

# **Energy Roadmap Workshop on Coal Bed Natural Gas REPORT**

Written by Douglas G. Patchen, WVU NRCCE, based on discussions with the Coal Bed Natural Gas Workshop Planning Committee and input from Coal Bed Natural Gas Workshop participants

## **Workshop Overview**

The Planning Committee for the Coal Bed Natural Gas workshop organized the program with two main goals in mind. One was to identify issues with coal bed natural gas (CBNG) that are perceived as impediments to the development of this resource in West Virginia, and the second was to identify steps that the State of West Virginia can take to remove these perceived road blocks.

To achieve these goals, the Coal Bed Natural Gas Workshop Planning Committee organized a program that would address all of the key issues related to CBNG development in West Virginia, and aggressively recruited key speakers, panelists and registrants who were expected to participate in the process.

Bringing together a diverse group of people who represented coal operators, gas producers, land companies, transmission companies, state regulatory officials and lawyers was essential to meet the workshop goals. The intent was that we could all learn from each other, especially what the problems are so that we can overcome them.

At the outset of the workshop, a challenge was issued to all participants. The challenge was to participate fully in the process. This would not be a seminar where they would just sit and listen; instead, this was a needs identification workshop in which all voices would be heard, and from which a report would be written and something would be done.

Participants also were given a promise. At the end of the day, the workshop would be over, but the process would continue, and the planning committee fully intended that this process would lead to an acceleration of the development of the CBNG resource in West Virginia.

Eight keynote speakers had been invited to share their views on CBNG potential, current activity, and key issues. Following these initial presentations, however, everyone who attended was given the opportunity to actively participate in three breakout sessions.

More than 150 individuals had pre-registered for the workshop, so it was impractical to divide this large a group into two or three breakout groups during each of the three sessions as originally planned. Instead, the Planning Committee decided to seat registrants at round tables of ten, with each table serving as a small discussion group. Participants were pre-assigned to tables to ensure diversity of the discussion groups, and prior to the workshop table leaders were recruited and trained to facilitate and document discussion. To ensure some degree of uniformity, each table leader had been provided with a discussion checklist for each session.

Three discussion group breakout sessions were scheduled. Prior to each, a panel of three or four experts was convened to offer comments that would set the stage for the discussions that followed. After 30-40 minutes of discussion, table leaders were handed a microphone by the roving facilitator, and each gave a brief report to the entire group, using comments written on flip charts as speaking points. This process was repeated for each of the three sessions.

Summaries of the comments made at each table during each of the three discussion sessions are included in the appendix.

Each registrant had been given an evaluation form in the workshop packet. At the end of the day, each person was encouraged to fill out the form and leave it with one of the staff people. A summary of these evaluation forms is included in the appendix.

### **Keynote Speakers**

Patrick Esposito, Sr. of Augusta Systems and Chairman, Governor's Energy Task Force, provided attendees with his vision of what West Virginia's coal bed natural gas industry would look like in 2020.

Lee Avary from the West Virginia Geological Survey presented an overview of the resource potential and location of current coal bed natural gas development in West Virginia.

Matt Conrad and Bill Vail, both of Marshall Miller and Associates, presented an overview of the various issues associated with the development of natural gas from coal beds. These issues included resources assessment parameters, ownership and leasing, coordinating efforts with the mining estate, development options, saltwater disposal, geology, engineering and economics.

David Bassage, from the West Virginia Department of Environmental Protection, discussed coal bed natural gas as a greenhouse gas that is more harmful to the atmosphere than carbon dioxide. He stated, however, that methane has a lower residence time in the atmosphere than carbon dioxide, and we have the technology to remove it.

Tom Lane of Bowles Rice McDavid Graff & Love, PLLC, briefly set the stage for the following two speakers, George Mason and James Martin, who shared their thoughts on pooling, unitization and field rules as applied in Virginia and West Virginia. Mr. Mason, of Mason Energy Consultants Inc., discussed his experience in Virginia, with references to spacing in the Nora, Oakwood, and Roaring Fork fields. Mr. Martin, from the West Virginia Department of Environmental Protection, discussed pooling and unitization in West Virginia as set out in the act of 1994 that protected coal and the right to vent gas with mining. This act also established the Coal Bed Methane Review Board.

### **Issues Identification Session 1: Ownership, Landowner and Regulatory Issues**

Tom Lane convened the first of three panels, consisting of James (Marty) Martin, Neal Pierce from Robinson McElwee, Kevin Wall from Natural Resource Partners, and himself. Mr. Lane introduced the topics that were to be discussed by the breakout groups during this first session

and made reference to the many discussions regarding severed ownership that he had participated in during meetings of the Eastern Mineral Law Foundation. He further stated that in the east, gas in coal beds generally is assigned to the coal owner, whereas in the west, gas in coal beds generally is assigned to the mineral (gas) owner.

Kevin Wall made brief remarks concerning the vast coal resources of the central and northern coal basins, which amount to more than 1.5 billion tons in reserve. Neal Pierce mentioned that Virginia regulates coal bed natural gas extraction through one board, whereas in West Virginia three boards have some overview of the industry: the Shallow Gas Well Review board, the Coal Bed Methane Review Board and the Oil and Gas Conservation Commission. Marty Martin went into some detail regarding shallow gas well activity and coal bed methane permitting.

### **Small Group Discussion Summaries: Session 1**

Topics for discussion during Session 1 included coal gas ownership, regulatory issues, landowner concerns and conflict between extractive commodities.

Coal Gas Ownership. Participants expressed the opinion that uncertainty, confusion and conflict regarding ownership of gas in coal beds is the main impediment to the development of the coal bed natural gas resource in West Virginia. They further stated that although the high occurrence of coal, gas and coal bed methane ownership division is not prohibitive, adding more parties increases uncertainty, time and cost. Many believe that the resulting contractual issues cannot be legislated away, but will be determined in the courts. Some expressed concern over pending and recent rulings on ownership in West Virginia and Virginia. There was general consensus that the ownership issue needs to be resolved, and that a clear ruling from the courts is necessary to provide certainty and allow development to proceed.

Participants also determined that there are other questions to be answered. Many of these involved royalties and the escrow fund.

Suggestions and solutions offered by the workshop attendees mainly concerned the need for the courts to decide the ownership issue, but others asked if new, “sensible” legislation or a constitutional amendment would be necessary. Several suggested that the powers of the current review board should be assessed, and that the board should be empowered to resolve the issue. The bottom line seemed to be that all parties should be prepared to proceed when the State Supreme Court renders a decision, and that all parties should get together to communicate win-win solutions.

Regulatory Issues. Although the groups at some tables expressed the opinion that State regulations generally have “good structure,” those at other tables expressed the concern that the regulations are unclear and that it would be advisable for the coal and gas companies to become involved in regulatory changes in a cooperative venture. Inconsistencies in the regulations, the number of agencies involved and the lengthy time for a permit to be approved also were mentioned. Others expressed the belief that horizontal drilling needs to be addressed in the regulations, and that the review board needs to address the issue of obtaining consent to fracture.

Questions also were raised concerning forced pooling and horizontal drilling, and who would issue permits for drilling core holes, stratigraphic tests and test holes.

Many suggestions and solutions were offered, with several of these addressing the desire to either coordinate the different regulatory agencies, or to consolidate them all under one roof under state, not federal, control. A consistent application of the rules was considered desirable, as well as quick processing, streamlining and flexibility of the permit process. The concern was raised that all parties should have a voice, and that surface owners should be educated about mineral estate rights to avoid conflict. Others suggested that the Department of Environmental Protection should keep up with technology (e.g. horizontal drilling) and needs to develop a better database for coal, oil, gas and surface owners.

Landowner Concerns. There seemed to be agreement that the split ownership of surface and mineral estates has created a problem because many surface owners do not receive a royalty. Instead, their only benefit is a location damage amount. Consequently, the division of estates has led to different priorities for property owners. Once the surface, coal and gas estates have been severed, many surface owners do not want further development of the mineral resources. Some of those present, however, stated that there would be fewer issues if operators would take the time to consider and work with the surface owners.

It was suggested that the State should clarify that all landowner concerns are to be governed by the current oil and gas regulations, and all reclamation should be done in accordance with the regulations. Furthermore, landowner rights should be better identified; landowners should be educated as to these rights; and landowners should have a seat at the table as industry moves forward to develop the coal bed gas resource.

Conflicts between Extractive Commodities. Horizontal drilling seemed to be an issue at some tables during this discussion. Although there are positives associated with this technology, such as water removal and methane production with fewer holes to mine through, the application of the technology in multiple seams adds multiple owners as well. Safety concerns and conflicts with existing rights also were mentioned.

Suggestions and solutions focused on the need for a strong regulatory board to maximize assets, and perhaps to consider a single body or entity for conflict resolution among coal, oil, gas, surface and coal-bed methane owners and lessees. Placing royalties in escrow accounts to be resolved later also was mentioned.

Summaries of all suggestions made by each table can be found in Appendix 3. These suggestions have been organized by topics in Appendix 4.

## **Issues Identification Session 2: Economic Impediments and Incentives**

Following the lunch break, Don Nestor of Toothman Rice convened the second panel. He was joined by Mike Mooney of Penn Virginia, Claude Morgan of CNX Gas, and Charlie Byrer from the US Department of Energy's National Energy Technology Laboratory.

Don Nestor began by briefly reviewing tax incentives, including the severance tax exemption, Section 29 tax credits and pending legislation in the House and Senate. Mike Mooney followed with an overview of Penn Virginia's coal bed methane operations in Virginia. Penn Virginia produces gas from the Lower Beckley, Fire Clay and Pocahontas 3, 4 and 5 coals, at shallow depths and low reservoir pressures. Hydraulic fracturing has not been effective in these low permeable coals, so horizontal drilling has become an option. Several water disposal wells are necessary due to the low reservoir permeability. Disposal costs range from \$0.38 to 0.40 per Mcf of gas produced. The company's main concern is long-term pipeline capacity.

Charles Byrer briefly reviewed various DOE-funded research and demonstration projects related to coal bed methane development. These include projects in the San Juan basin, Poland, the multi-seam completion at Waynesburg College, and the multi-strata, dual-completion project at the College of West Virginia. He also described the fuel cell project at Cadiz, Ohio and the new project in the San Juan basin in which CO<sub>2</sub> sequestration is being combined with enhanced coal bed methane production.

Claude Morgan discussed the big picture of coal bed methane production in the Appalachian basin, where 143 MMcf (million cubic feet) of gas are being produced each day from coal beds. Most of this daily production (140 MMcf) is from approximately 450 wells in Virginia. These include gob wells, conventional (vertical) coal bed methane wells and horizontal wells. He made the point that due to the necessity of disposing of saltwater, this is not an inexpensive play. The typical well produces 3 to 5 barrels of water per day that is high in chlorides. Therefore, water hauling and compression costs add to the overall cost of the operation. When gas prices are in the \$4.50 to \$5.00 per Mcf range, coal bed methane is economic. But, when the price falls to \$3.50/Mcf, a tax credit would be needed to develop the resource in West Virginia, in his view.

### **Small Group Discussion Summaries: Session 2**

Topics for discussion at each table during Session 2 included cost of recovery, water disposal, low permeability, pumping, compression, gas prices, tax incentives, enhanced production via CO<sub>2</sub> injection and greenhouse gas issues.

Cost of recovery. An important point was made that there are certain factors that are unique to coal bed methane production that add to the cost of recovery. Low permeability, low reservoir pressure, compression costs, water treatment and disposal, low success rates with hydraulic fracturing and expensive horizontal drilling as an option all make this an expensive play.

Participants suggested that we need to create incentives for infrastructure development, and perhaps greenhouse gas credits. Further research to define reservoir properties and to develop new technologies also was suggested. An additional suggestion was to create a private/public partnership to fund and conduct technology research and development, along with greater deployment in the field of the new technology.

Water disposal. Issues that seemed to be repeated by groups at different tables included permitting and regulations, other uses for the water, and the need for new technology.

Some believe that the current water disposal permitting process is “onerous,” and that we need faster turnaround on permits, and site specific, rather than individual well permits. Regulations should aid in water disposal; perhaps tax incentives could be provided as well. One suggestion was to allow water injection above reservoir fracture pressure.

Several comments were made concerning the need for more research to develop new technologies for water disposal or use. Other states allow brine to be spread on roads for dust and snow control. It was suggested that perhaps West Virginia could institute such a program.

Low permeability. The need for more and better data seemed to be a key issue. One suggestion was that it is in the best interest of the State to have producers share information with the West Virginia Geological Survey. Others suggested the state needs a clearinghouse of geologic data, a role that could be filled by the Geological Survey. An inventory of current data should be made, and these data should be made readily available to the public.

A corollary to data collection and inventory is the expressed need of some participants for more research, development and demonstration projects. Horizontal drilling was mentioned more than any other technology, but better casing programs, drill bits and slant rigs also were mentioned. Mapping available permeability data to determine locations with the best potential also was suggested.

Pumping. Surprisingly, the comment was received that this is the least problem associated with a coal bed methane project. Possible problems associated with pumping, however, could include problems with electric power or fines going through the pumps. It was suggested that pumping issues can be controlled by operators on a well-by-well basis, with higher costs offset by lower drilling costs.

However, some participants expressed a lack of knowledge concerning equipment and processes available, and others the need to develop a “smart” pump. The ultimate goal would be to develop better, cheaper pumping systems. Education programs should be developed for operators to learn these new systems, and a forum should be created for vendors to meet producers and provide training.

Compression. Comments concerning compression were limited, or tied to other discussion topics. It was conceded that essentially compression is needed everywhere, and that “smart” compression would be advantageous. Changing permitting requirements and expanding the list of exempt compressors to ease the acquisition of air quality permits were suggested.

Another suggestion was for producers to work with pipeline companies to develop the best system of gathering lines and compression, including the pipeline company’s own compression system.

