



“Envisioning Our Future”

Energy Supply

Session A on Tuesday, April 9, at 9:30 – 11:00 a.m. in Moody Hall, Activities Room

Environment Virginia Symposium 2013

Conveners: Maureen Matsen, Deputy Sec. of Natural Resources & Governor’s Chief Energy Advisor
Michael Dowd, DEQ, Air Division Director

Sub-issues suggested by stakeholders in previous interviews with DEQ staff:

- Energy diversity: Appropriate role and balance of all energy sources, both traditional (coal and natural gas, for example) and renewable (solar, wind, hydro, biomass); effectiveness and resource impact of each energy source
- Siting of energy infrastructure
- Changing energy plans & portfolio over time, based on changing needs, costs, & available technology
- Reliability of the commercial grid (problems that could result from aging infrastructure, terrorist attacks, severe weather, and how facilities can prepare for such eventualities, such as military facilities’ goal of energy independence “behind the fence”); role & benefits of distributed energy
- Evaluating effects of specific energy sources’ market price on totality of energy planning
- Incentives to encourage renewable energy, especially involving local government partnerships with local industries
- Meeting increased energy demand
- Energy efficiency (technology, how consumers can finance, and user behavior; “smart” grid development)
- Aging out & retirement of baseload plants (e.g., nuclear, coal)
- Expanding net metering for farmers, residences, industries without shifting costs to those who do not self-generate
- Infrastructure to transmit natural gas & other forms of energy
- Grid modernization & integrating intermittent sources (e.g., wind, solar)
- Appropriate balance of affordability, reliability, and cleanliness of energy sources
- Sensible time frame for transitioning from coal and natural gas to renewables, etc.; incremental steps in transitioning away from fossil fuels
- Cost recovery issues for utility infrastructure as more self-generation
- Potential impacts of fracking, uranium mining, etc. on water supplies
- Impacts of using crops & forests as fuels/energy sources

If you have further ideas to contribute, please email them to carol.wampler@deq.virginia.gov.

Thank you for contributing to the dialogue on our FUTURE.

Envisioning: Energy Supply Conveners

MAUREEN MATSEN

Maureen Matsen is Deputy Secretary of Natural Resources and Senior Advisor on Energy to Governor Bob McDonnell. Over the last 3 years she has led the Governor's efforts to implement an "all of the above" energy policy in Virginia to support and secure adequate supplies of affordable, reliable energy for Virginia's citizens, businesses and industries. An expected offshore wind lease sale in 2013 and the transition of Virginia's state-owned vehicles to alternative fuels are among the Governor's many successful efforts.

Also a trial and appellate lawyer, Maureen previously served as Deputy Attorney General in Virginia, responsible for the Attorney General's Civil Litigation Division. Her work included oversight of the Consumer Counsel in utility matters before the State Corporation Commission, and advice to the Attorney General on energy legislative and policy matters.

MICHAEL G. DOWD

Michael Dowd is Director of the Air Division for the Virginia Department of Environmental Quality. In that position, Michael oversees the air quality planning, permitting, compliance, modeling, monitoring, and mobile source programs for the Commonwealth. Prior to becoming Air Division Director, he served as DEQ's Director of Enforcement. Before joining DEQ, Michael was an attorney in private practice with law firms in Richmond, Virginia, Washington, D.C., and Columbus, Ohio. Michael is a graduate of Columbia University and holds a J.D. from Vermont Law School. He is the 2013 Chairman of the Mid-Atlantic Regional Air Management Association (MARAMA), Chairman of the Mid-Atlantic Diesel Collaborative, and Co-Chairman of the Training Committee of the National Association of Clean Air Agencies (NACAA).

REPORTER:

Tammy Stephenson, Department of Environmental Quality, Program Coordinator, Office of Water Supply

Session Notes

Carol Wampler welcomed attendees on behalf of DEQ and introduced reporter Tammy Stephenson and the session conveners. She explained that the "Envisioning Our Future" sessions are part of DEQ's seeking stakeholder input regarding future environmental and energy priorities. . The Virginia General Assembly formed DEQ in 1993 by joining four agencies – State Water Control Board, Department of Air Pollution Control, Department of Waste Management, and Council on the Environment, which was responsible for long-range planning.

