due August of 2012 and therefore was already nearly two years late. Commissioner Jamison noted that the report needed to be closed out to move ahead and that this report was the Departments' report. Commissioner Weiss pointed out that this process is designed to ensure that all Commissioner opinions are heard and recorded throughout the entire length of the Commissions existence. Ms. Kenney noted that if Commissioner views change as a result of the economics, health, risk assessment and transportation studies, these viewpoints would be recorded in the minutes and possibly reflected in an appendix to the Final Report. The Final Report is to be regarded as a synthesis of all prior reports with additional revisions to best practices based on additional studies. Commissioner Weber asked if additional risks could be incorporated into the risk assessment and Ms. Kenney confirmed that, at this point in time, it is not too late to include additional factors for the risk assessment to consider.

Commissioner Roberts asked the Departments if there was any connection between the Governor's fund raising event at America's Natural Gas Alliance (ANGA) offices and the push to finalize the Best Practices report. Secretary Summers said there was no connection and that political campaigning is separate from government operations.

Commissioner Bunker asked if the risk analysis could consider different best practices where the Commissioners disagreed on particular practices. Mr. Rowe, Deputy Director of MDE's Science Services Administration, who was present, and Ms. Kenney agreed

that this could be done for a limited number of risks. Also, if the risk were high despite recommended best practices, the risk assessment might suggest additional or more stringent practices. Commissioners Weiss noted that the Departments are entitled to make decisions based on what the science supports. He noted that the Departments had looked at the regulations of many states that were presumably based on risk. Commissioner Weber objected to the presumption that other states' regulations were based on risk assessments. Commissioner Kupfer observed that the role of the Advisory Commission is to provide advice, but that the best practices report is written by MDE and DNR and contains the agencies' positions. He also noted that some of the practices the Departments are recommending would not meet the definition of best practices in the Executive Order because they are conceptual and untried, and they have not "consistently shown results superior to those achieved by other means, and which are used as benchmarks." He commented that if we are to follow the language of the executive order, the report would only be recommending practices that are already in place elsewhere and for which there is solid evidence of superior results.

Ms. Kenney then described a process for collecting the Commissioners' comments on the best practices so that those comments could be accurately presented in an Appendix to the Best Practices report as the results of consultation by the Departments with the Commission. For each best practice, Commissioners were asked to provide responses to the following question:

"Given my current understanding of the facts and the science, I think

1. it is an appropriate standard to carry forward to the risk assessment.
2. it may not be the appropriate standard to carry forward to the risk assessment, but I can live with it.
3. it is not an appropriate standard to carry forward to the risk assessment because [fill in the blank].

Chairman Vanko led the discussion by identifying the best practice under consideration. Ms. Kenney provided additional detail as necessary and described what changes had been made to the draft Best Practices report resulting from the review of public comments, expert opinion, Commission discussion and state agency deliberations. Dr. Conn recorded the responses, which will be compiled into an Appendix in the June 2014 Best Practices report. The minutes below reflect the discussion prior to formally recording each Commissioner's response. A table showing the responses is appended to the minutes.

Section III. Comprehensive Gas Development Plan (CGDP) for landscape level planning

Commissioner Bunker asked if the 2.5 mile radius limit for exploratory well development was for one company or an area. Ms. Kenney noted that this would be applied to an area.

Commissioner Weber stated that the process was not clear for exploratory wells and wanted to know what is involved in a “rapid site assessment.” Ms. Kenney reviewed the criteria for exploratory well development, pointing out that the process is the same as for a production well except that a permit can be issued for an exploratory well without an approved CGDP. Ms. Conn briefly described the rapid site assessment, noting that the purpose is to identify additional environmental and other features that could not be evaluated by existing maps or required geologic investigations. Ms. Kenney reiterated that each well permit also required an environmental assessment. Commissioner Roberts asked how exploratory well pipelines would be worked into a pipeline gathering network. Ms. Kenney explained that this would occur through the CGDP process.

Commissioner Roberts commented that exploratory well options seem to encourage flaring. Ms. Kenney noted there are limitations on flaring and Commissioner Weiss commented that flaring can be necessary for safety. He also said that where there was a lack of pipeline infrastructure to get gas from a producing well to market, the company rather than flaring would more likely shut in the well and plug it. Commissioner Roberts asked whether it is possible to ask a company to limit flaring to 30 days and then plug, commenting that a company might prefer to flare because it is always cheaper. Commissioner Kupfer noted that scenario doesn’t make economic sense. A company would want to connect into a pipeline network as soon as possible, so that it can bring the gas to market. The exception could be a situation like North Dakota, where the primary product is oil, and natural gas is a byproduct. Since there are no available pipelines, there is a significant amount of flaring of gas in North Dakota. Commissioner Roberts expressed concern that wells in Pennsylvania are being flared extensively because it is not economical to connect to a pipeline. In response to a question from Commissioner Bristow, Ms. Kenney confirmed exploratory well permitting includes a public process.

