Shenandoah Valley Poultry Litter to Energy Watershed & Air Advisory Group
Meeting Summary
February 11, 2011

Maureen Matsen , Deputy Secretary of Natural Resources and Senior Advisor on Energy, and Anthony Moore , Assistant Secretary for Chesapeake Bay Restoration, welcomed the Shenandoah Poultry Litter Power Generation Advisory Group.

Co-Advisors of the advisory group are Rick Weeks, Chief Deputy Director, Department of Environmental Quality and Russ Perkinson , Assistant Division Director for Nonpoint Source Programs, Department of Conservation and Recreation.

Advisory Group Members in Attendance:

a. Jeff Corbin - Senior Advisor to US Environmental Protection Agency, Region III
b. Katie Frazier - Agribusiness Council
c. Don "Robin" Sullenberger - Shenandoah Valley Partnership
d. Darrell Marshall – Virginia Department of Agriculture and Consumer Services
e. Martha Bogle and Jim Schaberl - Shenandoah National Park Service
f. Angela Navarro – Southern Environmental law Center
g. Terry Walmsley – Fibrowatt
h. Kristen Hughes – Chesapeake Bay Foundation
i. Mark Dubin - Chesapeake Bay Program
j. Tony Banks – Virginia Farm Bureau
k. Hobey Bauhan - Virginia Poultry Federation
l. Tim Moore – Virginia Military Institute
m. Jeff Kelble - Shenandoah Riverkeeper
n. Emil Avram – Dominion
o. Jim Pease – Virginia Tech
p. Dave Frackelton - Shenandoah Resource Conservation and Development (RC&D) council
q. Susan Bulbulkaya - Chesapeake Bay Commission

Meeting Facilitator was Angela M. Neilan, Community Involvement Specialist, VA DEQ
Note Takers were Salud Layton, Dominion, and Neil Zahradka, VA DEQ

Rick Weeks explained that the purpose of the Advisory Group is to determine the scope of work for a study focusing on how siting a waste-to-energy poultry litter facility in the Shenandoah Valley will impact/benefit air quality and the Chesapeake Bay Watershed. He advised the group to look at what questions need to be answered to determine if a project like this will work. Rick Weeks responded that the state will take what is advised today and develop the scope for the study.

Russ Perkinson then presented key issues regarding the Chesapeake Bay TMDL Watershed Implementation Plan. The project would require a large amount of poultry litter removal and perhaps other options. A study must look at the by- products and environmental impacts for each option but the main focus is on poultry litter.

Emil Avram , in his role as Director Business Development, Dominion, provided an energy company's perspective on the types of questions that need to be answered by this research endeavor. He explained that the State invited Dominion to be a stakeholder in the net environmental impact/benefit analysis. Dominion is in the exploratory phase of evaluating a poultry waste-to-energy facility, but no decisions about moving forward with such a project have been made. Dominion recommends that the analysis account for economics, technical and environmental impacts. Emil Avram then suggested the following questions for the group discussion:

> What is the existing baseline of poultry litter availability? What is considered excess poultry litter? How does this fluctuate throughout the year?
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> What types of impacts would a waste-to-energy facility have in the air and watershed?
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> How would this project compare to other options that would reduce the nutrient load in the watershed?
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> Which alternative would be the lowest cost option to the state?
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> How sensitive is the net impact/benefit analysis to the amount of litter that is used as fuel, or the location of the facility?

Facilitator, Angela Neilan, began the discussion by outlining the four tasks detailed in the invitation to the advisory group:

> Determining net nutrient load reduction levels - taking into account reductions from litter-to-energy system as well as potential new load from replacing land application with commercial fertilizers.
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> Analyzing effects from emission deposition on the Chesapeake Bay watershed and effects on Shenandoah National Park air quality.
>
> Analyzing various waste ash handling options to determine impact on Chesapeake Bay watershed.
>
> Analyzing and comparing costs of alternative solutions for nutrient reductions in the Shenandoah Potomac watershed

Facilitator asked advisors to identify and discuss questions and issues that need to be answered by the study and should be included in the research agenda:

> What are the impacts to the environment-air and water quality- in addition to economics?
> Participation from agricultural interests is crucial balanced with the importance of environmental protection
> Research should include workforce development and economic alternatives

What are the impacts to the poultry industry and poultry growers? How will growers be compensated for litter?

What are the social Issues such as impacts from truck traffic, added emissions and location of such a facility?

What methods would be used for outreach to and identifying impact on communities?

How can the best science be used to evaluate alternatives?

Can this study be funded for and produced by Universities and technical experts who are objective and have no stake in the outcomes?