Now, at Environment Virginia, expert conveners will facilitate discussion among attendees to get information on how DEQ and other parties should plan for the next 30-50 years. The reporter will capture comments. Summaries will be posted on DEQ's and VMI's websites and will form the basis of white papers to be submitted to DEQ's Director and the Secretary of Natural Resources.

Convener Mike Dowd reiterated that DEQ is celebrating its 20th birthday this month and added that DEQ is now looking at envisioning where we will be environmentally in 30 years or so. This session is looking at Virginia's energy capacity. We spend a lot of time on permitting power plants, the energy sector. We would like to hear your ideas about our energy future, both from the industry and the users' side. He turned the meeting over to Ms. Matsen.

Convener Maureen Matsen encouraged interaction and dialogue among attendees on energy and the issues it raises now and the next 30-50 years. She added that we need abundant, reliable energy. One of the strongest assets we have in Virginia is low energy costs. It's one of the top five reasons industries locate here. Years ago, we had one or two electric appliances in our home. Now, the number is more like 25-30. We will be using more and more power to do what we do. Thinking about what energy looked like 25 years ago, we couldn't have envisioned it to look as it does today.

An attendee from Norfolk -- said that one of the things he's hearing across the Commonwealth is that we need to make this push for a balanced energy portfolio. So far, we have not realized, with wind, solar, bio-fuels, the kind of commitment from the Commonwealth to that balance. Many people share this concern and wanted to bring it to the table in the beginning.

Ms. Matsen asked this attendee what steps need to be made to make this happen. He replied that, when it comes to wind energy for Virginia and North Carolina, we have class 5 and 6 wind, we also have the ridges in the western part. Wind has been put down a bit in some quarters because of the cost and danger to birds. Birds actually learn about wind farms, per studies, and it is not a major problem. If we are to succeed and have a well-balanced economy, we need to pay close attention to things on the horizon. Example, National Geographic reported about a gentleman who captured solar energy 12 miles above the surface. If this could be done, it could possibly take care of 95% of the world's energy needs. We need to look at the potential for wind, solar, and others, pull away from fossil fuels, particularly in the next 30-50 years.

A representative of an electric utility company -- agreed with the Norfolk attendee, stating that we need to pay attention to the diversity of our energy supply. To maintain reliable, cost-effective energy, we need to do this. The coal industry is decreasing significantly. Her utility is in the process of converting some plants to natural gas, shutting down some coal-powered plants. The biggest single increase is natural gas. Almost everything being built today is natural gas. How much of our energy should come from natural gas? Not 100%, but what is acceptable? Not zero. It used to be a tiny percent, but will now be a larger percentage. Fuel prices fluctuate. Wind is far more expensive. In Virginia, it will be the State Corporation Commission (SCC) that determines whether we can build it. Do we just look at natural gas, or look at other types of energy -- nuclear, etc.?

Mr. Dowd asked the group how they saw the role of government regulation shaping the energy mix that we'll have in Virginia.

The utility representative -- said that her CEO is an advocate of having an energy policy. She thinks we need a coordinated energy policy at the state and national level. You have to look at the environmental and other impacts. With regard to environmental regulation, the Clean Water and Clean Air Acts have served valuable purposes. But today some of those laws could use some improvement to work better together. Her business has air, water, and waste impacts. We deal with these in a silo, but we should look at them more holistically. What matters the most? They all do. We need to look at them across the media boundaries. Example, carbon: the Clean Air Act was not written to address it. Congress needs to come up with a law to see how it's regulated in the states. Instead, EPA is forced to use the Clean Air Act to enforce. This is probably also true on environmental and industrial sides. We need better tools to address today's problems.

An environmental consultant -- added that the market is what drives the industries' plants. It is hard to predict this far in advance. SCC -- example: a utility made plans for plants, but SCC said no. Question is, should a power plant go to SCC to do wind, it would be looked at very closely, possibly be told no. We need to look 10, 20, 50 years out. If we're to look effectively long range, should we look at SCC reforms or how they see projects?