Commissioner Weber expressed concern that planning principles are just guidance and not enforceable as a regulatory practices. Commissioner Roberts asked if any evidence exists that CGDP reduces impact. Commissioner Weiss responded that we will not find any evidence or reports on effectiveness because it is not mandatory anywhere. The concept of a CGDP follows the model of land use planning which will focus on where the practice is more appropriate. There is good evidence to show that planning from a land use perspective is very effective for minimizing impacts and placing growth in appropriate places. Commissioner Roberts noted that Mr. John Quigley, who provided guidance to the State on CGDPs, has expressed concern that the CGDP process has not been very effective in Pennsylvania state forests. Commissioner Bunker commented that planning is better than no planning and that The Nature Conservancy is developing a tool for companies to use for road and pipeline planning to reduce impact to sensitive

environmental resources. Commissioner Roberts expressed concern that the CGDP process would lead to the placement of a 40 acre industrial site next to his home, with adverse impacts. Commissioner Weiss noted that the planning process should take his concerns into account.

Commissioner Mitchell noted the absence of explicit linkage of environmental protection and public health in the CGDP narrative and that the benefits seemed focused mainly on natural resources. He suggested amending the narrative to specifically focus on the public health protections as a basic planning principle and to make certain that these objectives were also included throughout the throughout the discussion

Commissioner Bristow noted that CGDP, as an analogy to land use planning, does addresses forest fragmentation very well. She suggested that because CGDP will focus concentrated development in certain areas, and that this may intensify risks to public health from air emissions and explosions, contribute to greater rates of casing failure because of the proximity of wells, and increase the risk of water contamination. She stated that the CGDP does not look at synergistic risks related to public health. Both Commissioner Bristow and Roberts specifically requested that this comment be noted explicitly for the record: **There is no research on the effects of CGDP on public health and there is concern that this practice may intensify potential impacts.**

Commissioner Mitchell will provide additional public health data layers for tool box such as demographics, built structures, and other layers that will be useful for incorporating public health considerations into the CGDP process.

Commissioner Kupfer asked how more efficient permitting might be achieved. Ms. Kenney responded that possible efficiencies could be gained through early alternatives analysis. Selection of a good alternative route for a pipeline, for example, would make it more likely that the route would be acceptable for wetlands permitting, even though those issuing the wetlands permit would not be bound to those decisions. She noted that pad locations approved in a CGDP would be less likely to be controversial when well permit applications are reviewed.

Section V. Individual well permit following CGDP approval

Commissioner Mitchell noted that an application for an exploratory well would bypass the review procedure for the CGDP. Should it require additional review by other State agencies? Ms. Kenney stated that under the current statute, DNR is the only commenting agency. Commissioner Mitchell suggested that other agencies could be asked to comment, such as the Department of Health and Mental Hygiene (DHMH) and maybe the Department of Housing and Community Development (DHCD). Commissioner Bunker suggested adding in local government review as well. Ms. Kenney noted that these agencies are free to provide comments during the public review

period. The Departments will consider if there is a way to involve other agencies when a permit for an exploratory well is under review.

Commissioner Weber asked if there are references and API guidance for each of the elements that compose the plan for each well. Commissioner Vanko suggested that the Commissioners review the list, to make sure all the critical elements are present, rather than drilling down into each of the references. Commissioner Weber felt that there was not enough information without specific API reference. Commissioner Vanko noted that the risk assessment will consider the relevant API reference.

Commissioner Bristow asked that the notification requirements include residential spring as a drinking water source. Ms. Kenney said that she wasn't sure there was an inventory of such springs. Commissioner Bristow said that notification should include springs used for livestock and that this information is recorded in agricultural assessments. Ms. Kenney suggested that the notification requirement could be revised to eliminate reference to drinking water wells and apply notification to all landowners within 2500 feet. Commissioner Roberts asked that this standard be applied to all notification practices throughout the document.

Two amendments were proposed: 1) DHMH and other agencies should be identified as commenting agencies. MDE responded that they will need to consider this proposal before making a decision; 2) Notification requirements will be revised to include all landowners within a 2,500 ft radius. MDE and DNR accepted this amendment.

Section IV. Location restriction and setbacks

Ms. Kenney provided an overview of the revised constraint analysis and noted that not all location restrictions and setbacks could be mapped, such as caves, limestone outcrops and residential drinking water wells. The report will be updated with the revised constraint analysis. She also noted that the minimum 2,000 vertical separation between lowest fresh water zone and target formation had been added. The Departments had accepted this recommendation from the UMCES report but it has now been added to Table I-2 of the best practices report. In addition, pad disturbance was defined as the limit of disturbance according to sediment and erosion control plan.

Commissioner Kupfer said that the report should include a map of the updated setback distances and note which setbacks will not be mapped.

1,000 ft setback from well to property boundary

Senator Edwards asked if a landowner could waive this setback and whether more than one adjacent landowner would have to agree. Ms. Kenney said that she will ask the Department's Assistant Attorney General for guidance on whether the [review letter](#) on SB370 by the Attorney General would affect waivers of setback requirements under the oil and gas regulations.

2,000 ft vertical setback between lowest freshwater zone and target formation

Commissioner Roberts asked Commissioner Vanko if he had seen the science on this issue of fracture propagation. Commissioner Vanko responded that some studies show fracture propagation beyond target formation as far as 1,000 to 2,000 ft. Most often, fracture propagation extends about 100 feet. In Maryland, most of the Marcellus is 5,000 – 8,000 feet below the surface.

450 ft setback from aquatic habitat to edge of pad

Commissioner Bristow expressed concern regarding groundwater contamination of aquatic habitat. She said that aquatic habitat should have the same setback as drinking water protection. Commissioner Roberts and Bunker agree.

