

April 27, 2011 Marcellus Shale Advisory Commission Meeting Minutes

CALL TO ORDER AND WELCOME

Chairman Cawley called the April 27, 2011, meeting of the Marcellus Shale Advisory Commission to order at 9:37 a.m. and stated that today's meeting would focus on environmental impacts of natural gas development in Pennsylvania. Chairman Cawley stated that, to date, Pennsylvania has 117 state parks which encompasses over 300,000 acres and welcomes more than 30 million visitors every year. Sixty percent of the state is forest, with a total of 17 million acres of forest land, 2.2 million acres of which make up the state forest system. Chairman Cawley added that state parks and forests are a vital part of Penn's woods and stressed that conservation and protection of these lands must be part of our discussion on Marcellus Shale.

APPROVAL OF MARCH 25, 2011 MEETING MINUTES

Chairman Cawley stated that he would like to hold off on approving the March 25, 2011 meeting minutes, as there have recently been some grammatical corrections made. The corrected minutes will be provided at the May 20, 2011, meeting, at which time the commission will vote to approve them.

WORKING GROUP REPORTS

Infrastructure:

Secretary Barry Schoch provided an overview of infrastructure and touched on issues such as: the number and training of inspectors, the aging current underground system, safety issues, standardization of pipeline conditions, permit time and consistency, highways, rail freight, and field visits for pipelines. Secretary Schoch added that we need to identify overlapping issues between the workgroups.

Chris Helms stated that the permitting issue was an interesting topic at the workgroup sessions, and noted that the workgroup members are planning site visits.

Following the discussion, Jeff Wheeland stated that one of the issues in Lycoming County is the mapping of gathering lines and asked whether PUC be responsible and, if so, how the counties can attain mapping for GIS system.

Robert Powelson stated that there are two pieces of legislation moving through the House and Senate regarding registering of pipeline—one sponsored by Representative Matt Baker and the other by Senator Lisa Baker—which would be public information. Mr. Powelson stated that we would coordinate efforts at the county levels and believes it is

critically important that this legislation approved by the Governor's Office to give us oversight of the non-jurisdictional gathering systems that are going to be built.

Public Health, Safety and Environmental Protection:

Department of Environmental Protection (DEP) Secretary Mike Krancer, with assistance from Cynthia Carrow, presented the information that was discussed at the Public Health and Safety and Environmental Protection Workgroup session. Secretary Krancer stated that the workgroup received presentations from the American Petroleum Institute (API) as well as the Clarion and Williamsport Water Authorities. API promulgates standards on many topics and has risen to level of the regulations. The Williamsport Water Authority had previously taken Marcellus wastewater but it capped at a certain level in the last administration when legislation made the decision to allow certain facilities to take wastewater. Secretary Krancer added that last week, DEP asked the industry to stop using grandfather facilities and the industry was in compliance within 24 hours. The Eureka facility treats frackwater to TDS and bromide standards, which discharges distilled water into the Williamsport Wastewater Authority.

Cynthia Carrow then turned the floor over to Tony Bartolomeo with PEC, who provided a brief summary of the May 2010 Duquesne conference. Patrick Henderson added that the May conference was outstanding and asked Mr. Bartolomeo whether the sustainability provisions would be something that he could share with this commission. Mr. Bartolomeo replied that once they go through the policy committee process the information will be introduced to this commission.

It was stated that it would be valuable to bring in additional expertise on public health issues. Chairman Cawley concurred.

Local Impact and Emergency Response:

Glenn Cannon provided an overview of the April 13th session of the Local Impact and Emergency Response workgroup. The Lycoming County Gas Task Force provided a presentation at the session, which Mr. Cannon stated that the commission will hear more about from Commissioner Jeff Wheeland later. Mr. Cannon continued that PEMA did a survey of 9-1-1 call centers around the commonwealth which showed that there has been an increase in call volume due to the gas industry, which in turn requires the need for additional staff and more money from the counties. There is also an issue with well developers contacting call centers and not having an address to give due to the fact that they are in the woods. The traditional computer dispatch system functions by address so it is important to create an alias address based on latitude and longitude in order to be found. Pennsylvania's 9-1-1 system has adhered to the Tier 2 level so that if you call from a cell phone, an address/location will appear to dispatch; however, cell phone coverage is limited in a lot of locations. Many companies have been using satellite phones. Mr. Cannon said that Ed Mann came to the workgroup session and discussed the direct impacts on a service-providing group that is already in crisis—firefighters. Mr. Mann stated that most accidents are typical construction injuries that local EMS can