A representative of another utility company -- said he believes the SCC considers the utilities are alike, but they are different geographically. As he looked at how SCC has handled utility issues in the past, his company didn't always like how they responded. If you listen to why they didn't allow his company to recover the cost of renewable energy-purchased power, they didn't like what the customers would have to pay and they thought we were ahead of the curve. We weren't needed to meet current goals, so they denied the two contracts. As you think about why they make the decisions they do, they do treat the two utilities differently. Our customers' needs are entirely different. It will be a challenge going forward with projects that have a more than traditional cost. We'll just have to do a 'wait and see.' This representative said he knows that another utility is interested in the off-shore wind, which may be a great fit; but for his company, probably not. If we went to the SCC today for off-shore wind, they'd likely say no.

An engineering consultant -- commented on what he's seeing in New England. We're beginning to recognize the least-cost paradigm is good for the consumer, but not necessarily for the industry. The Public Utilities Commissions (SCC in Virginia) are having trouble getting out of the least-cost paradigm. We were building a bunch of gas plants in the early 2000s. At that point, gas costs were stable, then increased. These were natural gas supplied. Costs went from \$6 to \$14. A lot of industries that built the plants had to turn them over to the banks. All of a sudden, gas markets weren't that strong. States looked at fuel diversity. Now, paradigm has shifted again. Technology for renewables was driving the cost. Pricing gap between renewable and natural gas increases. 80% of energy produced in the northeast is natural gas. Need to look at diversity. Do we look at diversity for long term stability? Regulated utility comes in and does cost for service. Until there's a matchup between the utilities and SCC, will natural gas be the fuel for the future? -- Yes.

Mr. Dowd said that, as an interested regulator, he is concerned whether natural gas prices will stay low forever. Do you see major natural gas plants being built instead of others?

The consultant -- said to be careful. If we look at shale gas, they say the supply is there – it may or may not be. The point is the predictions on the markets are that gas will stay at \$5 - \$8 dollars BTU. The world markets dictate that a lot.

Mr. Dowd asked if there a representative of the coal industry in attendance. No one responded.

Ms. Matsen said there's an irony that the resource underdeveloped is nuclear. It eliminates emissions entirely and is a clean source of base-load generation, and it is safe, as illustrated by the performance of North Anna in last year's earthquake. In addition, once construction costs are over, then it's cheap. High-cost renewable is high cost primarily because it is high risk; it will come into the 'sun' (no pun intended), as technologies prove themselves; nuclear is already there. There's a question – what role should nuclear be playing in the fuel mix? What do we do about the pure market incentives that are driving us to just gas?

An energy developer -- commented that he would like to introduce something contrary. He doesn't agree that renewables are more expensive than traditional energy. Traditional energy is artificially cheap, doesn't account for costs to the environment, health, other issues that have not been factored in. In 30-50 years, when we compare investment alternatives for Virginia, he would like to see that comparison on level ground. A number of non-traditional sources of energy are actually more attractive.

Another attendee -- asked why we're one of the few states that doesn't have a mandatory renewable standard. If we had one, renewable energies would be a safer bet, more mainstream. She asked if someone could tell her why we don't have a renewable portfolio.

A utility representative -- responded that in Virginia, the General Assembly chose to dictate rates so that new renewables were less attractive to the industries.

Ms. Matsen added that she thinks there was concern about cost. When electricity was re-regulated in 2007, they decided to use carrots instead of sticks. Incentives seem to be working on what is set in voluntary standards. The utilities are meeting the voluntary goals, and the SCC is approving projects to allow them to do so. There was a cost fear, so they wanted some flexibility. It's a voluntary renewable portfolio standard instead of mandatory, but it seems to be working equally well. The goals are being met.

The Norfolk attendee -- responded that, with all due respect, he rests his case. The fact is we have an opportunity in Virginia to address the issues we're now discussing. But there's been no political will to accomplish it. For those of you who will be here in 30-50 years, he hopes to see the ability to hand off to our young people clean air, clean water, and a quality way of life. He understands what the regulators are saying, but all he's heard this morning – cost, cost, cost. He thinks in fairness, we should also say, the assessment of the cost needs to include health. He's not opposed to nuclear energy. The biggest issue for this source is disposal of waste. He lives in Hampton Roads. With all the medical institutions there, we know that issue is significant. We need an even playing field for discussion. You can find lots of information, if you want to cherry pick the results.