600 ft setback from special conservation areas to edge of pad

Commissioner Bunker asked if pipelines are considered. Ms. Kenney indicated that pipelines are not considered permanent surface infrastructure and that siting would be addressed through permits and the CGDP. Commissioner Vanko noted that pipelines do cause a permanent disturbance even though it is not surface infrastructure. Senator Edwards asked if identification of additional Wildlands would impact a permit that had already been issued. Ms. Kenney stated that a permit issued before the designation of an additional Wildland would probably not be affected.

300 ft setback from special conservation areas to edge of pad

The issue of noise impacts on these areas was raised as a concern. Commissioner Weiss noted that where more than one setback applies, the larger setback will be enforced. Commissioner Mitchell wants more data on health, especially noise. Commissioner Weber noted that the counties do not seem to have the capacity to enforce noise regulations. Ms. Kenney noted that noise regulations are the law, are enforceable and that MDE is evaluating how to provide additional assistance to the counties for monitoring and enforcement.

1,320 ft setback from historic gas wells to borehole, including laterals

Commissioner Bunker asked if this includes existing active gas wells and whether notification includes notifying all existing gas well owners so that they can take certain safety precautions. Ms. Kenney noted that the current regulations do not require notification to owners of existing gas wells and the best practices did not address it. [This was an oversight and will be corrected.]

1,000 ft setback from compressor stations to any occupied building

Commissioner Bristow pointed out that there are no air emission monitoring at the Accident gas storage field and no data on the noise impacts.

1,000 ft setback from edge of drill pad disturbance to any occupied building

Commissioner Roberts noted that if a compressor station or drill pad were located on undeveloped land, future development of that land would be limited if a person could not build a house within 1,000 feet of a drill pad or a compressor. Because the setback requirement would not prohibit a company from locating a compressor immediately adjacent to a property line, the owner of an adjacent undeveloped property might be severely limited in how he could develop his land. Commissioner Weiss suggested that this issue might be addressed by local zoning. Commissioner Bristow noted that there was no zoning in Garrett County. Commissioner Weber suggested this restriction should also be expanded to include dehydrators.

There was further discussion about unimproved property and setbacks that were from occupied buildings. It was stated that consideration should be given to property not improved by an occupied dwelling and to unimproved property, so that the needs of the surface owners of those properties would not be unduly restricted. Commissioner Mitchell suggested that this should be considered because it could happen in the future. Ms. Kenney admitted that the agencies had not thought about this. Commissioner Bunker also suggested that this is a property use and value impact and may be more appropriately addressed through local land use controls. It was also noted that the current best practices do not mandate a setback between a drill pad and a field where livestock graze. Senator Edwards asked if this would be another instance where landowners could approve variances. Ms. Kenney indicated that this would need review by the Department's legal counsel.

2,000 ft (or reduced with study to minimum of 1,000 ft) setback from a private drinking water well to the well pad

Commissioner Bristow asked that this include springs used for residential drinking water. Commissioner Weiss suggested the practice be revised to private drinking water "source". Ms. Kenney will check with the water supply programs to see if spring sources could be evaluated in a similar manner as private drinking water wells. Mr. Rowe agreed to run a risk assessment scenario for setbacks of 1,000 ft, 2,000 ft and 1 kilometer from private drinking water wells.

1,000 ft setback from a source water assessment area for a public surface water intake system

Commissioner Bristow asked that the agencies check if all public water supply systems are mapped, including spring, and to make sure that Crellin and Grantsville public water supply springs are also protected.

Section VI. Engineering, Design and Environmental Controls and Standards

A. Site construction and sediment and erosion control plans

Commissioner Weber commented that a huge volume of stormwater will need to be stored in tanks. Ms. Kenney noted that one commenter suggested that the requirement could increase the size of the pad to accommodate tankage; but she noted that it would reduce the amount of pond storage. Commissioner Vanko noted that this practice is currently being used elsewhere and can be used as a benchmark. Commissioner Kupfer indicated that Chevron uses million gallon sized tanks and that only a couple of tanks are needed for a well pad. He also does not agree with the recommendation that the tanks need to be closed; there are safety and practical construction considerations. He said it isn't clear that the benefits of a closed tank outweigh these other considerations. Ms. Kenney indicated that closed tanks could be vented to a pollution control device.

Commissioner Weber stated that the absence of best practices for gathering lines needs to be addressed and that this remains a gap. Commissioner Bristow asked if it is within MDE's purview to set materials standards for pipelines. Ms. Kenney referred to PSC presentation to the Commission and said that standards for the materials used in pipelines have been established by FERC. Commissioner Mitchell asked if it is possible that roads would be built for exploration wells. Ms. Kenney confirmed that most exploratory wells would require a road. Commissioner Weber expressed concern with lack of best practices oversight on ancillary equipment and structures.

B. Transportation planning

Commissioner Mitchell noted that additional noise and diesel emissions would accompany increased truck traffic and suggested that monitoring protocols could include potential health impacts from traffic congestion, idling engines, etc. He suggested that the planning element could incorporate an opportunity for monitoring if a transportation problem is building up over time. Commissioner Bristow shares Commissioner Mitchell's concern and would like to see on-line component for GPS tracking to facilitate citizen tracking. Ms. Kenney indicated GPS tracking was addressed under wastewater.

C. Water

Commissioner Weber would like to see more assurances that small and headwater streams are prohibited as withdrawal sources. Commissioner Vanko recalled that Mr. Jay Sakai (MDE) assured Commissioners that withdrawals would only be allowed if there were sufficient resources. Commissioner Weber would still like more assurances. Senator Edwards asserted that MDE will not let water withdrawals run the streams dry and that companies will need a permit.