respond to; however, a fire or well blowout would be beyond the local fire department's ability. There was a training program that was funded by the Marcellus Shale Coalition but there is no more money in the budget so that training program will end. We have to train firefighters to not attempt to fight any fires where hazardous materials are present. There are only three companies (all based out of Texas) that are capable of handling such fires—CUD, Boots & Coots, and Wild Well Control—which send teams to the well site to assess the situation. Mr. Cannon continued that these companies' resources are so heavy that they can only fly into Pittsburgh, Harrisburg, Philadelphia, or Elmira NY, and require special permits. A tremendous amount of planning and cooperation between the industry, counties and the local emergency response is necessary. The workgroup is looking closely at PA's Hazardous Materials emergency planning and response act (Act 165), which was passed in 1990 and is in need of review and updating. The workgroup intends to add a new chapter for Shale which will address many of the issues that local first responders have in dealing with Marcellus. The workgroup also plans to do a site visit to be able to see and understand more about the process.

Jeff Wheeland stated that the Local Impact Emergency Response workgroup in conjunction with the Lycoming Gas Taskforce Safety Committee will sponsor a well blowout roundtable June 13, 2011 in Lycoming County. Included in the roundtable will be: DEP, PSP, PEMA, PennDOT, DCNR, OSHA, EPA, EVS of Vermont (which is our county hazardous response team), and Wild Well Control Company. The objective is to discuss responsibility should there be a level 2 incident/blowout. We will be reviewing the operators' response, protocols and expectations of the following: PPC (preparedness prevention control plan), SPCC (spill prevention containment and control) and ERPs (emergency response plan). The goal for this working group will be to bring forth recommendations to the full commission for consideration of policy and procedures to present to Governor.

Economic and Workforce Development:

Gene Barr, Vice President, Government and Public Affairs, provided an overview of the April 14th Economic and Workforce Development Workgroup session. There were three presentations given at the session: Sue Mukherjee, Director of Workforce Development at the Department of Labor and Industry (L&I); Larry Michael, Director of Marcellus Shale Education and Training Center; and Frank Thompson, Deputy Director of Northern Tier Workforce Information Analysis. The presentations focused on climate impact of the development of the Marcellus industry. From the perspective of L&I, there is an inverse relationship between the Marcellus Shale well activity and regional employment rates. We have seen steady employment increases in core industry as well as ancillary jobs, as well as some jobs that are not as obvious, such as civil engineer maintenance and tourism. There have been 48,000 new hires in the core ancillary jobs in the affected regions, 71% of which are PA residents. We have asked L&I what Pennsylvania's unemployment rate would be without this industry and discussed the demographics and education level of the people being hired. There was a lot of discussion of the Education and Training Program at Penn College in Williamsport about what activities they are undertaking to train these individuals. This industry is creating real opportunities for

people like high school graduates and people coming off welfare with hourly pay starting at \$18-24 an hour. The workgroup is also looking at how to deal with any significant housing issues that may arise and our next steps are finding additional uses for the gas that is developed (e.g. natural gas vehicles).

Following the presentation, Gene Barr asked whether there have been any projections made that would sustain workforce needs over the next 5-10 years and what Pennsylvania's capacity is to fulfill those needs. Gene Barr replied that the industry would be able to provide a better projection, but we do know that this industry will continue to grow and that there are ongoing attempts to create additional training facilities in Pennsylvania. Chairman Cawley added that there is a sister education system set up at Westmoreland Community College, which is working symbiotically with Penn College to cover both major areas of the natural gas region.

Anthony Bartolomeo asked whether we could do an assessment of our workforce investment boards to identify some of these trends and whether it would fall on L&I to get those groups together and start collaborating on best practices. Gene Barr responded yes.

Vince Matteo asked how we are going to get the word out about jobs in Pennsylvania to people who are willing to relocate to other areas of the state. Mr. Matteo added that on the infrastructure side, two weeks ago got together in Williamsport, a group of over 100 people from all parts of PA and outside of the state, formed a compressed natural gas focus group. A day-long session was held and we will get that information to the Secretary. Anthony Bartolomeo recommended using the network of workforce investment boards (WIB) around the state to be the vehicles through which additional recruiting can occur. Gene Barr agreed that WIBs should be tapped and has already talked to his local career link office about this issue.