Mr. Dowd said he would like to pick up on that point, and asked of the energy developer what specific programs he would like to see or advocate to internalize externalities with certain types of fuels, energy sources.

The developer -- responded that obviously there is not a simple answer, and he may not be the ideal person to answer. But, we're talking about a 30-50 year horizon. He is thinking of his wish list. First, he would like to see more comprehensive and intelligent research on the actual cost of renewable energy. How much did this country spend on defending our "energy source"? He would like to see this layered into the cost appropriately, so when we compare to other renewable energy, co-generation, natural gas, etc. We/Virginia need to invest in understanding and having a more accurate picture of what the inherent costs are. There are obvious concerns that have slowed the development of resources. In Pennsylvania, they started fracking, problems with well water surfaced. We don't know what the cost is for preventing these types of problems. If we did and we included that into the cost of natural gas, we'll have a better idea of the actual cost.

Ms. Matsen asked what role cost should be taking in our thinking. Should cost be driving our decision making? Whether or not it should, it does. Case in point, regulations of coal-fired power got more stringent. Utilities had to retrofit coal-fired plants to meet higher standards. Rate payers had to pay those costs, reflecting the externalities. The outcry was startling. From a political standpoint, this became a real problem for the utility who was trying to be an environmentally responsible party. How do we set priorities and make choices? Maybe we should be willing to pay a little more to make off-shore energy more cost comparable. She admitted she doesn't know what the secret is to breaking through the logjam to getting us from where we are today to where we need to be.

Another attendee -- said she would like folks to share political component, etc.

Ms. Matsen said she thinks folks are willing to do what they can do without significantly raising the price. Once you raise the price, people react. Taxpayers are rate payers, rate payers are taxpayers.

The developer -- added that when there is an increase in cost through taxes to account for some of these things, rate payers also pay for health costs, etc. Which slice of the tax bill are you getting savings from? He is not in politics and recognizes the difficulty in conveying the message. He'd like his 10-month-old son to attend this conference in 30 years and see some benefit of the work we've done.

Another attendee -- said his specialty is mining. In his opinion, there are a lot of individual perspectives, coming from different angles. There should be recognition that no one entity will be self-sufficient. There should be a clear, well-articulated, national energy policy. There should be a clear direction of where we're going. There are plenty of places to put nuclear waste. There are certain places in the country amenable to accepting this, using wind energy, etc.

A utility representative -- commented that over the last six years, his company has spent over \$2 billion putting environmental controls on coal-fired facilities. We're in the process now of closing some of our older coal-fired facilities, converting one to natural gas. His customers are

paying 60% more for their power today than they did last year. For his company, it is about balance. We spend every day trying to find the balance of how we improve the grid, etc., in the most cost-effective way, so our customers enjoy the most cost-efficient energy. Knowing customers are concerned with food on the table, gas in their cars, paying utility bills. Here's how he sees things – we all really want the same thing. 30-50 years from now, he hopes the technology tells us that there's a new type of renewable that is a base-load generation. Today, it's natural gas, coal, and nuclear. We're now looking at diversifying the mix. What we need to find is technology and time to implement it. It was a good business model/decision his company made to improve plants. In the future, as technology advances, the investment will be put forth to put the new technology into place. Re EPA: you're not going to build a new coal facility today. Technology doesn't exist to build such a facility under new regulations. We all want cleaner air, cleaner energy. We hope to see technology and time come together.

A VMI staff member -- said she puzzles over citizen complaints about electricity rates when citizens pay so much for cell phones; she wonders about the psychology of paying for things. How, in terms of educating the public, do we charge our cell phones without power? In terms of public policy, the public perception of comparison of utility bills (water bill compared to dinner out, etc.).