D. Chemical disclosure

Commissioner Weber raised concern about the depleted uranium used in perforation devices and that this should be disclosed and evaluated. Commissioner Vanko commented that this is a new issue and we will need to keep it on the radar screen.

Commissioner Roberts asked if Physicians for Social Responsibility (PSR) has met with the State. Commissioner Mitchell indicated he has had several meetings with PSR and PSR has expressed many concerns about trade secrets and physician patient communication. Ms. Kenney noted that the proposed practice makes it easier for health professionals to get trade secrets information than under federal OSHA requirements; she understands, however, that there is a lingering concern that there may be a chilling effect on physicians' requesting information because, if the information is wrongfully released, physicians may be suspected of violating the confidentiality agreement. Commissioner Bristow wants to eliminate trade secrets altogether and asserted that officials need to know identity and quantity/concentration/weights. Chemical data is worthless without this information. It is necessary to know how they are combined and to recognize chemical changes resulting from heat and pressure may produce chemicals with more negative public health impacts. Ms. Kenney commented that companies will have to report exact concentrations to MDE of the chemicals they used in hydraulic fracturing to MDE under the proposed best practices.

E. Drilling

It was mentioned that there is more of a tendency now to use natural gas to produce electricity on site or to power devices, and companies are moving away from diesel.

Commissioner Weber asked if pilot hole information will be used as part of permitting. Ms. Kenney confirmed that this information will be considered in the review of the drilling plan, and could be used to revise it, if appropriate.

F. Casing and cement

Commissioner Vanko commented on new research in Canada on wellbore leakage. The researchers noted that some Marcellus wells in the United States are not fully cemented from top to bottom by design, and casing head valves are not vented. The authors state that this can promote gas migration into the bedrock. Chairman Vanko requested that the agencies evaluate whether should allow boreholes that are not fully cemented. Ms. Kenney stated that the practices do require complete casing and that cementing would be required in all gas and fluid bearing zones; she said that the agencies will consider this suggestion.

Commissioner Weber expressed concern over the lack of specificity and was not pleased that the casing and cement plan will be developed by industry. He asked how MDE would evaluate the plans. Ms. Kenney stated that testing will be required to ensure the gas and fluid bearing zones are isolated before any drilling proceeds and that these standards are more restrictive than API. Commissioner Weiss noted that this is a practice that should be performance based rather than prescriptive. This places the onus on industry, and the responsibility is with the Department to have the resources to

properly evaluate the proposal. Commissioner Weber is still concerned with the lack of specificity.

Commissioner Roberts noted that the Canadian study was evaluating fugitive/stray gas methane and feels that the Commission discussions do not seem to be that concerned with this either through casing or GHG controls.

Commissioner Bristow asks that if a well is refracked, is there a process in place to determine the integrity of the cement. Ms. Kenney confirmed that there is a process and that well integrity will need to be evaluated first. She understands that this practice is required in Alabama. Commissioner Bristow would like a reference on the integrity testing before a refracturing event.

Commissioner Roberts commented that the cementing practices are not taking into account the immediate local effects that contamination by a faulty well will cause and asks if the proposed practice is at least or more protective than API. Ms. Kenney confirmed that they were. Commissioner Vanko recommended further evaluation and pointed out that there might be good reasons not to fully cement the well from top to bottom. Ms. Kenney indicated that there have been concerns raised about the sheer weight of cement over the length of the borehole causing damage to the well or the formation, and that fully cemented boreholes are harder to monitor for leaks.

J. Air emissions

Commissioner Vanko voiced support of the offset proposal. Commissioner Weber asked how offsets will be implemented; there is too little detail. He also stated that top-down Best Available Technology (BAT) sounds great but is wishy-washy because a company can avoid installing it if it is too expensive. Commissioner Bristow asked who determines whether the proposal is cost-effective or not. Ms. Kenney indicated that the air program at MDE has extensive experience with this approach and that top-down BAT is a site by site evaluation and cannot be prescribed.

Commissioner Bunker noted that industry could use RGGI to supply offsets.

Senator Edwards commented on the recommendation to limit idling time for engines to 5 minutes, noting that every time an engine is started, it emits particles, and asked if there a reason for 5 minutes. Ms. Kenney stated that MDE's air program suggested this limitation on idling.

K. Waste and wastewater treatment and disposal

Commissioner Bristow asked if there a social justice issue that Maryland is exacerbating by shipping our wastes to another state. She referred to the Yucca Mountain radiation disposal site that she said was not approved because concerns about the integrity of storage were viewed as a threat to people living nearby, as an example. She pointed

out that wastes are being held long-term in tanks in Pennsylvania because there are fewer places that will take the waste. She wondered if Maryland regulations will propagate this problem. Ms. Kenney stated that the applicant will have to identify what they will do with the wastewater. The applicant will not receive a permit unless they identify a legal disposal option. In addition to deep well injection, other options may be available such as reverse osmosis, evaporation or dry fracking. Commissioner Bristow asked how long the storage tank can be on site and what the tank specifications should be to address long term storage. Commissioner Bunker supports the idea that there should be provisions on how long a company can store a tank on site. Ms. Kenney commented that there may be reasons why wastewater may be stored in tanks on site, such as recycling and reuse, but the bottom line was that the company must have disposal plan to receive a permit.