Gas prices. Much of the discussion at various tables appeared to include a discussion of how prices affect the ability of a company to attract financing for coal bed methane ventures. The point was made that getting 90% of the gas out of the ground in a relatively short time makes the investment metrics choice different than for conventional gas. That small discussion group

concluded that we need financing metrics appropriate for the unique nature of coal bed natural gas development.

Availability of information again was an issue raised by at least one of the groups. The point was made that there is not a lot of sharing of information and there is no state requirement to file data. Others asked if this was intentional.

Tax incentives. More comments were received on this issue than on any topic in any of the three discussion sessions. The bottom line was that workshop participants agreed that tax incentives are desirable and necessary to develop the coal bed natural gas resource. They suggested that all of the producers of energy – coal, gas, coal bed methane, hydro, LNG, ethanol – work together to reduce costs and make coal bed natural gas economics more attractive.

Water disposal and CO<sub>2</sub> separation are important metrics to be considered when crafting tax credits. It was suggested that tax incentives should be provided for the installation of saltwater disposal wells, brine reuse and zero discharge for landfill gas; to build plants, pipelines and electric lines; to solve potential environmental issues; for high CO<sub>2</sub> projects that re-inject the CO<sub>2</sub>; and for the elimination of greenhouse gases. One group suggested that a 2-tier tax incentive should be created for coal mine natural gas projects and coal bed natural gas production, recognizing that there are higher production costs associated with coal mine natural gas development.

Tax credits also were mentioned numerous times. These included credits for the elimination of greenhouse gases; pollution credits for methane recovery that could be used, bought or sold; a coal bed methane credit for stripper wells; an added state credit for coal bed methane reduction; and a credit to forgive the state's personal property tax on compressors used in coal bed methane operations.

The severance tax abatement or exemption was another issue that was commonly mentioned. Most believe abatement to be a positive incentive that should be retained.

Another suggestion was that the state should develop a “mirror” of the federal Section 29 tax credit for coal bed methane wells. The thought was that this would spur activity.

Enhanced production via CO<sub>2</sub> injection. At least one small group concluded that this could become a reality if carbon dioxide becomes regulated. However, possible ownership issues and the need for a regulatory framework could be consequences.

Research was recommended to determine the injection integrity of different formations, and to develop the technology to separate and inject CO<sub>2</sub> at the well site. Other techniques to separate and use other gases were thought to be desirable.

More information on CO<sub>2</sub> sequestration should be made available to help small producers.

Greenhouse gas (GHG) issues. This issue is closely related to CO<sub>2</sub> injection. Various suggestions were made regarding the need for more research and technology transfer. Further

greenhouse gas technology research and development with application to methane recovery was suggested, along with more RD&D to lower costs.

Others suggested that we need more promotion and education on greenhouse gas credits.

### **Issues Identification Session 3: Infrastructure**

Daniel Kortum from Dominion, Curt Tipton from Equitable Gas, and Jim Crews from Columbia Gas Transmission comprised the final panel of the workshop.

Dan Kortum discussed the significance of gas quality and capacity issues in southern West Virginia. New construction and financing are needed. No longer is there the mentality that you can “build it and they will come.”

Curt Tipton briefly summarized Equitable’s infrastructure and operations, including their requirements for gas quality.

Jim Crews also touched on gas quality requirements, and then focused on new ways to increase pipeline capacity. Long-term commitments are needed.

### **Small Group Discussion Summaries: Session 3**

Topics for discussion during the third breakout session included pipelines, gas quality, transmission, gathering and capacity.

Pipelines. Many in the groups believe concerns over pipelines are justified. New construction may be uneconomic; therefore, incentives are important, both financial and regulatory. Eminent domain might need to be broadened. A further suggestion was to consider a West Virginia Pipeline Commission with the power of eminent domain.

Information, communication and collaboration also were issues that were mentioned often. Quality information is needed on a timely basis. End users need to come together to resolve issues. CBM operators need to cooperate. Pipeline consortia could be formed to develop infrastructure.

Various incentives were suggested, including incentives to consume West Virginia gas, for the transportation of non-traditional gas, for compression of non-traditional gas, for infrastructure construction and for research.

Higher gas prices and price stability were suggested as cures for many problems.

Gas quality. Standardization was an issue that was mentioned several times at various tables. Gas quality standards should be uniform and applied in a non-discriminatory manner. Some felt that standards are increasing, not decreasing. Others believe that stakeholders should have input for the standardization of gas quality specifications.

A Coal Bed Methane Office should gather information on pipelines, gas pressures and gas quality.

Requirements for coal bed methane and coal gob gas are very stringent, and probably need to be. It was noted that if a pipeline has to be shut down, coal mine methane production cannot be shut in, and coal bed methane wells will have to be de-watered again if these wells are shut in.

Blending and gas enrichment also appeared to be key issues. Technology is needed for enrichment; incentives should be provided for gas blending.

Further research on corrosive agents in the gas stream was suggested to insure that current limits on CO<sub>2</sub>, N<sub>2</sub> and O<sub>2</sub> are valid “measuring sticks.”

Transmission. It was suggested that transmission networks should be integrated to improve deliverability. Eminent domain should be granted to encourage pipeline expansion. New pipelines could be laid parallel to current pipelines on existing rights of way. The public needs to be educated on the necessity of expanding the pipeline grid; the “not in my backyard” mentality needs to be overcome.

Questions regarding who pays, who benefits and who regulates what were raised. Corrosion problems also were mentioned at several tables, along with the need to construct facilities for the removal of undesirable components in the gas stream.

Converting depleted conventional reservoirs to gas storage fields for coal bed methane could, over time, improve gas quality prior to withdrawal and transmission.

Gathering. Standard specifications should be applied to the entire pipeline system, including gathering lines. We need to take advantage of existing gathering lines and we need to provide incentives for the development of new capacity. Many of our existing gathering lines need to be upgraded to reduce shrinkage. Reporting gas production on a well-by-well basis could help promote the development of new gathering lines and pipelines.

Capacity. Capacity was identified as the real problem when discussing infrastructure. West Virginia is the only state east of the Mississippi River that has excess gas, so it is the only exporter of gas and the existing pipelines are full of conventional gas. In addition, West Virginia’s pipeline infrastructure is very old, with lots of line loss.

The relatively short production life of a coal bed natural gas well makes long-term investment in additional pipeline capacity difficult to justify using current financing mechanisms. However, if the FERC process can be avoided, the cost savings might spur development.

It was suggested that a group of operators could get together and create their own capacity. One way would be to buy existing pipelines and take over the operations, again to avoid FERC approval in building a new line. Another possible solution would be a partnership between producers and pipeline companies where all would share the cost and share the benefit. Combining forces with LDC’s and pipeline companies could add the needed capacity.

The bottom line is, we need to build more pipelines.

Permit issues. A few comments were made regarding permit issues. Permit issues for gas cleanup can be extremely involved. The permitting process needs to be streamlined. And, the air quality permitting process for compression and treating facilities needs to be streamlined.

How can government help? Some groups went beyond the others and made general suggestions about how government could help industry upgrade and expand the natural gas infrastructure. Creating tax and economic incentives seem to lead the list. Having the State broker deals between producers and pipeline companies was another. A third was to improve the ability of companies to secure rights of way for new construction.

A pro-active rather than a re-active mentality by the State was recommended.

### **Event Evaluation**

As part of the feedback process, evaluation forms were distributed to all registrants. Their responses were used to gauge participant satisfaction with the event and to gather ideas for further events, if held. Response was good, as 102 of the 161 participants returned a form.

Evaluation of Presentations. Of those who responded, nearly 80% agreed or strongly agreed that the presentations were very helpful in giving them a better understanding of the issues that were to be discussed throughout the workshop. However, only 60% agreed or strongly agreed that the presenters were given enough time to make their presentations. This dissatisfaction carried over to the question on the amount of time provided for questions and answers following the presentations. Thirty percent disagreed or strongly disagreed that we had scheduled enough time for this activity, whereas another 30% agreed or strongly agreed that we had provided enough time, and the other 40% were either neutral or declined to answer. Comments concerning the presentations indicated that the summary of coal bed natural gas activity in West Virginia by Lee Avary and the summary of activities by Marshall Miller and Associates were considered to be the most valuable to participants. Others commented on the diversity of information provided, which was one of our goals in selecting speakers. Another thought that this was an excellent starting point to make West Virginia a profitable coal bed natural gas producing state, and that the workshop provided the opportunity to learn from other's mistakes as well as victories. This, of course, was another of our stated goals, to bring together a diverse group so that we could learn from one another.

Evaluation of Facilitated Sessions. Seventy five percent (75%) of the respondents agreed or strongly agreed that the breakout sessions were effective in generating discussion, ideas or recommendations, even though, due to the large attendance, we had to host these small breakout groups at adjacent tables in one large room. Another 17% were neutral and only 5% disagreed that the sessions were useful in this regard. These percentages were essentially duplicated for the question concerning the accuracy with which their particular session was reported to the larger group. Seventy five percent agreed or strongly agreed that their session was accurately reported, whereas only 5% disagreed, with the others neutral or non-responsive. Nearly half of the

respondents, 48%, strongly agreed that they felt welcome to express their ideas and opinions during these sessions, and another 40% agreed that they felt welcome to do so. Only 2% felt they were not welcome to freely express themselves. Sixty five percent agreed or strongly agreed with the ideas, opinions and suggestions that were made by members of their group. The most common comment received was that the breakout sessions were good, although crowded, and more breaks would have been welcomed. Diversity, communication, good discussion and good ideas also were mentioned. Others, however, thought that the breakout sessions added very little to what the speakers had presented, and it would have been more beneficial to provide more time for the speakers. At least one person felt that many of the suggested solutions could not be implemented or influenced by state government.

Evaluation of Logistics, Website and Registration. Respondents really seemed to like the meeting facility. Eighty six percent (86%) agreed or strongly agreed that the meeting space was conducive to a successful event; 90% agreed or strongly agreed that the event staff was very helpful; and 83% agreed or strongly agreed that the hotel staff was very helpful. And, slightly more than 95% agreed or strongly agreed that there was plenty of good food and beverage available. Essentially no one disagreed or strongly disagreed with any of these questions. Only 68%, however, agreed or strongly agreed that the website provided timely, valuable information. This may be due to a large extent by the number of respondents who did not seem to have seen the website. Twenty percent did not respond to this question, presumably because they had not visited the website. On-line registration seemed to gain favor with respondents as 62% agreed or strongly agreed that the process worked well for them. Again, 21% did not respond to this question, probably because they had not seen the website and could not take advantage of the on-line registration option. Only 6% of those who tried seemed to have had a problem with the process.

Eighty-three people responded to the question about how they learned about this meeting. Of these, 43 received a brochure in the mail, 21 first learned of it by way of the “save the date” post card that was mailed earlier, and 19 learned of it from the website without first receiving a mailing.

The Most Important Topics or Ideas Generated in the Breakout Sessions. Approximately 70 answers were received in response to question 4, “In my opinion, the most important three to six topics or ideas generated in the breakout sessions were:” All 70 are listed in the appendix. As anticipated, more than one third of these comments referred to coal bed natural gas ownership as the key issue. Tax and other incentives ranked second to the ownership issue.

### **Conclusions and Recommendations from the Workshop Program Committee**

The Program Committee that planned, organized and hosted this event consisted of the following members:

**Douglas G. Patchen**, (Chair) Petroleum Technology Transfer Council at West Virginia University

**Jeff Herholdt**, West Virginia Development Office Energy Efficiency Office

**Tom Lane**, Bowles Rice McDavid Graff & Love

**Clint Hurt**, Clint Hurt and Associates  
**Charlie Byrer**, DOE's National Energy Technology Laboratory  
**Patrick Esposito Sr.**, Augusta Systems

The Program Committee reviewed all of the comments made by all speakers, panelists and the 17 small discussion groups during the three breakout sessions, and makes the following recommendations:

1. The State should take steps to resolve the coal bed natural gas ownership issue. This issue was perceived as the main impediment to development of the coal bed natural gas resource. Participants took no position as to who should own the gas, just that the issue needs to be resolved to remove uncertainty. Also, workshop participants took no position on where the issue should be resolved, i.e., through new legislation, or in the courts based on existing legislation.

Recommendation: New legislation should be written which resolves the remaining issues regarding coal bed natural gas development and ownership which were not resolved in the recent decision handed down by the West Virginia Supreme Court in November 2003.

2. Once the ownership issue has been resolved, the State should write comprehensive Rules & Regulations for coal bed natural gas development, and place regulatory responsibility within one State agency. Numerous comments were received from workshop participants about West Virginia's rules and regulations and the fact that there are several regulatory agencies or boards in West Virginia, but only one in Virginia.

Recommendation: Streamline the process of obtaining permits and reporting by designating one State agency to oversee all aspects of coal bed natural gas development, production and utilization.

3. The state should evaluate the costs and benefits of providing incentives to develop the coal bed natural gas resources in West Virginia. These could include both tax incentives and credits, and could be broad in scope, covering the various aspects of coal bed natural gas drilling, production, gas clean up and transportation.

Recommendation: The Department of Environmental Protection should issue an RFP for a report assessing the economic benefits to the State which would result from State investments in coal bed natural gas development.

4. The State should establish one Clearinghouse for coal bed natural gas data, and encourage coal bed natural gas producers to submit data in a timely manner. Based on comments made during the workshop, it is further suggested that the West Virginia Geological Survey be designated as the Clearinghouse for coal bed natural gas data, and be charged with the responsibility to make these data readily available.

Recommendation: The existing coal and oil and gas data bases at the West Virginia Geological Survey should be modified to accommodate additional data related to coal bed natural gas development and production.