What is the timeline for this research and how is this related to the Chesapeake Bay TMDL plan?

The study should consider how the Shenandoah Valley will look in 2025, not just near future.

Evaluate the fuel supply available now, and in the future.

Future permitting requirements may change the poultry industry.

Consider potential future changes in litter supply.

What effect will CAFO regulations have?

Public Health issues should not be separated from environmental and economic issues

Should the study consider incineration technology only?

Which technology will be used for the project and how will alternative technologies be evaluated?

Can other biomass be included in addition to poultry litter?

What scale? Centralized (large) or on-farm (small) and associated transportation issues

Evaluate other smaller, decentralized solutions

What are the costs of alternative solutions?

Project must be feasible and of commercial scale

Dairy manure applications may be restricted in the future so research should include a solution for this waste as well.

Farmer Economics must include value of Carbon in soils and nutrient trading options

What is the cost per lb nutrient conserved?

Examine long term soil viability.

Suggest looking at combined cycle technologies where the waste heat can be used at an industrial site or a university

Alternative solutions should be evaluated-the baseline is based on 75,000 tons of poultry litter removed from the Watershed.

Investigate what's already happening in this field, such as Fibrowatt in Minnesota

Look at work done in other Bay states

Phosphorus balances have been studied by Mid Atlantic Water Program @ Univ. MD

Potential resource in Green Engineering program at Virginia Tech and Air research at VMI, JMU

Explore the controversial nature of previous projects and ways to address citizen concerns

Chesapeake Bay program could be available to assist with the research and modeling

What additional stakeholders need to be involved in this project? Include other stakeholders in determining scope of work-particularly need a working farmer on the advisory group

Change the location of the next advisory meeting to Valley to increasing transparency and deal with misinformation that is out there now

After a short break, the advisory group focused more closely on the environmental issues and impact of poultry waste to energy project in Shenandoah Valley to the air quality and Chesapeake Bay watershed.
As the group re-convened, Rick Weeks asked advisors to focus on the environmental impact of removing nutrient from the Valley using an energy facility.

Russ Perkinson suggested the group look at what is needed to quantify the benefits and how the impacts are determined.

Emil Avram suggested the group consider the inputs needed for an energy facility, and the outputs resulting from such a facility, but that the facility itself is deemed a "black box" at this stage. There is no need for this advisory group to determine the type of facility.

Facilitator Angela Neilan tasked the committee to focus their discussion on the positive and negative impacts of shifting litter from all being used as fertilizer to being converted to energy, air emissions, and ash(fertilizer)

Discussion points brought forward by advisors:

Something needs to be done to improve water quality. Removing 75,000 tons of poultry litter/yr has already been determined as a necessary action.

Must look at how this alternative affects air quality.

What are the net impacts if 150,000 tons of poultry litter is removed from the watershed but replaced with commercial grade fertilizer? What are the impacts to the air from the current land application practices? There must be some ammonia currently going into the air with land application. What is the net environmental benefit of using litter as fertilizer versus using litter for energy? Will litter be replaced with commercial fertilizers? How much nitrogen and phosphorus is removed from agricultural application as litter vs. replaced by commercial fertilizer?

What are the benefits to the Shenandoah River? Look at algae and odor as parameters. Is there an issue with the pesticides in the wood chips that might be burned? Is arsenic an issue?

What is the sustainability of the fuel? Can emissions be determined from a pilot scale project, then scaled up? What is the heating value of the fuel, compared

to heating value of other fuels? What type of regulations does EPA have on this type of Biomass? Is Bio-char good for the soil? Look at emission depositions, and how it affects the soil. Analyze micro incineration emission as well as emissions from transportation.

Arsenic has not been attributed to fish kills in the region. DCR has already evaluated the arsenic issue, and determined the poultry industry is not at fault. The poultry growers have nutrient management plans. Litter that is land applied must meet regulatory requirements as well. Who has measured the amount of N and P not making it into streams?

Bay model is being revised. Make sure research is accurate, reflecting the latest models.

Comparison of effects ammonia emissions have on air and water when land applied versus effect on air and water from emissions coming from a large centralized waste-to-energy plant. Also must incorporate effects of the nutrient trading program (HB1102). If nutrients are being reduced in the agricultural sector, they should get the credit.

Review agro economics of phosphorous and nitrogen.

Review unintended consequences of each of the alternative solutions. We have baseline information on existing air quality and TMDLs; consider the information we already have.
What happens to the chemical composition of the Nitrogen, Sulfur, Copper and other pollutants from poultry litter in a high heat environment? Are dioxin and furan an issue?