Commissioner Bristow wants public access to GPS data. She asked if Maryland would permit a class II injection well. Ms. Kenney indicated that there have been no applications for such disposal wells in Maryland, but if there were, MDE would evaluate whether the geology were suitable, and, if so, would allow it. Commissioner Weiss noted that wastewater treatment could become a lucrative business opportunity. Commissioner Weber asked about real time reporting and how MDE would be notified if shipment did not arrive. Ms. Kenney stated that records will need to be kept and if any incidents are reported, MDE would check/audit the documents. She was unaware of any real time monitoring of waste disposal, even for hazardous waste. Commissioner Mitchell recommending looking to the compact developed for low level radioactive waste disposal as a possible model for managing the disposal of wastewater from hydraulic fracturing. Commissioner Bristow noted that there may be an increase in truck traffic with hazardous material if the waste is being trucked around with no place to go. Commissioner Weiss noted that more handling leads to more spilling. Commissioner Kupfer commented that the reference in the best practices document to the results of a particular study – that there has been accumulation of radioactive sediment in Pennsylvania streams -- is out of place. It appears that this is the only time the report cites a study, and there is no attempt to place the study in context or address the criticisms of it. He believes that the reference does not support the report and suggests that it be deleted.

L. Leak detection

Commissioner Weiss noted that the same leak detection practices should address fluid and chemical leaks.

N. Noise

Commissioner Mitchell notes that noise will be one of the areas addressed in the health report. He notes limitations in the capacity of local government to enforce noise regulations and that this needs to be addressed. He also indicated that noise is an emerging public health issue.

P. Spill prevention, control and countermeasures and emergency response

Commissioner Bristow expressed concern about the local capacity to deal with incidents. Commissioner Mitchell agreed and expressed particular concern with capacity about dealing with emergencies.

Section VII. Monitoring, Recordkeeping and Reporting

Commissioner Weiss commented that it is a good practice for the State to commit to developing monitoring protocols. Commissioner Weber wants to see some detail. Commissioner Mitchell asked if monitoring protocols would be written into the regulations. Ms. Kenney noted the monitoring requirements would be written into the permitting so regulatory revisions would likely not be required. Commissioner Mitchell would like review and participation by other agencies with the opportunity for public comment. Ms. Kenney noted that if monitoring requirements were incorporated in new regulations, there would be opportunity for public review. If requirements were included in the permit, comments would be provided through the public process.

Commissioner Roberts said he had provided a detailed recommendation to the agencies for ground water monitoring and has a commitment from Dr. Baldassare to give a presentation to the commission. Ms. Kenney noted the agencies are still working on the monitoring protocol and asked Commissioner Roberts to resend the proposal.

Commissioner Weber recommended that effective public outreach be developed to engage the public when opportunities arise for public review and comment. Commissioner Bristow indicated that it might be possible to expand the Marcellus stream monitoring effort that engages citizen scientists, to expand into air monitoring.. She also asked that enforcement data be provided in a publicly accessible manner and requested that the agencies estimate the cost of monitoring and enforcement of one huge 36 acre well site with 44 acres of supported infrastructure that she said was proposed by UMCES to determine the financial and technical resources needed for monitoring and enforcement.

Additional topics were discussed following the end of the guided process to elicit Commission response to the proposed best practices.

Economic Study

Ms. Kenney provided an update on the economic study. The Departments have opened a comment period on the RESI economic report. The report and related documents can be found MDE's [website](#). Comments must be received by the close of business on July 14, 2014. Responses will be prepared and posted on MDE's website. Questions and comments should be sent to marcellus.advisory@maryland.gov with the words "economic study" in the subject line. Alternatively, they can be sent to Ms. Kenney by

postal service mail at MDE. RESI will send representatives to a future meeting of the Advisory Commission to answer questions from the Commissioners.

Health Study

Commissioner Mitchell indicated that the health team will stick to the same schedule for the report. There is an upcoming public meeting to present overall findings in Garrett County at the Garrett Community College. He is trying to provide an offsite transmission option but is not sure that will be successful.

Commissioner Weber commented that he is concerned about not having an opportunity to discuss the RESI economic study and that the health study would be released before the Commission receives the report. Commissioner Mitchell clarified that this public meeting is not a release of the report, just an opportunity to present findings and get feedback from affected community before the report is finalized.

Commissioner Roberts asked if the agencies were disappointed that tourism impacts were not quantified. Ms. Kenney and Dr. Conn indicated that they were satisfied with the explanation of this due to the lack of data and the resulting qualitative assessment. Commissioner Bristow suggested that it may not be helpful to have RESI come back. She has consulted knowledgeable persons who told her that there are different economic models that can correct for the effects of the Great Recession.

Regarding the health study, Commissioner Bristow requested that researchers on health have more time to complete the study since the summer months are the period of active research time for professors and their graduate students.