5. The State should provide matching funds for a Government/Industry/Academic Coal Bed Natural Gas Research Consortium. This consortium should be charged with developing a research plan for coal bed natural gas drilling, completion, production, water use and disposal, enhanced coal bed natural gas production technology, carbon dioxide injection, gathering, compression and transmission, and developing the necessary infrastructure. The consortium should receive and approve research proposals funded by the State and industry; cost share would be required.

Recommendation: A Coal Bed Natural Gas Institute should be created, supported by State, Federal and industry funds.

6. The State should encourage and promote the development of the infrastructure necessary to bring coal bed natural gas to the market.

Recommendation: The State Energy Committee should be charged with writing a report with recommendations regarding the type of infrastructure needed and the costs and benefits which would result from such investments.

## **Appendix**

- Appendix 1: Workshop Flyer
- Appendix 2: Workshop Program
- Appendix 3: Discussion Summaries by Table, Session 1
- Appendix 4: Discussion Summaries by Topic, Session 1
- Appendix 5: Discussion Summaries by Table, Session 2
- Appendix 6: Discussion Summaries by Topic, Session 2
- Appendix 7: Discussion Summaries by Table, Session 3
- Appendix 8: Discussion Summaries by Topic, Session 3
- Appendix 9: Evaluation Results
- Appendix 10: Registration List



Appendix 1: Workshop Flyer

**WEST VIRGINIA**

**COAL BED NATURAL GAS WORKSHOP**

**OCTOBER 29, 2003 • STONEWALL RESORT**



**Assessing West Virginia statutes, rules, regulations, ownership and development issues regarding the production of natural gas from coal seams.**



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West Virginia University  
National Research Center for Coal and Energy

West Virginia University  
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A handwritten signature in blue ink, appearing to read "Bob Wise".



**WEST VIRGINIA COAL BED NATURAL GAS WORKSHOP**  
October 29, 2003 • Stonewall Resort, Roanoke, WV

**PRE-REGISTRATION:** All pre-registration must be received by October 24.

Preferred method is online registration at: [www.WVEnergyRoadmapWorkshops.org](http://www.WVEnergyRoadmapWorkshops.org). If necessary, mail or fax registration form to:

WVU/NRCCE  
Attn: Peggy Andreas  
P.O. Box 6064  
Morgantown, WV 26506-6064  
Fax: (304) 293-3749

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Name: \_\_\_\_\_  
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City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

If you have any special dietary needs or other special requirements, please explain:

\_\_\_\_\_  
\_\_\_\_\_

**Registration Fee (to defray expenses):**

Pre-registration before October 24:	\$35.00
Walkins or registrations received after October 24:	\$45.00

Payment Type: \_\_\_\_\_ Check (payable to WVU Research Corp.)

\_\_\_\_\_ Visa \_\_\_\_\_ Mastercard

*(Sorry, we are unable to process Discover or American Express)*

Name on Card: \_\_\_\_\_

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**Program Contact:**

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**Conference Logistics:**

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*This workshop is funded by a grant administered by the US DOE and is a cooperative effort by the Energy Efficiency Program of the West Virginia Development Office and West Virginia University.*

**WEST VIRGINIA  
COAL BED NATURAL GAS WORKSHOP  
October 29, 2003**

**STONEWALL RESORT, ROANOKE, WV  
WWW.WVENERGYROADMAPWORKSHOPS.ORG**

**Objective:** To assess West Virginia statutes, rules, regulations, ownership and development issues regarding the production of natural gas from coal seams.

**Registration Fee:** \$35 pre-registration before October 24/  
\$45 walk-in

**Contacts:** *Program* - Douglas Patchen, (304) 293-2867 x5443 or email at Doug.Patchen@mail.wvu.edu *Conference Logistics* - Tracy Novak, (304) 293-2867 x5421 or email at Tracy.Novak@mail.wvu.edu

**Lodging:** A block of rooms have been reserved at Stonewall Resort for the discounted rate of \$99 per night plus taxes and resort fee. Rooms will be held at the discounted rate until September 29.

**Lodging Reservations:** (888) 278-8150. Mailing Address: Stonewall Resort, Stonewall Jackson Lake State Park, 149 State Park Trail, Roanoke, WV 26447.

**Program Committee**

Douglas Patchen(Chair), *Petroleum Technology Transfer Council at WVU NRCCE*

Jeff Herholdt, *West Virginia Development Office Energy Efficiency Office*

Tom Lane, *Bowles Rice McDavid Graff & Love*

Clint Hurt, *Clint Hurt and Associates*

Charlie Bryer, *National Energy Technology Laboratory*

Patrick Esposito Sr., *Augusta Systems*

**PRELIMINARY AGENDA**

**October 29 • Stonewall Ballroom**

*Coal Gas Ownership, Regulatory Issues, Landowner Concerns, and Conflict Between Extractive Commodities*

- 8:30 am Private Breakfast Meeting for Group Leaders  
*Moderators: Doug Patchen, Jeff Herholdt, Tom Lane*
- 8:30 am Registration
- 9:30 am Welcome and Introductions  
*Doug Patchen, WVU and Jeff Herholdt, West Virginia Development Office*
- 9:35 am 2020 Coal Bed Natural Gas Vision Statement  
*Pat Esposito, Chairman, Governor's Energy Taskforce*
- 9:45 am Resource Potential and Location of Coal Bed Natural Gas in West Virginia  
*Lee Avary, West Virginia Geological and Economic Survey*
- 9:55 am Coal Bed Natural Gas - An Issues Overview  
*Marshall Miller, Marshall Mills and Associates*
- 10:25 am Coal Bed Natural Gas as a Greenhouse Gas  
*David Bassage, WV DEP*
- 10:35 am Pooling, Unitization and Field Rules: Virginia and West Virginia Approaches  
*Moderator-Tom Lane, Bowles & Rice; George Mason, Mason Energy Consultants Inc. - VA; James Martin, WV DEP*
- 11:05 am Issues Identification Session 1  
*Facilitators-Neal Pierce, Robinson McElwee; Kevin Wall, Natural Resource Partners; Tom Lane, Bowles & Rice; James Martin, WV DEP*  
  
Small Group Discussions: Ownership, Landowner and Regulatory Issues

Reports to General Group

12:30 pm Lunch

1:30 pm Issues Identification Session 2  
*Facilitators-Don Nestor, Toothman Rice; Mike Mooney, Penn Virginia; Claude Morgan, CNX Gas; Charlie Byrer, NETL*

Small Group Discussions: Economic Impediments & Incentives

*Cost of Recovery, Water Disposal, Low Permeability, Pumping Compression, Gas Prices, Tax Incentives, Enhanced Production via CO2 Injection, and Green House Gas Issues*

Reports to General Group

3:00 pm Issues Identification Session 3  
*Facilitators-Daniel J. Kortum, Dominion; Curt Tipton, Equitable Gas; Jim Crews, Columbia Gas Transmission - invited*

Small Group Discussions: Infrastructure Pipelines, Gas Quality, Transmission, Gathering, and Capacity

Reports to General Group

4:25 pm Evaluations

4:30 pm Closing Remarks -  
Tom Lane, Clint Hurt, Pat Esposito

6:00 pm Reception in conjunction with West Virginia Industries of the Future and North American Coal Bed Methane Forum

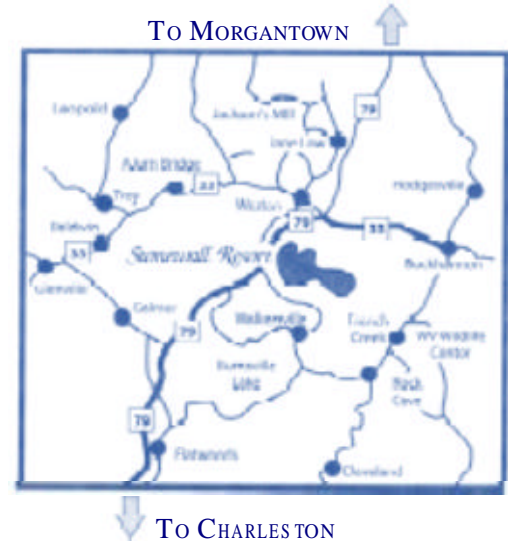
## Driving Time to Stonewall Resort

Morgantown, WV	1.5 hours
Washington, DC	4.5 hours
Charleston, WV	1.5 hours

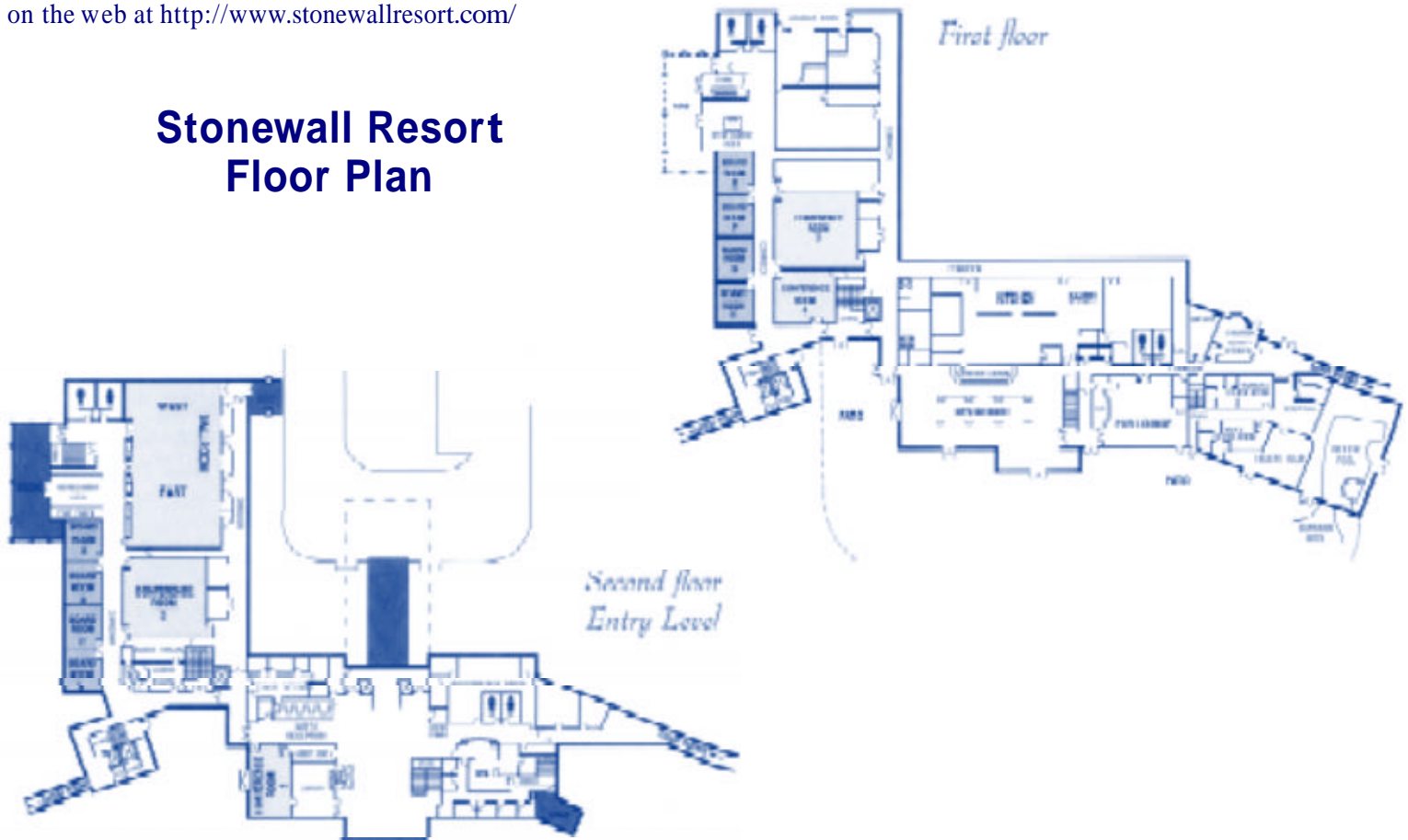
Situated on 2000 pristine acres, Stonewall Resort blends exceptional recreational opportunities, state-of-the-art conference facilities, luxurious resort accommodations and excellent cuisine. The resort is located just 3 miles off Interstate 79 at exit 91 and is accessible from all major metropolitan areas within a 4-hour driving radius. Stonewall Resort is 1-1/2 hours north of Charleston, WV and 1-1/2 hours south of Morgantown, WV. The resort is accessible via air from Clarksburg, WV 35 minutes north of the resort where USAir offers five flights daily.

**Recreation:** Enjoy the 18-hole Arnold Palmer Signature Golf Course, full-service spa, fitness center, indoor/outdoor pools, whirlpool and sun deck, 376-slip marina with boat launch and rentals, hiking and biking trails, nearby white-water rafting, fishing on Stonewall Jackson Lake and a 18,000-acre wildlife management area.