Ms. Matsen said one piece of informing them is the experience with de-regulation. Consistent with what we saw in the situation where the SCC disallowed cost recovery. She doesn't think we expect the government to regulate what we pay for cell phones. So, we pay it. But, with utilities, we have a history of regulating. As soon as we saw the experience in the northeast with deregulation, the voters of Virginia said we're not doing that, and we re-regulated utilities in Virginia. She doesn't know what the answer is, but this is the experience with our behavior as consumers and voters. She doesn't know if we need to change the mindset. Ms. Matsen asked attendees' thoughts.

A consultant and former legislator -- responded that most of the discussion today is about generation, not efficiency or conservation. Perhaps utility companies can give us insight on investment and technology, working on the demand side. When Virginia energy plan was done in 2007, Chapter One symbolically was on conservation and energy. The Governor purposefully made it Chapter One. Maybe we should spend some time talking about efficiency and conservation, generating less.

An engineering consultant -- added that looking at statistics on the demand side, shaving off peak demand, the demand side has grown, LEED design, management side is helpful, but may not provide enough increment to decrease load demand. If economy declines and demand decreases, may not be the answer. Technology is the answer. When we can store renewable energy and deploy it at peak loads, we'll be there. Coal can't cycle very well; they're base-load operators. What we're seeing is peak centers coming in to meet the demand at high peak. Transmission system is old. When we put intermittent capacity in old lines, they are shorting out. We're in this shift of a diversified fleet mix, when intermittents are coming in from off-shore, on-shore, or base load, all coming together. He added that he attended an international workshop, and the Europeans in attendance were taken aback that we don't have a national energy policy. Instead it is left to the states, which is a very fragmented system. Takeaways were that policy should be on a national level, spread across the board. At the end of the day, it's going to cost more. Because

we can't get to higher pricing, it's not moving forward. As other SCCs are saying we're not going to pay more, the technology is stalled. The market is driving new technology that will bring the cost down. The Europeans said they started out with smaller projects. They have carbon trading rules as well. It's a complicated I-cloud right now. With the lack of national direction and commitment, we can't move forward. It is politics, pricing, policy. We will have to pay more for energy, no doubt.

Ms. Matsen said we needed to wrap up the session and would like to hear from those who have not said anything yet. She asked that they go around the room, and those who have not spoken give a single question that needs to be addressed regarding energy to move forward for next 30-50 years.

Ms. Matsen said that something that hasn't yet been mentioned is small-scale and local power generation as opposed to large generation. Bring it down to smaller scale.

A representative of an electric cooperative -- said that siting existing technology is a challenge; not easy to place, have to be in certain areas. 50 years from now, more people, urban sprawl.

A county utilities representative -- added that regarding regulatory reform and eliminating silos, regulations don't always play well together. Regulations were developed at different times to solve different problems. Regulatory reform would help a lot.

A planning district representative -- agreed that, although the demand debate goes on, we need to put emphasis on conservation and energy efficiency. He talked about things his agency has done. Just in this small example, they have cut electric bill 50%. It starts with individuals and businesses (lighting, HVAC).

A marine scientist with a state agency -- said he is here to learn trajectories of the energy world. He serves as one of the scientific advisors to the state (Chesapeake Bay), alternative energy. He wants to help the energy and the state, water supply, how they're all intertwined.

A community-college professor -- said they are considering having an environmental science curriculum, interested in what people thought about that. As a citizen, he is concerned about energy preparation in Virginia.

An engineering consultant -- said she'd like to see discussion about cost and what goes into it.

Another speaker -- added that talking about policy and issues of conservation, the question that came to mind, if we're keeping the rates at a place that is comfortable for consumers, where's the motivation for rate payers to think about conservation and thinking long-term to make sure energy is available. Look at what different states are doing. It doesn't seem that Virginia sees this. Balance.

A representative of local governments -- said that one of the things that comes up with his constituents is how do local governments make these investments when the payback period is so long. How do localities get access to funds to assist (investments)? Rate of return, look at in changing demand.

A representative of a state agency who handles environmental education -- said he gets a lot of questions related to energy.

An attendee -- said he was curious if there are new nuclear projects in Virginia or in U.S. Yes, Dominion, per Ms. Matsen, a third unit on North Anna. The attendee asked what the major hurdles are. A utility representative said her company is seeking to get the licenses from SCC and DEQ, and the biggest challenge is cost, new design, to get approved from SCC, must be cost competitive.