Public comments

Eric Robison: Mr. Robison expressed his appreciation that Secretary Summers attended this meeting. He clarified that the May minutes implied a tone that he did not intend to express the tone. In regards to forest fragmentation, he asks if the state is considering forest banking and this might be especially relevant for pipeline right of ways. He asserts that banking should stay within Garrett County. He is waiting for the transportation study and asked MDE to clarify if they gave RESI estimated trucking trip data. Ms. Kenney responded that the transportation report will be done and made public before the Final Report is submitted. She has coordinated with the US DOT, State police, SHA and county roads departments and was waiting for truck trip data before continuing the work. Regarding the truck trip data, while MDE was waiting for RESI to provide the numbers, MDE's Science Services Administration (SSA), unbeknownst to her, had independently estimated the number of truck trips using the same source material (NY DSGEIS) RESI used and found that RESI had made a mistake in the interpretation of the NY data. SSA communicated this to RESI, and they corrected the estimate in their full report before it was released. Mr. Robison also noted that the RESI study did not provide references to data sets. Ms. Kenney stated that RESI acknowledges that they

should have provided more detail on their data sets and they will include additional references.

Nadine Grabania: Ms. Grabania expressed her unhappiness that a 6 hour meeting was held on a Friday during a busy time in her tourism business. She also said that it was difficult for her to hear the speakers at the meeting. She indicated that the elected and appointed officials on the Commission have failed to represent her concerns by voting on best practices without the benefit of economic and health studies and risk assessment. She also stated that those Commissioner in dissent represent her views and that the agencies and the Commission should provide greater weight to dissenting views as they represent the many citizens who will be affected.

Woody Getz: Noted that there was an error in the time advertised for the public health meeting. He also asked that waste disposal be considered in context of West Virginia Elk River spill. He pointed out that Hagerstown uses GPS technology to track curbside pickups at individual homes (FID chips) and suggests that waste pickup and transport of Marcellus shale wastes by trucks could use same technology.

Gabriel Echeverri: He expressed that people living here have to live with the decisions that are being made today and it is unacceptable for Commissioners to vote that they can “live with it” when they do not live here and will not be impacted.

Rebecca Ruggles: Ms. Ruggles would like to know who the economic reviewers were and would like to see their comments if possible. Ms. Kenney said she will need to get that information from RESI. Ms. Ruggles also asked when reviewer comments on the health study will be available and how the Commissioners will be engaged in evaluating the results. Commissioner Mitchell stated that the reviewers will comment on the final report and their comment will be shared. He stated that when the report is delivered, both UMD and the State agencies will post it on their websites. The report will be distributed immediately to reviewers who will provide a page or two of overarching comments, questions and critiques. Once all of the public and reviewers comments are collected, these comments will be transmitted to the commission. Commissioner Mitchell will address those comments. Ms. Ruggles stated that 30 days is too short of a time period for review. Commissioner Mitchell said he would consider extending the comment period until just before the August meeting. He would discuss this with Ms Kenney. Ms. Ruggles added that there will continue to be comments on this issue and that comments would result from the September public health symposium. She also asked for an outline of what the final report will contain since there is such confusion regarding this final product.

Public commenter: Will the regulations be codified in law, or are they just guidelines? At what level will they be enforced – state or local? Ms. Kenney stated that there is a process for proposing and adopting regulations at the state level. These regulations are enforceable by the State. County and municipalities can promulgate their own regulations.

Public commenter: What happens if a well is already in production and the options for disposal of the wastes are no longer available? Would the State shut down production? Commissioner Weiss pointed out that if the well was in production, it would no longer be generating wastes from drilling or hydraulic fracturing. Refracking would require an additional review process. If they wanted to refrack and did not have a disposal plan, they could not refrack. There could be an instance where a permit was issued, but before the well was drilled, the disposal option became unavailable. This has not specifically been addressed in the best practices.

Paul Durham: Mr. Durham pointed out that the April 2013 presentation emphasized the protection of quality of life, aesthetics, agriculture and grazing, but he does not see practices that reflect these goals. It appears to him that the BMPs have been narrowed down to the only areas that MDE and DNR could regulate. The county Board of Realtors are evaluating the economics and is asking how RESI treats the issue of shale development on property values. He asks if there are BMPs that can be used to mitigate the impact of shale on property values and notes that the Commission seems to shift that issue to local government, particularly during the discussion on compressor stations and property lines. He notes that landowners with wells and houses get setbacks from compressor stations while agricultural land owners don't. He emphasized that agricultural landowners are not protected in the way natural areas are and suggests that the risk analysis should address this. He recommends revising compressor station setback relative to the property line, not just relative to an occupied building.

The meeting adjourned at approximately 5:10 pm.

The votes cast at the June 13, 2014 meeting are tallied in the following chart:

Section III. Comprehensive Gas Development Plan (CGDP) for landscape level planning	
Response	Commissioners
1	Bunker, Edwards, Jamison, Mitchell, Raley, Vanko, Weiss
2	Kupfer
3	<ul style="list-style-type: none"> • Bristow: Will provide written comment, approach not shown to be superior to the approach commonly employed; there is no research on the effects of CGDP on public health and there is concern that this practice may intensify potential impacts. • Roberts: Not appropriate, no science to support it; there is no research on the effects of CGDP on public health and there is concern that this practice may intensify potential impacts. • Weber: Endorse approach for protecting natural resources, the CGDP incompletely deals with human and safety concerns and how they will be addressed

Section V. Individual well permit following CGDP approval	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Raley, Vanko, Weiss
2	
3	<ul style="list-style-type: none"> • Bristow: • Mitchell: Needs to have DHMH and other agencies as commenting agencies on permit review • Roberts: Same as Mitchell • Weber: Lack of specific API references, same as Mitchell
The Departments agreed to amend the practice to include notification of all landowners within a 2,500 ft radius.	