**Directions:** By car take the Roanoke exit (91) from I-79 and follow the signs to Stonewall Jackson Lake State Park. Additional information on Stonewall Resort can be found on the web at <http://www.stonewallresort.com/>



## Stonewall Resort Floor Plan





Appendix 2: Workshop Program

**West Virginia Coal Bed Natural Gas Workshop  
Energy Roadmap Series  
Stonewall Resort, Roanoke, WV  
October 29, 2003**

**8:30: Private Breakfast Meeting for Group Leaders – Pecan Room, lower level**  
Moderators: Doug Patchen, Jeff Herholdt and Tom Lane

**STONEWALL BALLROOM 2**

**8:30: Registration**

**9:30: Welcome and Introductions** – Doug Patchen, Petroleum Technology Transfer Council at WVU and Jeff Herholdt, West Virginia Development Office

**9:35: 2020 Coal Bed Natural Gas Vision Statement** – Patrick Esposito, Sr., Augusta Systems and Chairman, Governor's Energy Taskforce

**9:45: Resource Potential and Location of Coal Bed Natural Gas in West Virginia** – Lee Avary, West Virginia Geological and Economic Survey

**9:55: Coal Bed Natural Gas – An Issues Overview** – Bill Vail, Director of Oil & Gas Division; Matt Conrad, Vice President of Oil & Gas Division, Marshall Miller and Associates

**10:25: Coal Bed Natural Gas as a Greenhouse Gas** – David Bassage, WV Division of Environmental Protection

**10:35: Pooling, Unitization and Field Rules – Virginia and West Virginia Approaches:** Moderator Tom Lane, Bowles Rice McDavid Graff & Love PLLC; George Mason, Mason Energy Consultants Inc. – VA; James Martin, WV Division of Environmental Protection – WV

**11:05 Issues Identification Session 1** Facilitators: Neal Pierce, Robinson McElwee; Kevin Wall, Natural Resource Partners; Tom Lane, Bowles Rice; James Martin, WV Division of Environmental Protection

**Small Group Discussions: Ownership, Landowner and Regulatory Issues**

Coal Gas Ownership  
Regulatory Issues  
Landowner Concerns  
Conflict Between Extractive Commodities

**Reports to General Group**

**12:30: Lunch** – Stillwaters Restaurant, lower level

**MEETING RECONVENES AT 1:30 PM SHARP IN STONEWALL BALLROOM 2**

**STONEWALL BALLROOM 2**

**1:30: Issues Identification Session 2** Facilitators: Don Nestor, Toothman Rice; Mike Mooney, Penn Virginia; Claude Morgan, CNX Gas; Charles Byrer, U.S. Department of Energy National Energy Technology Laboratory

**Small Group Discussions: Economic Impediments & Incentives**

- Cost of Recovery
- Water Disposal
- Low Permeability
- Pumping
- Compression
- Gas Prices
- Tax Incentives
- Enhanced Production via CO<sub>2</sub> Injection
- Green House Gas Issues

**Reports to General Group**

**3:00: Issues Identification Session 3** Facilitators: Dan Kortum, Dominion; Curt Tipton, Equitable Gas; Jim Crews, Columbia Gas Transmission

**Small Group Discussions: Infrastructure**

- Pipelines
- Gas Quality
- Transmission
- Gathering
- Capacity

**Reports to General Group**

**4:25: Evaluations**

**4:00: Closing Remarks** – Tom Lane, Bowles Rice; Clint Hurt, Clint Hurt & Associates; Patrick Esposito, Sr., Augusta Systems and Chairman of the Governor’s Energy Task Force

**6:00: Reception – Grand Hall Lobby** (main entrance area)  
With the West Virginia Industries of the Future and the North American Coal Bed Methane Forum

**Coal Bed Natural Gas Workshop**  
**October 29, 2003**  
**Notes edited February 2, 2004**

**SESSION 1: Ownership, Landowner, & Regulatory Issues**

Session 1  
(Table 1 – Pat Esposito)

- Coal Gas Ownership
  - Impediment: Uncertainty of ownership
  - Solution: Assess current review board powers and establish power to resolve ownership issues
- Regulatory
  - Impediment: Frac consent
  - Solution: Empower review board to address this issue
- Landowner
  - None
- Conflict between comm.
  - None

Session 1  
(Table 2 – George Mason)

- Coal Gas Ownership
  - Expedited Declaratory Judgement Action
  - Condemnation Action
  - Special Judicial Panel
  - Constitutional Amendment (?)
- Regulatory Issues
  - Expedited issuance of general regulatory permits
- Landowner Concerns
  - Split ownership of surface & minerals – Problems
  - Dispute Resolution System (KY) – Another layer

Session 1  
(Table 3 – Claude Morgan)

- VA process may be easier for dealing with conflicting claims – facilitate development
- WV ownership issues slows permitting
- In VA, board doesn't take position on ownership – may help development
- Lessons learned – more explicit lease language
- Concern over pending & recent rulings on ownership in WV and VA – especially VA holding re: “surface owner's” CBM rights never severed
- If ownership goes to gas companies and they never develop, is that good economic/public policy?
- Industry will be able to deal with any certain way of handling ownership.

- Thought that WV Supreme Court is more “people” oriented on rights not contemplated in lease.
- Statute: Not prohibitive, though more parties and uncertainty add time and \$\$\$
- Landowner Concerns
  - Horizontal drilling – safety; damaging mineability of coal
  - Irresponsible to create mineability concerns in thick seams
  - May be a shortcoming in regulations
    - Right to consent
  - Some states won’t issue permits without surface use agreement – not a big issue in WV
  - Small companies only drill where surface owners are OK with it (cost/headache) “friendly location”; friendliest when surface owner also owns minerals.
  - Gathering thin seams – issue is different ownership – How to distribute royalties?
  - In VA proportional approach has worked.
  - In VA the fact you get decisions from a strong board helps keep projects moving forward.

Session 1  
(Table 4 – Bill Vail)

- How is the escrow account defined in West Virginia? Which revenues must be included?
- Are improperly plugged wells in northern West Virginia causing degasification of shallow coal seams?
- How much relief are operators going to get when WV Supreme Court makes a final decision?

Session 1  
(Table 5 – Kevin Wall)

- High occurrence of coal, gas, and CBM division ownership
- Variety of severances
  - Language of severance
- Need judicial opinions, but expensive to get, hard to justify
- Force Pooling works for small interests (consolidating); does not work as well for working interests
- Owners may make conflicting leases.
- Regulatory
  - Horizontal wells not addressed
    - Notice
    - Pooling
    - Units
  - Regulations unclear
  - Does forced pooling address subsurface & surface operation for horizontal?
  - Horizontal could potentially decrease occurrences of conflicts. Still concerns.
  - Would need to have coal and O&G companies involved in regulatory changes.

Session 1  
(Table 6 – Dan Kortum)

- Contractual issues can’t be legislated away
- Getting all parties to agree dilutes NRI and project economics
- Forced pooling creates a forum to resolve issues

- County/state land & tax records are confusing
- Regulatory
  - Generally good structure
  - Coop between O&G & Coal
  - Surface easement will be significant obstacle
  - Educate surface owners @ mineral estate rights. Set expectations.
  - Consistent application of rules & regulations by state agencies needed. Creates appearance of fairness.

Session 1  
(Table 7 - Jim McKinney)

Coal/Gas Ownership

- Needs a resolution to provide certainty
- Needs to be resolved sooner rather than later
- Conflicting biases all around
- Coal, gas, surface fee conflicts
- Coal lessee, conventional lessee, CBM lessee

Regulatory Issues

- Consent to stimulate – if not granted, then not deemed “approved,” hearing process
- Legal advertisement AND certify mail -> redundant
- Core hole permits for thickness and gas content → DOG and DOM don’t want responsibility, takes long time for approval, if ever

Landowner

- Few issues if operator takes time to consider and work with surface owner
- Protection of water table
- May have claim to CBM ownership

Conflicts: Coal/Gas

- horizontal drilling brings
  - Negative
    - Multiple seams = multiple owners
  - Positive
    - Water removal
    - Methane removal
    - No pipe to mine through

Session 1  
(Table 8 – Curt Tipton)

Coal/Gas Ownership

- Do surface owners own royalty in CBM?\*
- Did US Supreme Court set a timeline for states on CBM ownership?\*
- Can escrowed funds be placed with states as “unclaimed” property?

## Regulatory

- Streamline disposal well permit process (see TX, OK, for examples).
- Encourage development of alternative treatment process for surface discharge of produced waters.
- Re-inject produced water into coal seam after field is depleted.
- Flexibility of the well permitting process to test CBM potential.
- Consolidate all permitting agencies under one roof.

## Landowners

- Clarify that all landowner issues are governed by current oil & gas statutes.

## Conflict of Extractive Commodities

- Consider a single body or entity for conflict resolution between coal owner/lessee, oil & gas owner/lessee, surface owner, and CBM owner.

### Session 1 (Table 9 – Tom Lane)

#### Ownership:

- Provide actual benefit to coal owner for CBM use or de-watering
- Complex ownership issues are impediments; tract by tract issues with unique deed language.
- Relation of lessees.
- Prepare to act when Supreme Court decides.
- Coal owner taxes and gas owner

## Regulatory

- Spacing regulations need to accommodate horizontal and vertical plans
- Facilitate de-water
- Coordinate different regulatory agencies
- Reconcile gas operator on coal permit
- Need voice for landowner min. and surf
- Where conflict – provide dispute resolution

## Landowner

- Provide compensation to surface owner?
- Landowner – seat at table
- Surface owner only gets damages to surface

## Conflicts

- buy all rights necessary
- Avoid conflict with exist. Rights
- Strong regulatory board to maximize asset

### Session 1 (Table 10 – Neal Pierce)

- No case law on statute
- Uncertainty on hydraulic frac

Session 1  
(Table 11 – Marty Martin)

Coal Gas Ownership

- Engage all parties
- CBM not contemplated prior to “’80’s”
- Need a min. Federal “Standard”
- Ownership issue needs final resolution
- How about binding arbitration?

Regulatory Issues

- 30-day clock on coal companies re: consents and 1600 ft spacing.
- Core drilling permit vs. stratigraphic hole vs. test hole: who permits?

Landowner Concerns

- Landowner education on “rights”
- Noise regulations?
- Conflict between Extractive Comm

Session 1  
(Table 12 – Don Nestor)

Coal Gas Ownership

- Unclear/split royalty in lease - joint industry agreement including industry associations.
- Separated

Regulatory

- Environmental & safety regs inconsistent in application (DOT/Fed vs State) EPA/EDA (Facility Design, etc.)
- Place in WV Div. Oil & Gas, etc., not Federal
- Spacing – with other gas wells

Landowner Concerns

- More wells with spacing smaller
- Rise of more surface damage
- Industry recommended standard to state

Conflict/Commodities

- Methods of stimulation vs. safety
- Joint industry conferences; MSHA
- Timing of mining vs drilling

Session 1  
(Table 13 – Jim Crews)

## Ownership

- Ownership
  - Problem: Who owns?
  - Solution: Need clear signal from Supreme Court
  - Problem: Escrow may not cover all interests – no financial incentive
  - Problem: Daunting title search
    - Coal, oil & gas
    - Deep or shallow
  - Solution: Marketable Title Act (Michigan Law)  
Dormant Minerals!!!  
One Stop Shopping (VA)

## Regulatory

- Problem: No standardization
- Problem: Compulsory Pool – Unknown
- Problem: Error

## Landowner

- Problem: Infrastructure to extract?

## Conflict

- Problem: Standardization

## Session 1 (Table 14 – Matt Conrad)

- East: Gas → owned by Coal owner
- West: Gas → Gas owner
- Coal Gas Ownership
  - Varies from state to state
  - Legal decisions are lease specific
    - Original lease text of deed
    - Intent at time of leasing
- Regulatory issues
  - Permitting process in Virginia is excessive, takes about 6 months to permit a CBM well
  - Permitting in West Virginia is more streamlined
    - Pooling provision
    - Escrow funds
- Land Owner Concerns
  - Many land owners do not receive any royalty because the minerals have been severed from the surface
  - Only benefit is a location damage amount
- Coal Owners
  - Are concerned about wells being driven through future mining reserves
  - Most tracts are owned by large coal companies
- Conflicts
  - Revenues go into escrow account
  - Determined later

- Public/Community/Land-owner concern: ponding of H2O → disease
  - Regulatory Model – West Virginia
    - Deep vs. CBM wells
    - Deep, shallow, and CBM agencies
      - Shallow well (law of capture) vs. CBM (1600' apart, 100' from lease line)
        - Additional issues – increased notice provision
        - Public notice requirement
        - Consent to stimulate
        - Spacing, pooling, and mitigation
        - Supreme Court decision:
          - Guidelines for development
- Marginal economics
- Ratcliff Case -→ in Virginia
  - Surface owner
  - McDowell 10, surface owners
- Landowner, Lyon County, Kansas  
Value of land: \$500 per acre.
- 2 acres – MAJOR CONCERNS
  - Salt water disposal, Lease does not
  - Buried pipelines
- 4,500 CBM lease, eliminates issues; coal lease objecting to drilling, overriding Royalty coal lessee, no stimulation. Coal lease, Predates
- Oil & Gas Lessee: same issues, claim can delay development
- No mechanism to resolve issue; not Royalty issue
- Coal Stimulation (Coal Union)
  - Is this safe for Mining?
  - Coal fracing

Session 1  
(Table 15 – Jeff Herholdt)

### Ownership

- deed dependent/lease dependent
- need a better definition of CBM
- statutorily assign ownership to either coal or natural gas
- equal royalty payments to coal and natural gas owners
- communicate win/win solutions

### Regulatory

- bond inj (?) concerns (inadequate funds for clean up)
- ownership issue cause additional steps for CBM permits – class & legal announcement
- quick processing
- use of hole: vent hole used for CBM production should get a permit
- need better definition of vent hole

### Landowner Concerns

- landowner wants to maximize returns

- after gas and coal severed, the owner does not want development
- reclamation according to regs
- better identify landowner rights
- avoid environmental liabilities

Session 1  
(Table 16 – Dave Locke)

Ownership Issues

- Confusion as to who owns, who decides
- What are the oil/gas well operators' rights/obligations? How?
- Solutions
  - Address issues by
    - Review Board
    - Do something
  - Propose clarifying, sensible legislation
    - May not be feasible
    - May raise constitutional issue
  - Until issues are resolved, broker deals between all possible claimants & stay out of court.

Regulatory Issues

- None?
- Keep up with technology (e.g. horizontal drilling)
- DEP needs better “ownership” database
  - Oil/gas owner, surface, coal, etc.

Landowner Concerns

- What do we own?

Conflict???