Barry Schoch asked what is required to be built in order to use fuel CFG and suggested that the Economic Workforce Development Workgroup should be in charge of seeking how to take advantage of Pennsylvania-based companies that are able to provide materials and instruction.

Jeff Wheeland raised concern about our legacy industries that were pre-Marcellus which are now hurting for qualified employees. Mr. Wheeland encouraged the workgroup to be sensitive to these legacy industries. Gene Barr stated that the workgroup had not touched on that subject specifically, but that the new industry is creating new and different opportunities and we will work with L&I to direct people to these areas of work. Mr. Wheeland added that it is not necessarily the laborers that are lacking, but rather the county government cannot afford to compete with the trained laborers.

Robert Powelson stated that the steel industry will be building a massive pipeline network, both interstate and intrastate, to get the gas to market. During our workgroup session, we had a discussion on how to incentivize our local steel production, versus relying on foreign steel.

NATURAL GAS DEVELOPMENT ON STATE LANDS

Rick Allan, Acting Secretary of the Department of Conservation and Natural Resources, provided an overview of Natural Gas Development on State Lands. Dan Devlin, Director of Forestry, assisted with the presentation.

Following the presentation, Terry Engelder stated that the development of Marcellus involves minimization of impacts and that the state forest lease blocks provide a model for how we should move forward in terms of minimizing that impact/number of pads. Mr. Engelder asked whether anyone has looked at what the unit sizes for state forest lands are going to be. Dan Devlin replied that we are probably looking at 380-400 in terms of the number of well pads.

Jeff Wheeland stated that the sportsmen are ecstatic because when the well pads in Lycoming County are reeded, there will be an oasis of wildlife habitat. Mr. Wheeland added that tourism will also increase. Anadarko is very active with stream and habitat restoration and does good quality work.

It was asked whether we are avoiding sensitive habitats. Mr. Devlin replied that, yes, we try to utilize areas that have already been disturbed.

Cynthia Carrow asked how we can manage the threat to invasive species. Mr. Devlin replied that invasive species is one of our major concerns and we do have protocols to monitor existing disturbances and eliminate any invasive species that may be found.

Jeffrey Kupfer asked whether the 1.5 million or 675 available acres on the main fairway includes land that has already been leased. Mr. Devlin replied yes.

Dave Sanko asked for more details on the relationship with local outdoor sportsman groups. Mr. Devlin replied that we have a Recreation Advisory Committee and are able to promote trails, etc.

C. Alan Walker asked whether there is a formula that is used to determine how royalty income gets split up. Mr. Devlin replied that it goes into the Oil and Gas Lease Fund and then through the state budget process, which dictates where money will go. Next fiscal year the Department is supposed to receive \$65 million.

Chris Helms asked whether larger units are used in order to minimize surface print. Mr. Devlin replied yes.

Jeff Wheeland stated that he was on a well pad in state forest land and the units are well over 1,000 acres now. Anadarko is reaching out.

Mr. Devlin stated that we encourage a longer lateral because the larger area we drain from a single well pad, the better.

Ronald Ramsey added to Mr. Wheeland's comments that disturbances to habitat will not be appreciated by different types of species. Mr. Ramsey commended the Department for the analysis that was done last year on the vulnerability and the ecological and recreational significance of remaining undisturbed state forest land. Mr. Ramsey asked whether we are meeting success in finding well pad location sharing. Mr. Devlin replied yes, and we are encouraging thicker pipelines and waterlines and have been very successful in getting companies to share infrastructure resources.

Scott Blauvelt asked whether the bureau is involved in water use and disposal managements or whether we are relying on DEP. Mr. Devlin replied that DEP is handling water use and disposal.

Nicholas Haden asked what types of conservation recreation projects benefitted from the \$413M from the Fund over the past few years. Mr. Devlin said that we have been using that money for things like special projects, operating costs, state parks. Mr. Haden expressed that \$413M is a lot of money and does not feel that "special projects" does not fit the definition of recreation, conservation and flood control. Mr. Devlin replied that a lot of the special projects were recreational, such as: Pine Creek Trail, snowmobile trails, etc.

Terry Bossert noted that the leasing of state forest land is a controversial issue but the commonwealth owns a lot of other land that is not either a state park or a state forest, which is an excellent revenue source and we should focus on how we could synchronize the development of that land.

Randy Smith asked whether the projections for economic value as listed on page 10 of the presentation are long-term projections (10-15 years). Mr. Devlin replied that we have not projected out that far in advance. We are trying to marry our gas prices and we can see market fluctuation so we are only projecting out a few years. This fiscal year we hope to bring in \$26M and it is projected that next fiscal year we will bring in \$63M and it will continue to rise from there.