Section IV. Location restrictions and setbacks 1,000 ft setback from well to property boundary	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Raley, Vanko, Weiss
2	Mitchell
3	<ul style="list-style-type: none"> • Bristow: Needs to be the Limit of Disturbance (LOD), not the borehole • Roberts: Lack of supporting science • Weber: Lack of supporting science, no accounting of groundwater flow upstream or downstream from the well

Section IV. Location restrictions and setbacks 2,000 ft vertical setback between lowest freshwater zone and target formation	
Response	Commissioners
1	Edwards, Jamison, Raley, Weber
2	Bunker, Kupfer, Mitchell, Weiss, Vanko
3	<ul style="list-style-type: none"> • Bristow: Lack of supporting science and knowledge of aquifer

	<ul style="list-style-type: none"> • Roberts: Same as Bristow
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Section IV. Location restrictions and setbacks 450 ft setback from aquatic habitat to edge of pad	
Response	Commissioners
1	Bunker, Edwards, Jamison, Mitchell, Raley, Vanko
2	Kupfer, Weiss
3	<ul style="list-style-type: none"> • Bristow: Need implementation of Wolman report recommendations, groundwater contamination via casing failure could directly impact aquatic habitat, 450 ft not protective enough, concerned about agricultural land • Roberts: Same as Bristow

Section IV. Location restrictions and setbacks 600 ft setback from special conservation areas to edge of pad	
Response	Commissioners
1	Edwards, Jamison, Mitchell, Raley, Vanko
2	Bunker, Kupfer, Weber, Weiss
3	<ul style="list-style-type: none"> • Bristow: Need health data/studies on air quality impacts • Roberts: Same as Bristow, shocking the state would limit offset to 600 ft from an “Irreplaceable Natural Areas”

Section IV. Location restrictions and setbacks 300 ft setback from special conservation areas to edge of pad	
Response	Commissioners
1	Edwards, Jamison
2	Bunker, Kupfer, Raley, Vanko, Weiss
3	<ul style="list-style-type: none"> • Bristow: Need health data/studies on air quality and noise impacts • Mitchell: Would like to evaluate noise data • Roberts: Same as Bristow, not enough distance to reduce noise and air impacts • Weber: Same as Roberts

Section IV. Location restrictions and setbacks 750 ft setback from downdip side of limestone outcrops to borehole	
Response	Commissioners
1	Bunker, Edwards, Jamison, Mitchell, Raley, Weiss, Vanko
2	Kupfer, Weber
3	<ul style="list-style-type: none"> • Bristow: Don’t see the reason to reduce the setback, not enough information • Roberts: Not enough distance, not properly evaluated

Section IV. Location restrictions and setbacks Eliminate absolute 1,000 ft setback from coal mines in lieu of pilot hole and geologic investigations to develop site specific drilling, casing and cementing techniques	
Response	Commissioners
1	Bunker, Jamison, Kupfer, Mitchell, Raley, Weiss, Vanko
2	Bristow, Edwards, Roberts, Weber
3	

Section IV. Location restrictions and setbacks 1,320 ft setback from historic gas wells to borehole, including laterals	
Response	Commissioners
1	Edwards, Jamison, Mitchell, Raley, Weiss, Vanko
2	Bunker, Kupfer
3	<ul style="list-style-type: none"> • Bristow: Not enough data • Roberts: Not enough data • Weber: Not enough data

Section IV. Location restrictions and setbacks 1,000 ft setback from compressor stations to any occupied building	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer
2	Mitchell, Raley, Weber, Weiss, Vanko
3	<ul style="list-style-type: none"> • Bristow: No health data/studies • Roberts: No health data/studies

Section IV. Location restrictions and setbacks 1,000 ft setback from edge of drill pad disturbance to any occupied building	
Response	Commissioners
1	Bunker, Vanko
2	Edwards, Jamison, Kupfer, Mitchell, Raley, Weiss
3	<ul style="list-style-type: none"> • Bristow: No data/studies on how animals and agricultural use are affected by direct impacts and byproducts • Roberts: Same as Bristow • Weber: Same as Bristow

Section IV. Location restrictions and setbacks 2,000 ft (or reduced with study and consent to minimum of 1,000 ft) setback from a private drinking water well to the well pad	
Response	Commissioners
1	Bunker, Edwards, Jamison, Raley, Vanko, Weiss
2	Mitchell
3	<ul style="list-style-type: none"> • Bristow: Recommend 1 kilometer setback, no science to support a lesser setback, use the Vengosh study results • Kupfer: Setback is too wide and is unsubstantiated by existing information. Private wells have not been mapped out with setbacks

	<p>applied in the constraint analysis.</p> <ul style="list-style-type: none"> • Roberts: Same as Bristow • Weber: Same as Bristow
<p>Note: The risk analysis will run scenarios on 3 setback distances of 1,000 ft, 2,000 ft and 1 kilometer.</p>	

<p>Section IV. Location restrictions and setbacks</p> <p>1,000 ft setback from a wellhead protection area or a source water assessment area for a public ground water system to the well pad</p>	
Response	Commissioners
1	Bunker, Jamison, Mitchell, Raley, Vanko, Weber
2	Bristow, Edwards, Kupfer, Roberts, Weiss
3	

<p>Section IV. Location restrictions and setbacks</p> <p>1,000 ft setback from a source water assessment area for a public surface water intake system</p>	
Response	Commissioners
1	Mitchell, Raley, Vanko
2	Bristow, Bunker, Edwards, Jamison, Kupfer, Roberts, Weber, Weiss
3	