Session 1  
(Table 17 – Jim Dobbs)

Ownership

- Need clear ruling from Supreme Court
  - Problem: science vs. politics
    - Science can identify difference between CBM & natural gas
  - Problem: oil vs. gas vs. neither
  - Problem: solution in court and/or legislation?

Regulatory

- Dependent on court ruling
- Can't use coal regulations as model because poor model
- Unnecessary regulations
  - Process
  - Actual regulations
- need mandate from Gov. to improve

- easier in VA & PA but gas easier in WV than PA

#### Landowner

- Again, tied to court ruling
- Different priorities for property

#### Conflict

- Again, tied to court ruling

**Coal Bed Natural Gas Workshop**  
**October 29, 2003**  
**Notes reformatted February 5, 2004**

**SESSION 1: Ownership, Landowner, & Regulatory Issues**

- Coal Gas Ownership: Statements of Fact or Perception
  - Impediment: Uncertainty of ownership
  - Solution: Assess current review board powers and establish power to resolve ownership issues
  - Unclear/split royalty in lease - joint industry agreement including industry associations.
  - Separated
    - East: Gas → owned by Coal owner
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  - Concern over pending & recent rulings on ownership in WV and VA – especially VA holding re: “surface owner’s” CBM rights never severed
  - Thought that WV Supreme Court is more “people” oriented on rights not contemplated in lease.
  
  - Ownership issue needs final resolution
  - Need judicial opinions, but expensive to get, hard to justify
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    - Problem: science vs. politics
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    - Problem: solution in court and/or legislation?
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- WV ownership issues slows permitting
- In VA, board doesn’t take position on ownership – may help development
- VA process may be easier for dealing with conflicting claims – facilitate development
  
- Uncertainty on hydraulic frac
- CBM not contemplated prior to “’80’s”
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- Coal Gas Ownership: Questions to be answered
  - If ownership goes to gas companies and they never develop, is that good economic/public policy?
  - How is the escrow account defined in West Virginia? Which revenues must be included?
  - Are improperly plugged wells in northern West Virginia causing degasification of shallow coal seams?
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  - Core hole permits for thickness and gas content → DOG and DOM don't want responsibility, takes long time for approval, if ever
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  - Impediment: Frac consent
  - Solution: Empower review board to address this issue
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- Regulatory Issues: Questions to be answered
  - Does forced pooling address subsurface & surface operation for horizontal?
  - Core drilling permit vs. stratigraphic hole vs. test hole: who permits?
  
- Regulatory Issues: Suggestions and Solutions
  - Consistent application of rules & regulations by state agencies needed. Creates appearance of fairness.
  - Coordinate different regulatory agencies
  - Consolidate all permitting agencies under one roof.
  - Place in WV Div. Oil & Gas, etc., not Federal
  - Expedited issuance of general regulatory permits
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  - Streamline disposal well permit process (see TX, OK, for examples).
  - Facilitate de-watering
  - Encourage development of alternative treatment process for surface discharge of produced waters.
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  - Flexibility of the well permitting process to test CBM potential.
  - Spacing regulations need to accommodate horizontal and vertical plans
  - Spacing – with other gas wells
  - Reconcile gas operator on coal permit
  - Educate surface owners @ mineral estate rights. Set expectations.
  - Need voice for land, mineral and surface owners
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  - Keep up with technology (e.g. horizontal drilling)
  - use of hole: vent hole used for CBM production should get a permit
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    - Oil/gas owner, surface, coal, etc.
  
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  - Split ownership of surface & minerals – Problems
  - Different priorities for property
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  - Few issues if operator takes time to consider and work with surface owner
- Landowner Concerns: Questions to be Answered
    - Provide compensation to surface owner?
    - What do we own?
    - Noise regulations?
    - Problem: Infrastructure to extract?
- Landowner Concerns: Suggestions and Solutions
    - Clarify that all landowner issues are governed by current oil & gas statutes.
    - reclamation according to regulations
    - better identify landowner rights
    - Landowner education on “rights”
    - Landowner – seat at table
    - Surface owner only gets damages to surface
    - avoid environmental liabilities
- Conflicts between Extractive Commodities: Statements of fact or perception
    - horizontal drilling brings
      - Negative
        - Multiple seams = multiple owners
      - Positive
        - Water removal
        - Methane removal
        - No pipe to mine through
    - Problem: Standardization
    - Public/Community/Land-owner concern: ponding of H<sub>2</sub>O → disease
    - Again, tied to court ruling
- Conflicts between Extractive Commodities: Questions to be answered
    - Methods of stimulation vs. safety
    - Timing of mining vs drilling
- Conflicts between Extractive Commodities: Suggestions and solutions

- Consider a single body or entity for conflict resolution between coal owner/lessee, oil & gas owner/lessee, surface owner, and CBM owner.
- Strong regulatory board to maximize asset
- Joint industry conferences; MSHA
- Avoid conflict with existing rights
- buy all rights necessary
- Revenues go into escrow account
- Determined later
  
- Regulatory Model – West Virginia
  - Deep vs. CBM wells
  - Deep, shallow, and CBM agencies
    - Shallow well (law of capture) vs. CBM (1600' apart, 100' from lease line)
      - Additional issues – increased notice provision
      - Public notice requirement
      - Consent to stimulate
      - Spacing, pooling, and mitigation
      - Supreme Court decision:
        - Guidelines for development
  - Marginal economics
  - Ratcliff Case -→ in Virginia
    - Surface owner
    - McDowell 10, surface owners
  - Landowner, Lyon County, Kansas  
Value of land: \$500 per acre.
  - 2 acres – MAJOR CONCERNS
    - Salt water disposal, Lease does not
    - Buried pipelines
  - 4,500 CBM lease, eliminates issues; coal lease objecting to drilling, overriding Royalty coal lessee, no stimulation. Coal lease, Predates
  - Oil & Gas Lessee: same issues, claim can delay development
  - No mechanism to resolve issue; not Royalty issue
  
- Coal Stimulation (Coal Union)
  - Is this safe for Mining?
  - Coal fracing

**Coal Bed Natural Gas Workshop**  
**October 29, 2003**  
**Notes edited February 3, 2004**

**SESSION 2: Economic Impediments & Incentives**

Session 2  
(Table 1 – Pat Esposito)

- Cost of recovery (water disposal, pumping, compression, permeability)
- Private/public partnership for additional technology Research & Development along with greater field deployment
- Pricing/Tax Incentives
  - Investigate code changes to calculate taxes based on net proceeds (vs. gross)
- Enhanced production/GHG issues
  - Encourage additional GHG technology R&D with application to methane recovery

Session 2  
(Table 2 – George Mason)

- Cost of Recovery:
  - Individual Operator Control
- Water Disposal: (too low to justify pipeline)
  - Tax incentives for disposal of water
  - Share facilities with coal company – Permit
- Low Permeability:
  - Geological Survey: WV's best interest to have producers share info/Public information most transparent then greater development in state
  - Horizontal Drilling
  - Legislate HIGH Perm!
- Pumping: Well-by-well basis
  - Control of Operator
- Compression:
  - 60 days Air Omissions Permit – 2 year temporary period

Session 2  
(Table 3 – Claude Morgan)

- Cost of Recovery
  - Low Permeability problem can be helped with horizontal technologies
    - Open hole fishbone
    - Revising casing programs
    - Step down hole size – smaller drill bits
    - Slant rigs, save on directional costs

- Change regs to make 300 ft. start where you enter reservoir (like Oklahoma)
- Rate of return on investment
  - Not difficult to do analysis on existing seams – amount risked/return
  - Build a model
  - Oil and gas looks at “finding costs” metrics rather than rate of return
- Getting 90% of gas out in short time makes investment metrics choice different than for conventional gas
- CONCLUSION: We need financing metrics appropriate for unique nature of CBM development.
- Is there an adequate amount of publicly available data?
  - Not a lot of information sharing – no state requirement to file data
  - Intentional obfuscation of production data?
- These metrics would be helpful in crafting tax credits
  - Water Disposal
    - Streamline injection well permitting process
    - Research \$ for treating produced water so it could be cost effectively treated and discharged
  - CO<sub>2</sub>
    - Research \$
    - Losing a lot of gas in current operations stripping the CO<sub>2</sub> out
    - Molecular sieves allow for scaling of gas treatment
    - Partial pressure limit on CO<sub>2</sub>
- Tax Incentives
  - At what gas price are tax incentives necessary to promote CBM development: \$3.50? (The # below which development will not occur without a tax credit)
  - Can DOE provide risk capital for horizontal test drilling? In amounts enough to spur development? The industry needs tax incentive now when the technologies are developing – when the tax credits expire, the industry will know enough to continue cost effectively without support.
- Permeability hard to predict from cores in lab.

Session 2  
(Table 4 – Bill Vail)

- PA DEP uses brine to suppress dust when spread on highways; maybe WV counties or Highway Department could use brine to our advantage.
- Expand the list of exempt compressors to ease the acquisition of air quality permits.
- Tax incentives for the installation of salt water disposal wells—or perhaps income tax relief

Session 2  
(Table 5 – Charlie Bryer)

- Things unique to CBM:
  - Topography makes fixed costs higher
    - Hits CBM harder
    - Site prep harder
    - N. West Virginia: Higher CO<sub>2</sub> – 20-30 cents/MMBTU Removal
    - N. West Virginia: Frac’d wells not as good, so go horizontal, more H<sub>2</sub>O; \$1/MCF Costs

- Harder to shut in a CBM well; can't respond as well to market.
- Permitting disposal wells is time consuming and expensive.
- May be a chance to come back in on areas of conventional WV development.
- Harder for small producers/small tracts.
- N. West Virginia has lower perm
  - Lower CBM content 100-200 cf/T
  - Even in deeper seams
- Horizontal wells
  - More H<sub>2</sub>O
  - More land work
  - More expensive to drill
- Horizontal drilling – we are still learning
- Pumping – Least problem
  - May have some trouble with power
  - Have problems with fines
- Compression – everywhere
- Severance tax exemption – good thing – keep
- Perhaps some offset to operating costs
- CO<sub>2</sub>:
  - Possible ownership issues
  - Regulatory framework

Session 2  
(Table 6 – Dan Kortum)  
“Economics”

- Water Disposal
  - Faster disposal well permits
  - Use brine as resource; use on roads; ease restrictions
- Add a State Income Tax Credit for CBM Mcf developed in addition to severance tax
- Incentive for brine reuse
- Incentive for zero discharge
- State mirror of Sec. 29 credit
- State clearinghouse of geologic data to share and promote CBM data; i.e. permeability
- State forgive personal property tax on compressors used in CBM
- More info on CO<sub>2</sub> sequestration to help small producer
- Promote greenhouse gas credits
- Added state credit for CBM reduction
- Make inventory data readily available

Session 2  
(Table 7 – Jim McKinney)  
“Economic Impediments/Inc.”

- What about injection of water into abandoned mines?
- Sec. 29 spur activity
- Sev. Tax abatement has been incentive

- Costs/price associated with LNG -→ ceiling on gas prices
- Landfill gas incentives
- FOR ENERGY INDEPENDENCE WE NEED INCENTIVES FOR ALL ENERGY SOURCES: COAL, GAS, CBM, HYDRO, LNG, ETHANOL: WORK TOGETHER!!!
- INCENTIVES BASED ON PRICE LEVELS TO MAKE ECONOMIC ATTRACTIVE: \$6 VS \$3
- Energy Bill has to address water and exemption from SWDA
- OPTIMIZE LINE SIZES SO DECREASE COMPRESSION REG.
- STATE INCOME TAX INCENTIVE REGARDLESS OF FED.
- GENERATING OR USING GAS CLOSER TO PRODUCTION
- Pollution credits for methane recovery that could be used, bought, sold
- Incentives to build plants, pipelines, electric lines AND incentives to private people and communities to approve or sell
- Energy Policy Act with teeth to force/encourage co-operation between private, public, governmental
- Less paperwork time for approvals/permits on state lands
- Easier process on federal lands

Session 2  
(Table 8 – Curtis Tipton)  
“Cost of Recovery” & Others

- Expand the process and capabilities of on-site re-injection of produced water
- Provide incentives for high CO<sub>2</sub> projects that re-inject the CO<sub>2</sub> back into the formation (tax credits)
- Design a federal incentive price program for CBM projects where greenhouse gas reduction programs can be enhanced
- Streamline the disposal well permitting process
- Educational programs for advanced wellhead automation

Session 2  
(Table 9 – Tom Lane)

- Cost of Recovery
  - Relation to Infrastructure
  - Create incentive for infrastructure development
  - Complex ownership cost; facilitate resolution of ownership
  - Spacing regulated to lower cost
  - Facilitate unit development to include all owners
- Water
  - Regulation to aid water disposal
  - Research better ways to dispose
  - Study historical effects of water disposal
  - Determine positive benefits of using water
- Permeability
  - Research new ways
  - Incentives for new ways
- Pump/Comp
  - Higher cost offset by lower drill cost
- Gas Price/Tax Incentive

- tax credit
- determine split between producer and royalty owner
- study biggest bang
- CO<sub>2</sub>
  - Encourage transportation ability; move to point where CO<sub>2</sub> can be used.
  - Develop technology to separate CO<sub>2</sub> at well and inject at well.
  - Develop technique to separate and use other gas.

Session 2  
(Table 10 – Neal Pierce)

- Start date for WV tax incentive?