Arsenic should be reviewed to rule it out as an issue. Also, need to evaluate how much poultry litter is currently being land applied and use math to determine what the actual excess amount available as potential fuel is.

Evaluate why Fibrowatt was able to build in Minnesota, but is not having success in the Eastern Shore.

Also, need to look at potential regulatory changes, such as the nutrient trading program, that might affect pricing, and the overall economics of any such project.

Fibrowatt's work on the Delmarva Peninsula is complicated since Fibrowatt needs to find a long term PPA. The Company is also evaluating what to do with the ash.

Look at current legislative measure that might be outlawing phosphorous in fertilizer.

Find the chemical composition of the ash

Facilitator Angela Neilan then asked for any additional impacts that should be considered.

The following are the advisors' major issues to be considered in the research scope of work (as summarized by the Facilitator and Note Takers):

N losses from land application sites
Non-nutrient impacts (e.g. arsenic)
Sustainability
Heating Value
Fuel characterization (BTU/lb)
By-products and the effect on soil
Emissions deposition (modeling, pilot vs. full scale)
Incineration Emissions vs. transport emissions
Realistic Litter Quantity Estimates are needed
Quantity may be affected by CAFO regulations
Consider Organic fertilizer benefit to soil
How much Nitrogen and Phosphorus from land application actually reaches the stream?
Bay Model portrayal – must be accurately modeled
There are end-user regulations on poultry litter – none on commercial fertilizer
Ammonia emissions: Central vs. on-farm
Toxics emissions
Conversion of Ash to a Saleable Product
SB1102 – Nutrient Trading, Nonpoint vs. Point Source (1:1 vs 2:1), How will these credits be traded?
Ultimate destination of Nitrogen and Phosphorus
Agronomic rate for N vs. for P
Ammonia-N and particulate N
Unintended Consequences
What is the baseline? Will improvement be measurable?
What has been done already (i.e. literature review is important)
Net benefit – Energy vs. fertilizer
Existing air quality issues in Valley
Chemical changes that occur in incineration
All variables must be addressed in Bay Model
Aesthetics/Heritage in Valley
Permitting issues: arsenic
Net nutrient reduction – Is litter over-application occurring or not?
Obtain information from Fibrowatt plant in MN
Commercial Implications – Power Partnership Agreements
Economic implications: tax incentives, trading, legislation?
Impacts from Dioxin, pesticides, acid deposition, particulates
Siting/Local Impacts
Ash: regulatory control, tracking, central or dispersed, chemical content, P content
Impact of pending legislation on fertilizers containing P

The floor was opened for Public Comment:

a. Lee McWhorter – a citizen from Page County: Objects to burning of poultry litter as the pine shavings, when burned, release Dioxin and Furan. He is a Vietnam Veteran on disability for being exposed to Agent Orange. Public health is a major concern with the burning of the litter. He suggests we stabilize the litter for safe land application. He mentioned that in Page County, Fibrowatt was kicked out, and the Economic Development Authority was fired.
b. Josh Frye - Owns a poultry gasification process in West Virginia. The Bio-Char byproduct is an activated carbon that can be used to clean water and air (mentioned land reclamation). The Nitrogen and Phosphorous is stabilized so it is safe for land application. These systems can produce income for the growers. He suggests forming small cooperatives in various parts of the region where such a unit can be used by various growers.
c. Joy Lorean – a citizen who works in the Shenandoah National Park area and has seen air quality deteriorate over the past 30 years. Can no longer see Massenuten Mountain from the SNP. Citizens of Page County do not want an incinerator at the foot of their mountain. She also stated there are a lot of empty chicken houses in page County now. Concerned about arsenic that is fed to chickens to get rid of parasites.
d. Mike Waver - President of Poultry Growers organization. States this issue is a regional issue, not just a Virginia issue. Mentioned that the Minnesota plant had air emission issues. Concerned that no poultry growers were asked to participate. His organization is meeting next week to discuss a pilot project that will look at bio-char or composting of litter. Economic impacts to growers must be evaluated.
e. J.D. Cave – Page County Board of Supervisors: Asks that the next meeting be held in the Valley. Page County does not want a Fibrowatt Plant.
f. Dave Libble from the Eastern Shore: Requests for Fibrowatt to share some of its information on fertilizer.

Rick Weeks and Russ Perkinson thanked the advisors and those who provided public comment. The leadership group will develop a draft scope of work that will be discussed with the Advisory Group.
The next meeting of the Advisory Group will be held in the Valley and a grower representative will be invited to join the group.