Another utility employee -- asked how we drive our national politicians to get a national policy, what do we do to get them to move along? Don't wait until there is a national crisis.

A utility-plant operator who works with coal -- asked what can we do as consumers to use less. There are consumers who cannot pay bills, cannot afford to put in new windows, etc.

An engineering consultant -- said that everything comes back to education. We are a Walmart-oriented society. Explain why rates would go up for pollution control – education.

A state agency retiree -- added that the biggest thing is that peak energy demand is driven by independent energy use. Regarding conservation, it is harder for homes to do that through efficiency.

An attendee -- who helps communities to get adequate water and sewer, works in coal communities. There's the issue of coal-bed methane in southwest Virginia. They think natural gas will play out in 30 years and they'll be back in business. They are still mining a lot of coal. He is working with impoverished people in southwest Virginia and can see the toll it's taking on them. There are many elderly and others on fixed incomes. From a water perspective, the largest use of ground water and surface water is for thermal and electric cooling. They try to come up with alternative solutions for water supply.

Another attendee -- from a manufacturing perspective, said he feels our facility in Virginia is like others in Virginia, we try to reduce energy consumption. One thing we notice in the U.S. is that when we look at various states, incentives for reducing energy aren't there. It isn't in Virginia. It could help in trying to reduce demand. Why does Virginia not implement incentives for industry? There are some for individual and commercial.

A paper mill employee -- said his questions involve air permitting issues and how complex the process has become. Nobody understands how to go about permitting anything anymore. It's very difficult. Talking about changing fuels, it's quite a challenge. We use a lot of biomass at our mills. We produce steam, not power. How can we fix the air regulations to facilitate energy in the future?

Another attendee -- used the example of a landfill using (methane) gas for the industry next door, but couldn't get it approved. Mr. Dowd said they should try again, as there are many of these landfill gas projects now in Virginia.

A community college representative -- said he is looking at how to reduce energy load in the grid. We need to think bigger, also thinking smaller. He echoed Ms. Matsen's initial statement – decentralizing is the way to go. He's heard a lot of excuses of why we can't do things, why it's

cost prohibitive. In Virginia, we have the most LEED projects. Leadership is hard. Fossil fuels are not going to be there forever. We need to think 50 years into the future. He added that he is not speaking for the college. He disagrees with opening a new nuclear plant. No one has proven that we can store nuclear waste effectively. He didn't have a specific question, but a statement that we must get beyond thinking that fossil fuel is cheap, will be there forever. Also, no one has mentioned geothermal, hydropower. If we decentralize things and help those things, make new buildings net zero, we'll put the power companies out of business. Power companies need to think of how they'll stay in business.

A representative from a wastewater treatment facility -- asked what our customers want. That's one thing we haven't talked about. We serve the public; we need to have a more grassroots discussion. There are a lot of smart people attending this conference, but we need to meet the needs of the people we serve. We need to have more discussion. They may be okay with power costs going up if they know there's a plan in place for the state to work on it and make it better. This is an environmental conference and this is the focus. We need to figure how to bring the costs down and meet the fundamental needs.

Another attendee -- mentioned issues of availability, reliability, security, transmission capabilities.

The Norfolk attendee -- added "conservation, conservation, conservation"; and fix the Renewable Portfolio Standard (RPS) in the state of Virginia.

Ms. Matsen concluded by noting progress on off-shore wind. She wanted to make sure everyone knows this: there are unsung heroes at Department of Mines, Minerals, and Energy, as well as volunteers on Off-shore Wind Authority, who have been working hard over the last three years. One of the first of three leases on off-shore wind project should be approved, and Dominion is an important partner on this.

Mr. Dowd thanked everyone for coming, and added that this was one of Ms. Matsen's last acts representing the Secretariat of Natural Resources before she leaves for a new job. He and Ms. Wampler presented Ms. Matsen with a book and a pin, as tokens of our esteem.

Ms. Wampler said one of the gifts is Cabell Brand's book, "If Not Me, Then Who?" There is also a copy of the book as a door prize, which was awarded to attendee Steven Herzog.