Session 2  
(Table 11 – Marty Martin)

- Cost of Recovery
  - Further research to better define reservoir properties; i.e. gas perm. & content
  - Greenhouse credit education
- Water Disposal:
  - Technology for providing disposal options
  - Low perm
- Pumping:
  - “Smart” pump for continuous operations
- Compression
  - Enhanced gas recovery through CO<sub>2</sub> injection
  - “Smart” compression
- Gas Prices
  - Economic threshold
- Tax Incentives
  - Stripper CBM tax credit
  - Severance tax credit is vital to operation
- Enhanced production via CO<sub>2</sub>
  - Research of injection integrity of formations (CO<sub>2</sub> Sequestration)
- Greenhouse Gas Issues:
  - Credit against
  - Further education on greenhouse gas credits

Session 2  
(Table 12 – Don Nestor)  
“Economic”

- Cost of Recovery
  - Large up-front cost & long time to develop project
  - Industry data for costs available to prospective investors
- Low Permeability
  - Little or no data
  - Industry mapping to determine best potential

- Pumping/Compression
  - Lack of knowledge of equipment/process available
  - Forum for vendors to meet producers and training
- Tax Incentives and Greenhouse Gas
  - Create tax incentives to solve potential environmental issues

Session 2  
(Table 13 – Jim Crews)

- Problem: Gas Prices  
Solution: Futures & options Market – stabilize cash flow  
Long-term fixed price arrangements
- Problem: Water Disposal  
Solution: Economic use for water: road treatment  
○ Water flood for oil
- Problem: Depletion Rates vs. Capital Investment  
Solution: Split stream production  
Pipeline vs. local use, Mine use
- Problem: Infrastructure Competition  
Solution: ACRS  
Tax credit for elimination of Greenhouse gases  
Coal, Oil & Gas, CBM: collaborate to reduce costs.
- Problem: Capital  
Solution: Emissions credit market: CO<sub>2</sub>

Session 2  
(Table 14 – Matt Conrad)

Operating cost .40/MCF

No compression on CBM wells

Handling H<sub>2</sub>O for horizontal well; highest cost driver

Also concerned about transmission capacity

Surface evaporator → Heat H<sub>2</sub>O using CBM gas

- NAB GOB .75 BCF

on-site or peaking gas use

- CAB GOB 1.3 BCF

143 MM CF/D

140 MMCF out of Oakwood Field

1,450 CBM wells

Quality and quantity of H<sub>2</sub>O

Water fresher in PA

- Can treat & dispose water into high discharge rate

5 psi line pressure on Gathering System

7% fuel for compression, 0.20/Mcf compression costs

CO<sub>2</sub> in northern Appalachian basin

Permeability – Low Perm increases cost

- Horizontal drilling
- OTHER SEAMS GET ORPHANED BY (SEAM DEVELOPED BY) POOR DEVELOPMENT OF RESOURCE \*\*\*

- Severance Tax positive asset
- Gas Prices → Markets
  - Not a lot of confidence in CO<sub>2</sub> Sequestration
  - Cost of Infrastructure is high

Session 2  
(Table 15 – Jeff Herholdt)

- Water Disposal
  - Need new treatment approaches for CBM produced water
  - Modify underground control injection regulations to allow water injection over frac pressure
- Pumping and Compression
  - Fair and reasonable “deducts” should be defined in lease between owners and producers. “Deducts” could include compression, transportation, and water disposal costs, or none of the above.
- Prices
  - Promote new gas uses
  - Tax incentives
  - 2-tier tax incentive for coal mine NG (methane) and coal bed NG, recognizing higher production costs associated with coal mine NG.
  - CO<sub>2</sub> injection: monetary benefit to CBM producers for injecting CO<sub>2</sub>

Session 2  
(Table 16 – Dave Locke)  
“Cost of Recovery”

- Water Disposal
  - Heavy metals problem, re: “Road Disposal/Treatment”
  - Water disposal well permitting process: onerous.
  - Also other permitting; e.g. stream discharge
  - Need for advanced technology at reduced cost
- Low Permeability – it’s bad!!
  - Again...improved technology at better price.
- Pumping
  - Better pumping systems
    - Compare downhole-powered vs. pump jacks & rod pumps
    - Education programs for learning new systems
    - Cheaper pumps!
- Compression
  - Work with pipeline companies to develop the best system of gathering lines & compression including the pipeline company’s compression
  - Give incentive for transporting CBM
- Gas Prices
  - Higher is Good!
  - Regulate (set floor price)
- Tax Incentives
  - Yeah!
  - Transfer Synfuel credits to CBM!!

- CO<sub>2</sub> injection
  - Only good if CO<sub>2</sub> is cheap enough
  - Could happen in CO<sub>2</sub> becomes “regulated”
- CHG
  - Related to CO<sub>2</sub> injection

Session 2  
(Table 17 – Jim Dobbs)

- Cost of Recovery
  - New technology investment (RD & D)
  - Market-driven
- Water
  - AML funds to address TMDL and anti-degradation
  - Use Alabama as model
  - Individual permit per well; site specific bonding (hinderance)
- Permeability
  - RD & D → horizontal drilling; enhanced CBM
- Pumping
- GHG
  - More RD&D to lower cost
  - Emissions trading market

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**Notes reformatted February 5, 2004**

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    - Solution: Futures & options Market – stabilize cash flow  
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Handling H<sub>2</sub>O for horizontal well; highest cost driver  
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Surface evaporator → Heat H<sub>2</sub>O using CBM gas
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140 MMCF out of Oakwood Field 1,450 CBM wells

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- Can treat & dispose water into high discharge rate  
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7% fuel for compression, 0.20/Mcf compression costs  
CO<sub>2</sub> in northern Appalachian basin
- New technology investment (RD & D)
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- Private/public partnership for additional technology Research & Development along with greater field deployment
- Individual Operator Control

- Water Disposal:

- Faster disposal well permits
- Individual permit per well; site specific bonding (hindrance)
- Water disposal well permitting process: onerous.
- Also other permitting; e.g. stream discharge
- Regulation to aid water disposal
- Research better ways to dispose
- Study historical effects of water disposal
- Determine positive benefits of using water
- Share facilities with coal company – Permit
- Technology for providing disposal options
- (Amount produced) too low to justify pipeline
- Low perm (cause of low volume of water produced, or difficult to inject?)
- Tax incentives for disposal of water
- PA DEP uses brine to suppress dust when spread on highways; maybe WV counties or Highway Department could use brine to our advantage.
- Use brine as resource; use on roads; ease restrictions
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- Use Alabama as model

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- Geological Survey: WV’s best interest to have producers share info/Public information most transparent then greater development in state
- State clearinghouse of geologic data to share and promote CBM data; i.e. permeability
- Little or no data

- Make inventory data readily available
- Permeability hard to predict from cores in lab
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  - Change regs to make 300 ft. start where you enter reservoir (like Oklahoma)
- Industry mapping to determine best potential  
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- Other seams get orphaned by (seam development by) poor development of resource \*\*\*
- Again...improved technology at better price.
- Low Permeability – it's bad!!
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  - Pumping – Least problem
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  - Forum for vendors to meet producers and training
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“Deducts” could include compression, transportation, and water disposal costs, or none of the above.
  - Compare downhole-powered vs. pump jacks & rod pumps
  - Education programs for learning new systems
    - Cheaper pumps!
  - Better pumping systems
  
- Compression:
  - 60 days Air Omissions Permit – 2 year temporary period
  - Expand the list of exempt compressors to ease the acquisition of air quality permits.
  - Compression – (required?) everywhere
  - Enhanced gas recovery through CO<sub>2</sub> injection
  - “Smart” compression
  - Problem: Depletion Rates vs. Capital Investment
  - Solution: Split stream production  
Pipeline vs. local use, Mine use
  - Work with pipeline companies to develop the best system of gathering lines & compression  
including the pipeline company's compression

- Give incentive for transporting CBM
- Gas Prices
  - Getting 90% of gas out in short time makes investment metrics choice different than for conventional gas
  - Conclusion: We need financing metrics appropriate for unique nature of CBM development.
  - Is there an adequate amount of publicly available data?
    - Not a lot of information sharing – no state requirement to file data
    - Intentional obfuscation of production data?
  - Costs/price associated with LNG -→ ceiling on gas prices
  - Economic threshold
  - Gas Prices → Markets
    - Not a lot of confidence in CO<sub>2</sub> Sequestration
    - Cost of Infrastructure is high
  - Promote new gas uses
  - CO<sub>2</sub> injection: monetary benefit to CBM producers for injecting CO<sub>2</sub>
  - Gas Prices
    - Higher is Good!
    - Regulate (set floor price)
- Tax Incentives
  - For energy independence we need incentives for all energy sources: coal, gas, CBM, hydro, LNG, ethanol: Work together!!!
  - Coal, Oil & Gas, CBM: collaborate to reduce costs.
  - Incentives based on price levels to make economics attractive: \$6 vs \$3
  - At what gas price are tax incentives necessary to promote CBM development: \$3.50? (The # below which development will not occur without a tax credit)
  - Can DOE provide risk capital for horizontal test drilling? In amounts enough to spur development? The industry needs tax incentive now when the technologies are developing – when the tax credits expire, the industry will know enough to continue cost effectively without support.
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- 
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- Incentive for zero discharge
- Perhaps some offset to operating costs
- Incentives to build plants, pipelines, electric lines AND incentives to private people and communities to approve or sell
- Landfill gas incentives
- Optimize line sizes so decrease compression regs
  
- Provide incentives for high CO2 projects that re-inject the CO2 back into the formation (tax credits)
- Create tax incentives to solve potential environmental issues
- Design a federal incentive price program for CBM projects where greenhouse gas reduction programs can be enhanced
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- Pollution credits for methane recovery that could be used, bought, sold
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- Solution: ACRS
- 
- Tax incentives
- Tax Incentives

- Yeah!
  - Transfer Synfuel credits to CBM!!
  
- Enhanced production via CO<sub>2</sub> Injection
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    - Possible ownership issues
    - Regulatory framework
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  - More info on CO<sub>2</sub> sequestration to help small producer
  
- Green House Gas (GHG) issues
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  - Encourage additional GHG technology R&D with application to methane recovery
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  - Credit against
  - Problem: Capital
  - Solution: Emissions credit market: CO<sub>2</sub>
  - Emissions trading market
  - More RD&D to lower cost

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**October 29, 2003**  
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**SESSION 3: Infrastructure**

Session 3  
(Table 1 – Pat Esposito)

- pipeline/transmission/capacity
  - consider a WV pipeline commission with eminent domain
  - encourage acceptance of gas blending of low BTU gas
- gas quality
  - standardization of gas quality specifications with stakeholder input
- gathering
  - upgrade of gathering systems to reduce shrink
- permit issues
  - streamline the air quality permitting process for compression and treating facilities

Session 3  
(Table 2 – George Mason)

Pipelines

- equal access to capacity
- need better quality information on a timely basis
- better communication – customer-friendly
- expedited condemnation/eminent domain law

Gas Quality

- CO<sub>2</sub> plant but need high volumes to justify cost.
- CBM office – gather information on pipelines, gas pressures, quality
  - “One stop shopping”

Transmission

- Open access – FERC
- Maximum flexibility by pipeline

Gathering

- standard specifications applied to all, including Gathering Pipeline affiliates

Capacity

- Build more pipelines!

Permits

- Streamlined permit processing

Corrosion Problems

- more processing/bleeding

Session 3  
(Table 3 – Claude Morgan)

Capacity Issues

- pipelines already loaded up with conventional gas
- short production life of CBM wells makes long-term investment in additional pipeline capacity difficult to justify using current financing mechanisms.
- REAL problem
- WV pipeline infrastructure very old – lots of line loss
- What prevents a group of operators from getting together and creating their own capacity?
- Interstate vs. intrastate pipeline issues
  - Can CBM additional capacity get exemption from FERC Process?
  - If FERC Process can be avoided, cost savings might spur development.
  - Wyoming – state provided “backstop” bonding to encourage capacity creation for CBM wells
- WV only state in east that has excess gas- exporter
- Producers might buy pipelines & take over operation, again to avoid FERC in building one’s own.
- Solution is Partnership between Producers and Pipeline Companies; all share cost, all share benefit.

Pipeline Quality

- Very stringent requirements for CBM – GOB gas
- IF pipeline goes down, CMM can’t be shut in – CBM wells need to go through dewatering again after being shut in.
- Down the line, finding the best markets for CBM might help.

How Can Government Help?

- Get more capacity built
- Incentives – financial
- Improving ability to secure ROW (right of way)
- How to reduce pipeline co. financial risk?
- MMS offshore (Gulf of Mexico) model – requiring pipeline sharing without surcharge for amount of capacity unused.
- State entity to broker deals between producers & pipeline companies (may be a bad idea).

Session 3  
(Table 4 – Bill Vail)

Strange drawing of a kind of graph????

Session 3  
(Table 5- Charles Byrer)

Uneconomic

- Interaction with mining other uses relocation costs  
Eminent Domain
- Have to be careful about gathering systems  
Utility corridors  
Gas quality

- Justifiable concerns
- Need collaboration among CBN operators to get consensus on cleanup
- Bring end users together within WV- ESP industrial users, possible problem with LDC, PSC?
- Encourage consumption of WV gas
- Give state incentive to consume WV gas
- Clearinghouse for gas consumers to facilitate low BTU gas sales
- More co-firing with CBM
- Market for byproducts

Session 3  
(Table 6 – Dan Kortum)

Infrastructure

- State incentive for transport of non-traditional gas
- State incentive for compression of non-traditional gas
- Quantify benefit of industry & CBM development has on WV (research), so state creates incentives.
- Use legislative “arm twisting” to encourage companies to work together on infrastructure construction
- Various tax incentives for all infrastructure construction
- Educate public @ dire condition regarding capacity.
- Pipeline consortiums to develop infrastructure
  - What would FERC think?

Session 3  
(Table 7 – Jim McKinney)

Pipelines

- Incentives to build private & public
- All high pressure; needs are for “gathering” lines as well

Quality

- Standards are increasing, not decreasing
- SPCC plans now have to include pipelines

Gathering

- Who’s regulating gathering pipelines?
  - Costs increasing; services decreasing

Transmission

- Why not parallel existing on existing R.O.W.’s?
- Safety: concerns/costs still increasing.