Vince Matteo asked for clarification on what fund the \$413M goes into. Mr. Devlin replied that it goes into the Oil and Gas Lease Fund, but much of it has been budgeted out in previous fiscal years. Mr. Matteo recommended that we do more piggybacking and sharing and asked whether we cannot run pipelines along the open public utility right of ways. Mr. Devlin replied no, but permission must be granted by the Public Utility Commission.

Mr. Henderson stated that there has been a lot of interest from the public about leasing opportunities on land owned by the commonwealth and asked what the guiding principle is in moving forward with this. Secretary Allan replied that DCNR has done an environmental assessment and is going to look at the guidelines, set priorities, look at existing surface lease agreements and use existing leases as platforms and determine what would cause the least amount of surface impact.

HYDROZONIX - CHEMICAL-FREE WATER TREATMENT

Aaron Horn, President of Hydrozonix, provided a presentation about what Hydrozonix does.

Following the presentation, Ronald Ramsey asked for clarification of what the pie charts on page 13 of the presentation are showing. Mr. Horn replied that the chart shows the makeup of standard hydraulic fracturing fluid in Arkansas and where the fluid is coming from. In Arkansas and similarly in Pennsylvania we have roughly 120,000 barrels of fluid, 81% which comes from a fresh water source locally and that 19% is coming from some sort of reclamation activity.

Nick Haden asked whether Hydrozonix creates sludge product. Mr. Horn replied no, there is no waste with this process.

Terry Bossert asked whether there is a buildup accumulation of flowback or a TDS increase with this process. Mr. Horn replied that the TDS stays same coming in and out of the system.

Lew Gardner asked whether Hydrozonix has the capacity to keep up with the growth and production and also asked for additional information about the company (i.e. – locations in Pennsylvania, how many employees there are, and who the employees are). Mr. Horn replied that the experience of the company comes from Ecosphere Energy Services. There are approximately 37 employees in the company, most of them based out of Arkansas, with about 7 or 8 in Oklahoma. Mr. Horn added that he believes there will be a demand for what this company does and that it will at some point go exponential with its growth. Mr. Horn continued that what we did to prepare for that was joined up with Phillips and Jordan who respond to disaster relief and have the contacts to provide support for the capital demands.

Mr. Porges asked who the competitors are. Mr. Horn replied that most of the companies have their own treatment processes, such as Halburton and GE. There are other companies, but none that have their own treatment facility on-site like we do. Mr. Porges asked what Mr. Horn would like to see come from a policy prospective come out of this commission's recommendations. Mr. Horn replied that his company walks a fine line in venues like this because we don't want the agencies to be told that we use this technology; we want it to be something you want to use. Mr. Horn stated that he only wants to make this group aware of the technology, and be a representative for the water treatment industry.

Jeffery Kupfer thanked Mr. Horn for the direction and suggested that the health, safety and environment committee workgroup, look at other greener technologies, in addition to this one.

C. Alan Walker stated that he is concerned about Pennsylvania not getting its share of the upstream, midstream and downstream from the industries.

Chris Helms stated that the way wastewater is handled and used is of paramount concern in the industry. Mr. Helms suggested, since the industry is so new, that we consistently measure the benefits versus risks, as with any new technology.

MARCELLUS GAS DEVELOPMENT AND HABITAT IMPACTS

Nels Johnson, PA Deputy State Directory, The Nature Conservancy, provided an overview of Marcellus gas development and habitat impacts.

Following the presentation, Vince Matteo asked what PNDI is. Mr. Johnson replied that PNDI is the Pennsylvania Natural Diversity Inventory, which is a database that keeps track of all the state and locally rare species. Mr. Matteo asked whether Mr. Johnson has met with gas and service industry people. Mr. Johnson replied yes, and that the Nature Conservancy shared similar results with a number of gas companies. Mr. Matteo asked how Mr. Johnson's company was received. Mr. Johnson replied that his company has been received positively.

Mr. Pegula asked how forest fragmentation is defined as far as acreage. Mr. Johnson replied that we need to work hard to ensure that the patches remain as large as possible in order keep the disturbance of species to a minimum.

Dave Porges asked whether a plan or outline has been developed for regulating the regional permitting process. Mr. Johnson replied that a specific outline has not been developed yet, but what we are asking the companies to do is put more time upfront into understanding what the potential impacts are to minimize them through more of a spacial approach to planning.