<p>Section IV. Location restrictions and setbacks</p> <p>A well pad cannot be located within the watersheds of the following public drinking water reservoirs: Broadford Lake, Piney Reservoir, Savage Reservoir</p>	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Vanko, Weber, Weiss
2	
3	

<p>Section VI. Engineering, Design and Environmental Controls and Standards</p> <p>A. Site construction and sediment and erosion control plans</p>	
Response	Commissioners
1	Bunker, Edwards, Jamison, Weiss, Vanko
2	Bristow, Kupfer, Mitchell, Roberts
3	Weber: Insufficient information on best practices – wants more detail
<p>Note: No vote recorded for Raley</p>	

<p>Section VI. Engineering, Design and Environmental Controls and Standards</p> <p>B. Transportation planning</p>	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Raley, Vanko
2	Bristow, Mitchell, Weber, Weiss

3	Roberts
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Section VI. Engineering, Design and Environmental Controls and Standards C. Water	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Vanko, Weiss
2	Bristow, Roberts , Weber
3	

Section VI. Engineering, Design and Environmental Controls and Standards D. Chemical disclosure	
Response	Commissioners
1	
2	Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Vanko, Weiss
3	<ul style="list-style-type: none"> • Bristow: Grossly inappropriate • Roberts: Extremely complicated issue, not enough time to research the issue, don't fully understand the details • Weber: Same as Roberts, concerned about depleted uranium used in perforation devices

Section VI. Engineering, Design and Environmental Controls and Standards E. Drilling	
Response	Commissioners
1	Edwards, Raley, Bunker, Jamison, Mitchell, Vanko
2	Bristow, Kupfer, Roberts, Weber
3	
Note: No vote recorded from Weiss	

Section VI. Engineering, Design and Environmental Controls and Standards F. Casing and cement	
Response	Commissioners
1	Edwards, Jamison, Weiss
2	Bunker, Kupfer, Mitchell, Raley, Vanko
3	<ul style="list-style-type: none"> • Weber: Lack of science and understanding • Roberts: Same as Weber • Bristow: Same as Weber, would like to see a cost assessment of enforcement needs by MDE

Section VI. Engineering, Design and Environmental Controls and Standards G. Blowout prevention	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Weber, Weiss, Vanko
2	
3	

Section VI. Engineering, Design and Environmental Controls and Standards H. Hydraulic fracturing	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Weiss, Vanko
2	Weber
3	

Section VI. Engineering, Design and Environmental Controls and Standards I. Flowback and produced water	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Weber, Weiss, Vanko
2	
3	

Section VI. Engineering, Design and Environmental Controls and Standards J. Air emissions	
Response	Commissioners
1	Bunker, Edwards, Kupfer, Mitchell, Raley, Vanko
2	Jamison, Weiss
3	<ul style="list-style-type: none"> • Roberts: This is an area of evolving research, can't support at this time • Weber: Same as Roberts • Bristow: Same as Roberts

Section VI. Engineering, Design and Environmental Controls and Standards K. Waste and wastewater treatment and disposal	
Response	Commissioners
1	Edwards, Kupfer, , Weiss Vanko
2	Bunker, Jamison, Mitchell, Raley
3	<ul style="list-style-type: none"> • Roberts: State should review and revise regulations on what constitutes on site storage (length of time, type of material, etc) so that this practice is not a de facto option for disposal and doesn't result in a prolonged period of time allowable for on site storage • Weber: Same as Roberts • Bristow: GPS tracking should be publicly available, recognize that shipping of waste exacerbates the problem of waste disposal, there are Environmental Justice concerns about exporting our wastes to another state

Section VI. Engineering, Design and Environmental Controls and Standards L. Leak detection	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts,

	Weber, Weiss, Vanko
2	
3	

Section VI. Engineering, Design and Environmental Controls and Standards M. Light	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Weber, Weiss, Vanko
2	
3	

Section VI. Engineering, Design and Environmental Controls and Standards N. Noise	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Weber, Weiss, Vanko
2	Bristow, Roberts
3	

Section VI. Engineering, Design and Environmental Controls and Standards O. Invasive species	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Weiss, Vanko
2	Bristow, Roberts, Weber
3	

Section VI. Engineering, Design and Environmental Controls and Standards P. Spill prevention, control and countermeasures and emergency response	
Response	Commissioners
1	Bunker, Edwards, Jamison, Kupfer, Mitchell, Roberts, Weiss, Vanko
2	Raley, Weber
3	Bristow: Need to address financial and capacity needs for emergency response

Section VI. Engineering, Design and Environmental Controls and Standards Q. Site security	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Weber, Weiss, Vanko
2	
3	

Section VI. Engineering, Design and Environmental Controls and Standards	
R. Closure and reclamation	
Response	Commissioners
1	Bristow, Bunker, Edwards, Jamison, Kupfer, Mitchell, Raley, Roberts, Weber, Weiss, Vanko
2	
3	

Section VII. Monitoring, Recordkeeping and Reporting	
Response	Commissioners
1	Bunker, Edwards, Mitchell, Raley,
2	Jamison, Kupfer, Roberts, Vanko, Weiss
3	<ul style="list-style-type: none"> • Weber: Needs more detail on the practices • Bristow: Same as Weber, monitoring information should be made publicly available