Incentives

- Incentives for local (DC’s) to buy WV-produced gas
  - Tax incentives
  - Price incentives
- Re-active vs. Pro-active mentality
  - Producers – price volatility
  - Pipelines – price volatility

Session 3  
(Table 8-Curtis Tipton)  
Pipelines

- Uniform gas quality standards and applied in a non-discriminatory manner
- Should there be additional research on the corrosive agents in the gas stream to insure that current CO<sub>2</sub>, N<sub>2</sub>, and O<sub>2</sub> limits are valid measuring sticks
- Grant eminent domain rights to state for pipeline expansion (ROW)
- Promote the development of small scale LNG applications for isolated areas
- Educate the public on the necessity of an expanded pipeline grid- “nimby”
- Convert existing depleted conventional reservoirs to storage fields
- Streamline permitting process for CO<sub>2</sub>, N<sub>2</sub>, and O<sub>2</sub> removal facilities
- Who pays for expansions?- 1. Consumers, 2. Producers, 3. Government
- Who benefits?

Session 3  
(Table 9 – Tom Lane)

Pipelines

- Incentive to pipeline development
  - Low interest loan for extension to new areas.
  - Broaden eminent domain.
  - Assisted pipe becomes common carrier.
  - Provide incentive for development and transmission.
  - Coordinate permitting where special needs exist.
  - Compressors noise suppression.
  - Streamlined consistent regulatory process.

Session 3  
(Table 10 – Neal Pierce)

- Wyoming Pipeline Authority model

Session 3  
(Table 11 – Marty Martin)

Pipelines

- need capacity
- longterm commitments are difficult
- landowners need proper compensation/reclamation

Gas Quality

- FERC mandated?

Transmission

- Who regulates what?
  - Define gathering vs. transmission, etc.

Gathering

Capacity

Corrosion Problems

- research into pipeline materials
- inspection frequency on mechanical integrity

Permit Issues for Gas Cleanup

- Can be extremely involved

Session 3  
(Table 12 – Don Nestor)

Pipelines

- Capacity
  - Use CBM locally as energy source for mining, etc.
- Variety of seasonal capacity
  - Store locally & sell when capacity available.

Gas Quality

- Low (& High) BTU
  - Incentives to blend gas
- High water, CO<sub>2</sub>, N content
  - Coop. Gas conditioning facility
- 

Gathering, capacity and transmission

- Limits
  - Create tax & economic incentives

Session 3  
(Table 13 – Jim Crews)

Problem: Pipelines (capacity)

- Credit
- Term

Solutions: CBM producer partner w/ LDC's  
Storage development

Problem: Gas Quality

Solution: Standardize Spec.  
ASME, ASCE  
Local low pressure/plastic market  
Local electric generation

Problem: High Depletion Rates

Solution: Partner w/ entity that has long-term transportation interest (LDC's/Power Plants)

Session 3  
(Table 14 – Matt Conrad)  
Missing???

Session 3  
(Table 15 – Jeff Herholdt)

#### Pipelines

- Have pipelines reduce nitrogen limits for CBM
- Establish uniform gas quality standards among pipelines

#### Corrosion

- develop high pressure pipelines that are non-metallic (like CBM lines) to eliminate corrosion problems

#### Gathering

- Production should be reported on a well-by-well basis to promote development

#### Transmission

- Integrate transmission networks to improve deliverability
- Treat coal bed methane as firm(?) transportation

Session 3  
(Table 16 – Dave Locke)

#### Pipelines

- Incentives are important
  - Financial
  - Expedition of regulatory approvals.
  - For transportation of CBM

#### Gas Quality

- blending included in contracts
- enrichment technology (separation, etc.)
- look for direct utilization opportunities

#### Transmission

- accessibility – gas quality issue
- use of common utility corridors

#### Gathering

- Take advantage of existing gas gathering lines
  - Corollary: incentives for developing additional capacity

#### Capacity

- Add dirigibles

- Combine forces with LDC's, pipelines to add needed capacity.

Session 3  
(Table 17 – Jim Dobbs)

- High gas prices cure these problems
- Price stability

**Coal Bed Natural Gas Workshop**  
**October 29, 2003**  
**Reformatted February 9, 2004**

**SESSION 3: Infrastructure**

- Pipelines
  - Justifiable concerns
  - Uneconomic
  - Incentives are important
    - Financial
    - Expedition of regulatory approvals.
    - For transportation of CBM
  - Incentive to pipeline development
    - Low interest loan for extension into new areas
    - Broaden eminent domain.
    - Assisted pipe becomes common carrier.
    - Provide incentive for development and transmission.
    - Coordinate permitting where special needs exist.
  - 
  - consider a WV pipeline commission with eminent domain
  - expedited condemnation/eminent domain law
  - Eminent Domain
    - Have to be careful about gathering systems
    - Utility corridors
    - Gas quality
  - 
  - need better quality information on a timely basis
  - better communication – customer-friendly
  - Bring end users together within WV- ESP industrial users, possible problem with LDC, PSC?
  - Need collaboration among CBM operators to get consensus on cleanup
  - Interaction with mining other uses relocation costs
  - Use legislative “arm twisting” to encourage companies to work together on infrastructure construction
  - Pipeline consortiums to develop infrastructure
  - 
  - Clearinghouse for gas consumers to facilitate low BTU gas sales
  - encourage acceptance of gas blending of low BTU gas
  - Educate public @ dire condition regarding capacity.
  - equal access to capacity
  - need capacity
  - Capacity
    - Use CBM locally as energy source for mining, etc.
  - Variety of seasonal capacity
    - Store locally & sell when capacity available.

Problem: Pipelines (capacity)

- Credit
- Term

Solutions:      CBM producer partner w/ LDC's  
Storage development

- - More co-firing with CBM
  - Market for byproducts
  - Encourage consumption of WV gas
  - Give state incentive to consume WV gas
  - State incentive for transport of non-traditional gas
  - State incentive for compression of non-traditional gas
  - Quantify benefit of industry & CBM development has on WV (research), so state creates incentives.
  - Various tax incentives for all infrastructure construction
  - Incentives to build private & public
  - 
  - What would FERC think?
  - All high pressure; needs are for “gathering” lines as well
  - Compressors noise suppression.
    - Streamlined consistent regulatory process.
  - Wyoming Pipeline Authority model
  - long-term commitments are difficult
  - landowners need proper compensation/reclamation
  - 
  - Have pipelines reduce nitrogen limits for CBM
  - Establish uniform gas quality standards among pipelines
  - 
  - High gas prices cure these problems
  - Price stability
- Gas Quality
    - Uniform gas quality standards and applied in a non-discriminatory manner
    - standardization of gas quality specifications with stakeholder input
    - Standards are increasing, not decreasing
    - Problem:      Gas Quality
    - Solution:      Standardize Spec.
      - ASME, ASCE
      - Local low pressure/plastic market
      - Local electric generation
    - Low (& High) BTU
      - Incentives to blend gas
    - High water, CO<sub>2</sub>, N content
      - Coop. Gas conditioning facility
    - blending included in contracts
    - enrichment technology (separation, etc.)
    - Very stringent requirements for CBM – GOB gas
    - IF pipeline goes down, CMM can't be shut in – CBM wells need to go through de-watering again after being shut in.
    - Should there be additional research on the corrosive agents in the gas stream to insure that current CO<sub>2</sub>, N<sub>2</sub>, and O<sub>2</sub> limits are valid measuring sticks?
    - CBM office – gather information on pipelines, gas pressures, quality
    - CO<sub>2</sub> plant but need high volumes to justify cost.

- Down the line, finding the best markets for CBM might help.
- SPCC plans now have to include pipelines
- FERC mandated?
- look for direct utilization opportunities

#### Transmission

- Open access – FERC
  - Maximum flexibility by pipeline
  - Why not parallel existing pipelines on existing rights of way (ROWs)?
  - Integrate transmission networks to improve deliverability
  - Grant eminent domain rights to state for pipeline expansion (ROW)
  - use of common utility corridors
  - Treat coal bed methane as firm(?) transportation
  - Safety: concerns/costs still increasing.
  - Promote the development of small scale LNG applications for isolated areas
  - Educate the public on the necessity of an expanded pipeline grid- “nimby”
  - Streamline permitting process for CO<sub>2</sub>, N<sub>2</sub>, and O<sub>2</sub> removal facilities
  - accessibility – gas quality issue
  - Who pays for expansions?- 1. Consumers, 2. Producers, 3. Government
  - Who benefits?
  - Who regulates what?
    - Define gathering vs. transmission, etc.
  - Corrosion Problems
    - more processing/bleeding
  - Corrosion Problems
    - research into pipeline materials
    - inspection frequency on mechanical integrity
  - develop high pressure pipelines that are non-metallic (like CBM lines) to eliminate corrosion problems
  - Convert existing depleted conventional reservoirs to storage fields
  -
- Gathering
    - upgrade of gathering systems to reduce shrink
    - standard specifications applied to all, including Gathering Pipeline affiliates
    - Take advantage of existing gas gathering lines
      - Corollary: incentives for developing additional capacity
    - Who’s regulating gathering pipelines?
      - Costs increasing; services decreasing
    - Production should be reported on a well-by-well basis to promote development
  - Capacity
    - REAL problem
    - WV only state in east that has excess gas- exporter
    - pipelines already loaded up with conventional gas
    - WV pipeline infrastructure very old – lots of line loss
    - short production life of CBM wells makes long-term investment in additional pipeline capacity difficult to justify using current financing mechanisms.
    - Can CBM additional capacity get exemption from FERC Process?

- If FERC Process can be avoided, cost savings might spur development.
  - Wyoming – state provided “backstop” bonding to encourage capacity creation for CBM wells
  - What prevents a group of operators from getting together and creating their own capacity?
  - Interstate vs. intrastate pipeline issues
  - Producers might buy pipelines & take over operation, again to avoid FERC in building one’s own.
  - Solution is Partnership between Producers and Pipeline Companies; all share cost, all share benefit.
  - Problem: High Depletion Rates
  - Solution: Partner w/ entity that has long-term transportation interest (LDC’s/Power Plants)
  - Add dirigibles
  - Combine forces with LDC’s, pipelines to add needed capacity.
  - Build more pipelines!
- Permit Issues
    - streamline the air quality permitting process for compression and treating facilities
    - Streamlined permit processing
    - Permit Issues for Gas Cleanup can be extremely involved

#### How Can Government Help?

- Get more capacity built
- By improving ability to secure ROW (rights of way)
- How to reduce pipeline company financial risk?
- Incentives – financial
- MMS offshore (Gulf of Mexico) model – requiring pipeline sharing without surcharge for amount of capacity unused.
- State entity to broker deals between producers & pipeline companies (may be a bad idea).
- Incentives
  - Incentives for local (DC’s) to buy WV-produced gas
  - Tax incentives
  - Price incentives
- Re-active vs. Pro-active mentality
- Producers – price volatility
- Pipelines – price volatility
- Limits
  - Create tax & economic incentives

Appendix 9  
**PARTICIPANT EVALUATION RESULTS**  
**West Virginia Coal Bed Natural Gas Workshop**  
**Oct. 29, 2003**  
Stonewall Resort, Roanoke, WV

Total number of evaluations submitted:	102					
Strongly disagree			Strongly agree			
Presentation Session Evaluation	1	2	3	4	5	No Answer
Overall I think the presentations were very helpful in laying the groundwork for generating a better understanding of the issues leading to new ideas.	0.00%	0.00%	18.63%	52.94%	25.49%	2.94%
The amount of time given to the presenters was just right.	0.98%	6.86%	29.41%	43.14%	17.65%	1.96%
The amount of time spent on Q&A with the presenters was just right.	9.80%	20.59%	23.53%	24.51%	6.86%	14.71%
The breakouts were effective in generating discussion, ideas, and/or recommendations.	0.00%	4.90%	17.65%	49.02%	26.47%	1.96%
The facilitated session was accurately reported in the planery session.	0.00%	5.88%	11.76%	55.88%	18.63%	7.84%
I felt welcome to express my ideas and opinions in the facilitated session.	0.00%	1.96%	6.86%	39.22%	48.04%	3.92%
I personally agreed with the ideas, opinions, or suggestions that were presented from the facilitated session.	0.00%	4.90%	23.53%	46.08%	19.61%	5.88%
Strongly disagree			Strongly agree			
Logistics Evaluation	1	2	3	4	5	No Answer
The meeting space was conducive to a successful event.	0.98%	0.98%	11.76%	46.08%	39.22%	0.98%
The event staff was very helpful.	0.00%	0.98%	4.90%	39.22%	50.98%	3.92%
The hotel staff was very helpful.	0.00%	0.00%	9.80%	39.22%	44.12%	6.86%
There was plenty of good food and beverages available.	0.98%	0.00%	1.96%	35.29%	60.78%	0.98%

The website provided timely, valuable information.	0.00%	0.98%	10.78%	35.29%	32.35%	20.59%
The online registration worked well for me.	1.96%	3.92%	9.80%	18.63%	44.12%	21.57%
Overall this was a high quality event.	0.00%	0.98%	7.84%	42.16%	47.06%	1.96%
I learned about the event through:						
Website	19					
Postcard	21					
Brochure	43					

**The most helpful presentation for me was:**

2020 Coal Bed Natural Gas vision statement was informative.
All were good.
All were very informative.
CBM operators.
CBM - An issue overview.
CBNG - An Issues Overview because it was more in line with professional focus.
Claude Morgan - CNX
CNX Gas - Claude Morgan
Cost of recovery.
Current activity and legal status of gas ownership.
Don Kortum, Lee Avery.
Economic impediments and incentives.
Economic incentives because it was interesting.
First one in the AM.
George Mason/Marty Martin.
Group discussion sessions for the opportunity to exchange/explore options.
Group discussions.
Infrastructure limitation.
Issues by Marshall Miller and Associates.
Issues identification, group presentations.
Issues overview because it had good launching point.
Lee Avery.
Lee Avery and Marshall Miller's presentations because as a geologist these outlined issues that pertain most to my line of work in CBM. They also highlighted points that I had not previously thought of.
Lee Avery/Pooling, Unitization and Field Rules because it contained very detailed information on the CBM within the state.
Lee Avery's because it had good overview of other companies production and issues.
Lee Avery.
Lee Avery--info was very beneficial and informative--looking for CBM development.
Lee Avery--resource potential.
Legal issues.
Locations of coalbed fields in WV because it worked w/coalbed in VA and Southern WV-Interested in Northern WV.
Marshall Miller and Associates.
Marshall Miller / Lee Avery because most comprehensive/ most data.