Jeff Wheeland stated that we need to engage the industry to help develop better habitat for our severely eroded stream banks. Mr. Wheeland added that Anadarko has done a lot for Lycoming County and recommended that we include them in our dialogue of stream bank improvements.

Matthew Ehrhart asked what the predominate impacts in Mr. Johnson's analysis are in regard to small streams. Mr. Johnson replied yes and added that Jerry Mead will offer some more data about this later. There are some monitoring efforts that are up and starting – e.g., Trout Unlimited is training a network of Trout Unlimited Chapter folks around the state and there are some colleges and universities working with local watershed groups to implement larger programs.

Anthony Bartolomeo asked what the timeline is for an energy company to take full advantage of these tools to utilize in their planning process. Mr. Johnson replied that the gas companies are very good at planning, which is generally done by geologists. In terms of tool development, we are only in the early stages of finding out what tools we can develop to make easier for companies, local or state governments or conservation groups

to think about how to get the infrastructure laid out with minimal impacts. We're thinking of some ways to do that, and have raised some funding to start working on that from a foundation. Mr. Johnson added that we also have some good partnerships with universities.

Richard Allan stated that, although we work very closely and have a good working relationship with the Western Pennsylvania Conservancy, there needs to be an increase of information in regards to PNDI, so DCNR has started a collaborative effort with DEP, Game Commission and Fish and Boat Commission. Mr. Johnson replied that we count on the nature conservancies to help us gain information.

Chris Helms stated that there are many jurisdictional issues in the development of energy infrastructure in the state. There is a federal process which has been in place for 60 years to deal with U.S. Fish and Wildlife and there is also a procedure under NEPA. Mr. Helms asked whether improvements will be made to the NEPA process. Mr. Johnson replied that the pipeline infrastructure development process is expensive, time consuming and complicated in terms of jurisdiction and that it is going to potentially create a huge number of impacts if we don't start to think about it now.

IMPACT OF GAS DEVELOPMENT ON SURFACE WATERS

Dr. Jerry V. Mead, Patrick Center for Environmental Research, The Academy of Natural Sciences, provided an overview of the impacts of gas development on surface waters.

Following the presentation, Chairman Cawley proposed that the commission dispose of the member discussion portion of the agenda in order to ensure enough time for public comment. The commission agreed.

Patrick Henderson asked whether Dr. Mead has given any thought to the density of the well pads based on topography and what would be an ideal location for them. Dr. Mead replied that he cannot give a specific location, but that this is a promising approach.

Robert Powelson asked what Dr. Mead's thoughts are regarding the impacts of the nuclear production in Pennsylvania and whether shale gas could help be a transitional fuel. Dr. Mead replied that we do not yet know what the environmental impacts or energy investment returns will be. Mr. Powelson added that this source provides affordable electricity pricing and that he appreciates Dr. Mead's leadership in this effort.

Ronald Ramsey asked when Dr. Mead will be able to add sites to get him to 30-40 total in the study and from that point how long it will take to have conclusions. Dr. Mead replied that his people will be out in field this summer collecting samples and hope to have the report completed by December 2012.

Terry Bossert asked whether there was a density per square mile on the report. Dr. Mead replied that it is about 6-8 per 20-30 square kilometers for high density and 1-2 per 20-30 square kilometers for low density.

Barry Schoch asked what causes the change in conductivity, PH and dissolved oxygen. Dr. Mead replied that the concentration of salts are high in the frackwater. Mr. Schoch asked how Dr. Mead knows that frackwater is leaking from these wells or pads. Dr. Mead replied that when his graduate student went out looking for sites, he saw many of these wells (3 out of 15) that had water leaking out of them. Chairman Cawley asked whether Dr. Mead personally saw the wells leaking. Dr. Mead replied that his graduate student showed him photographs of them.

Jeff Wheeland asked what the difference is between the brine that flows back and the salt we use on our highways. Dr. Mead replied that the data he has seen on the return water shows that there are rare elements that are not found in salt used for highways.

Mike Krancer stated that the Oil and Gas Act prohibits leakage and he would like to see photographs so DEP can go after the operators and fine them.

PUBLIC COMMENT

Public comment was received from 2:45 – 4:25.

ADJOURNMENT

Chairman Cawley stated that the next full commission meeting is scheduled for May 20, 2011. The April 27, 2011, meeting of the Marcellus Shale Advisory Commission, adjourned at 4:25pm.