Matt Conrad because of good summary of CBM projects.
Matt Conrad / Bill Vail because of good overview.
Miller and Assoc. presentations.
Marshall Miller and Associates presentation / Avary presentation.
Morning session about CBM projects.
N/A -- arrived late.
Overview of development; it helped clarify where viable development areas are located.
OVG ownership/pipelines.
Ownership.
Ownership.
Ownership and regulation -- great impact.
Ownership because it's the single most important issue that needs resolved to encourage CBM development
Ownership issues.
Ownership issues.
Ownership issues.
Ownership, landowner and regulatory issues.
Ownership, landownership, and regulation issues.
Ownership -- I represent owner.
Pooling and location issues; also small group forum was excellent.
Pooling, utilization and field rules.
Pooling, utilization and field rules.
Pooling,utilization, and field rules -- able to compare regulations between states.
Problems with CBM productions.
Resource potential and location of CBM in WV.
Resource potential as well as coal bed natural gas overview, it was a good window into industry potential.
Resource potential and location of CBM in WV.
Resource potential and location of coal bed natural gas in WV. It gave me information about the CBM resources in WV.
Session 1
Session 1
Session 1 - Uncertainty of CBM ownership is the single most important impediment to CBM development in WV.
Session 2
Session 3 on pipelines because it was a relatively new area to me. Gas good description of issues.
Summary of speaker papers in the form of a slide presentation.
The breakout discussions because sharing of ideas spurs creative solutions.
The layout of the well and pipeline structure to help me understand the coal bed methane fields.
Workshops.
WV Geologic and Economic Survey and Marshall Miller and Associates.
West Virginia Geologic Survey.

<b>General Comments about the presentations:</b>
Ability to hear diverse views from diverse conversation with diverse expertise.
All gave me some piece of good information.
All were very beneficial in setting the stage for the breakout sessions.
Better A/V.
Brochure should better describe the purpose of the workshop.
Consider panel discussion with Q and A from audience.
Enjoyed the meeting format and selection of discussing group at the table.
Excellent.

Excellent starting point to make WV a profitable CBM state. Learn from other's mistakes as well as victories.

Format w/small group was difficult with a large group--prefer more presentation time, less discussion and more expertise in presenters than tablemates.

Generally pretty good. A few failed to stimulate thoughts.

Generally well done.

Give more time to the presenters, so they have time to give some background.

Good

Good overviews.

Good panel of speakers.

Good presentations, but a question and answer period would be helpful.

Good venue and good topics, but should have more direct experience, I.E. field reviews, etc.

High quality.

Need better lighting and better sound system.

Need better visual.

Need more presentations.

Need more time for Q and A overall.

Overall were very good.

Poor slide quality.

Quite good overall.

Read offs as power point bullet points are fairly worthless.

Right length.

Right size.

Short and sweet--that was perfect.

Shorter (10 min.) presentations were more effective.

Small amount of reservoir and production of CBM data.

Some more detailed discussion about on site small volume usage for economic development.

The people in charge must insure the speakers can be heard in the back of the room also too much light in the room to see the slides. People in back of room can't see slides.

Very good.

Very good but poor sound system.

Very informative!!

Very well organized/ good discussion.

Well organized.

Were informative.

West Virginia has been at the forefront of CBM/CMM research for more than 20 years. They have the oldest known commercial CBM fields in the United States.

**In my opinion, the most important three to six topics or ideas generated in the breakout sessions were:**

- "illegible"
- "illegible"
- "illegible"
- 1) Need to streamline coordinate permitting and regulatory procedures--federal and state--and within state agencies.
  - 2) Tax incentives are the key--especially consider one VS more targeted multiple.
  - 3) Technology is key to efficient, safe and cost effective.
- 1) Ownership.
  - 2) Capacity of gathering and blending.
1. Ownership resolution--needs legislation vs. court interpretation.
1. Ownership, 2. Compression, 3. Disposal, 4. Cost of Recovery, 5. Gathering, 6. Capacity.
- Capacity--marketing--tax incentives/US gov't.

Clear regulation mandates to specific divisions.
-Core holes/strat tests.
-Gathering pipelines.
CO2 Gas ownership, landowner concerns, coalbed between extractive commodities.
Coal gas ownership.
Transmission, regulatory issues, gas prices, green house gas issues.
Coal gas ownership, cost of recovery, pipeline capacity and availability.
Coal gas ownership, cost of recovery, pipelines.
Coal gas ownership, tax issues, green house gases, gas quality.
Coal gas ownership, water disposal, capacity
Coal gas ownership, water disposal, pipelines
Coal gas ownership, water disposal, tax incentives.
Coal gas ownership, water disposal, tax incentives, pipeline gathering and capacity.
Combine lines.
Common info database and sharing or reservoir info.
Cost of recovery, tax incentives, water disposal, land issues.
Eminent domain for pipelines, need for education, incentives, incentives, incentives.
Environmental.
Gas (CMM) ownership rights and royalty issues. Gas quality very, very important.
Gas compression/gas quality/green house gas issues.
Gas transmission.
Goal gas ownership, regulatory issues, conflict between extractive commodities, transmission.
--Higher tax incentives for CMM than for CBM due to higher associated costs
--Relax injection regulations in deep zones to allow exceeding" fracture" pressures to inject water in tight, conventional wells already drilled.
--Require "royalty" owners to pa
How water disposal is a problem, shortage of pipeline capacity, coal/ownership, incentives for CBM producers.
Incentives for production and pipeline problems to address.
Incentives to develop greenhouse pollutants for energy use.
Inclusion of greenhouse gas . . . "illegible".
Need to resolve ownership one way or another.
Landowner issues.
Conflict between extractive commodities was interesting.
CO2 injection.
Lift cost, compression, infrastructure.
Low permeability is bad, complex issues of regulatory, CO2 sequestration is complicated, ownership.
Need for eminent domain rights for pipeline construction.
Water disposal issues/problems and needs for . . . "illegible"
WV CBM board does little to assist in getting CBM wells drilled.
Need for pipeline upgrades to capacity problems in the heart of Southern WV vs. CBM area.
Ownership, capacity, permits.
Ownership.
Ownership Issues
Ownership issues and infrastructure.
Ownership issues and regulatory issues.
Ownership issues, environmental issues, development issues.
Ownership of gas.
Disposal options for CBM water.
Ownership, greenhouse gas issues, regulatory issues.
Ownership, landownership, regulatory issues, pipelines.
Ownership, development, coal bed locations.

Ownership/mineral rights is fractured and divided into provincial interests. Fixed costs for processing and water disposal are disincentives to CBM development.

Permeability, infrastructure, pipeline capacity incentives, ownership issues.

Pipeline capacity issue, cost of recovery, regulatory issues in ownership.

Potential Solutions to Ownership and Dorment mineral Assets.

Promote WV as an energy exporter using CBM. Promote WV as a model eastern state with energy self-sufficiency.

Reduction/Elimination of taxes on CBM Development.

Some type of legislated solution to CBM ownership issue. Ratchet any type of tax incentive to market price for gas. Sharing of all technical data associated with CBM.

Streamline permitting process and consolidate regulatory agencies.

Tax incentives and expedited permit processing.

Tax incentives must be fair and equitable, ownership, and capacity.

Tax incentives, pricing, cost of recovery.

Title issues are what holding this play back. Solve them and the drilling will happen!

Unfortunately I had to miss the majority of the day. I only heard the first hour.

Uniform regulations, disseminate information, economics.

**In my opinion, the following topics also need to be considered to move West Virginia forward in this area:**

*"illegible"*

The costs of increased productivity with the advent of new technology.

A WV mineral court to address conflicting ownership claims ASAP.

Access to geophysical logs for drilled CBM wells for resource assessment.

An export tax on CBM exported out of state

Develop municipal "energy parks" using CBM as a fuel source to attract local industries

Citizen rights.

Combine offices to cost taxpayers less.

Consideration of surface owners in the development of infrastructure and environment issues.

Consolidate regulations!

Cooperation and working together to facilitate marketability and DAQ permitting cooperation.

Data availability, and research.

Deregulation to allow producers to sell and transport.

Education!

Example of co-op between oil and gas companies, coal companies and regulatory correspond to make a project work (economically).

GIS mapping of facilities and wells.

I'm not qualified to make any judgments.

It is extremely difficult to get a clear title in WV. The legislature should pass a dormant minerals act similar to the law in Ohio.

Make it clear to powers that be that CBM gas lines, etc. are very important.

More cooperation and synergy between all elements of WV's energy portfolio.

More R and D and operator emphasis on the need for expansion of the pipeline grid.

More research for all aspects of CBM.

Move forward on ownership issues. Possibly a legislation solution. Find ways to bring coal companies and oil and gas companies together to promote cooperation to develop CBM.

None.

Ownership of CMM, incentives to make it happen.

Policies for capital investment incentives.

Presentations in different treatment methods.

Production for cost for next 5 to 10 to 20 years.

Reduce taxes.

Regulatory bureaucracy coal, oil and gas, CBM are one entity.  
 Require operators to report CBM production on a well by well basis to promote development by offset operators.  
 Resolution of CBM ownership issues.  
 Same as above--as well as need to establish certainty of ownership area.  
 Need for public education about development benefits to WV.  
 Settle ownership.  
 Streamline O&G regulation with CBM similar to Virginia.  
 Tax in counties.  
 Tax incentives.  
 Tax incentives to transmission companies to increase/twin pipeline capacity.  
 The general business environment in West Virginia must be improved.  
 The state needs to incent producers/transporters to develop CBM and use tax breaks.  
 Thoroughly evaluate impacts to water.  
 Consider ecological economics, not just "standard" economics  
 Landowner rights and protections compensation.  
 Training/roundtable for producers and operators-technology review and exchange.  
 West Virginia needs a state-level sitting group.  
 WV should take a pro-active approach to solve legal, regulatory issues w/CBM.

**General comments about the breakout sessions:**

Provide report to all attendees. Next meeting should be more implementation oriented. Take ideas and move forward.  
 A good way to learn the issues if one is relatively uninformed.  
 A little crowded. Made it hard to hear table contributors.  
 Consider some breaks especially in the PM, as group input seemed to fall near the end.  
 Discussion is always good. Communication may only help.  
 Diverse group was welcome.  
 Excellent, Very informative.  
 Facilitator needs to be more knowledgeable about topic.  
 Good  
 Good  
 Good but at the end I was tired  
 Good discussion and ideas.  
 Good discussion by all participants at the table.  
 Good format. Generated a lot of ideas.  
 Good idea.  
 Good ideas/open discussion.  
 Good interaction.  
 Good!  
 Interesting, no magic pill.  
 Little additional information generated from small group discussion that was not presented in introductions to the sessions  
 Many of the solutions can not be attained or influenced by state gov't.  
 More official breaks allow people and companies to make CMM deals because we are all together.  
 No need to have all tables report.  
 None  
 Ok--but generally format did not generate benefit relative to time required--versus benefit of longer presentations from presenters. Mix at table made it difficult to get really useful discussion.  
 PA system was poor and loud feedback.  
 Personal contact team was very good to exchange with others.  
 Probably should have had only two breakouts to allow Q&A and some further discussion preview from

panelists.

Should have scheduled breaks.

Some topics were redundant, for example, cost of recovery, H2O Disposal, pumping, compression.

Table should be stacked with experts in each area.

Tended to become a debate session with a few dominating the conversation. This wasn't conducive to the overall purpose of this workshop, but that seemed to be only in the first session.

They were ok

Validates the importance of a CBM forum for the open exchange of ideas amongst CBM operators in WV.

Very good.

Very good discussions on all topics

Very good exchange of ideas.

Very good, beneficial.

Very informative and informal.

Very useful way to generate and document ideas at a forum.

Very Well Done!

We had a very diverse group which initiated a lot of conversation.

Worked far better than I expected.

**I learned about the event through:**

Alabama CBM monthly

Asked to facilitator and speaker

Charleston Gazette

Coal Bed Methane Forum

Conversation with Trina Waffle

Faculty

Gazette

Jeff Herholdt and Dev. Off.

My Boss

NACB Forum

Office of oil and gas

Other individuals

Participant

Personal comm.

Word of mouth

WV Chamber Newsletter

**Additional comments:**

"illegible"

Excellent site.

Good centralized location.

Good Job!

Good location to meet at--centralized.

Good site and very good logistics and event staff organization was outstanding.

Great.

Great place.

Great place for this, central location and beautiful.

Great site.

Hope this generated good ideas.

Instruct presenters to have slides with white background and dark lines. Power Point slides were hard to see.

Invited speaker.

Light on route 19 was not lit. This made finding the lodge extremely difficult.

Nice facility.
Nice Place!! Hope it uses WV gas.
Outstanding.
Screen was at a bad angle for speakers.
Sound system was problematic--too many problems.
Start earlier--time was limited.
Tables too close together (noisy).
The meeting was planned VERY well. I like the table assignments. :)
The sign on Route 19 was unlit after dark, so we drove right by the park.
Very accessible.
Very good.
Very good beginning.
Very interesting.
Why Stonewall Resort? Who paid for this meeting? Taxpayer??