



www.mdclimatechange.us

MEETING SUMMARY
MARYLAND GREENHOUSE GAS & CARBON
MITIGATION WORK GROUP
Meeting #6, January 15, 2008
9:00 AM – 3:30 PM

Attendance:

1. MWG Members:

Tad Aburn, *MDE/ARMA*, Chair

Misty Allen, *Mirant*

Uri Avin, *Parsons Brinckerhoff*

Dr. Michelle Harris Bondima, *Baltimore City Community College*

Joel Dunn, *The Conservation Fund*

Nancy Floreen, *Montgomery County Council*

Ed Giugliano, *AES Warrior Run*

Frank Heintz, *Citizen*

Brad Heavner, *Environment Maryland*

Debra Jacobson, *DJ Consulting*

George Kelly, *Environmental Banc & Exchange*

Michael Li, *MEA*

Bill Livingston, *W L Gore*

Elizabeth Martin, *Natural Resources Defense Council*

Mike Malinoff, *City of Annapolis* (by phone)

Dr. Cindy Parker, *Johns Hopkins Bloomberg School of Public Health*

John Quinn, *Constellation Energy*

Matthias Ruth, *UM CIER*

Dr. Lise Van Susteren, *The Climate Project*

2. MD Department of Environment (MDE):

Liz Entwisle, MDE

Brian Hug, MDE

3. Center for Climate Strategies (CCS):

Ken Colburn, *Facilitator*

Katie Pasko, *Assistant*

Joe Pryor, *Facilitator*

James Wilson, *Facilitator*

Public and others in attendance:

Adreinne Attalimi, *MD Coal*
Madeleine Carmichael, *observer*
Bill Cunningham, *UJAE*
Jerry Hughes, *PSC*
Howard Simons, *MDOT*
Mark Southerland, *Verser (DNR-PPRP)*

Background documents:

All posted at: http://www.mdclimatechange.us/GHG_Carbon_Mitigation_WG.cfm.

1. Agenda
2. Overview Presentation
3. Draft Policy Option Catalogs and Descriptions
 - a. Agriculture, Forestry and Waste Management
 - b. Energy Supply
 - c. Residential, Commercial and Industrial
 - d. Transportation and Land Use
 - e. Cross Cutting Issues

Discussion items and key issues:

Tad Aburn welcomed all the members and asked all to introduce themselves. He informed the group that the Interim Report was made public that morning, 15 January 2008 and will be posted on the MD website. It was received quite favorably.

He also informed the MWG that RGGI rules were voted out of the advisory council. The vote was unanimously in favor with two abstentions.

Generally, these rules will require power plants to cover their emissions with credits. Each state has an allocation of credits equal to their emissions. The credits are to be auctioned to emitters. The current estimate is \$2-5/ton.

The proposed auction format will likely follow a specific auction format in order to avoid market collusion and manipulation. This will incorporate fixed price, sealed bid, single round bidding, which will allow the market to find a fair price.

Colburn reviewed the agenda for the meeting and provided additional updates. He reported that the Inventory and Forecast draft has been completed. As the work of this group continues, the values will be refined. The report is posted on the website. Aburn cautioned the group to keep the I&F values in perspective. Ozone levels have been tracked since the 1970s and are reliable. Tracking CO₂ is a new process and will take time to refine.

Colburn explained the policy review process. The MWG is asked to approve each draft. Voting will be Unanimous, Supermajority or Majority. A supermajority vote is support by approximately two-thirds of those present.

The MWG and the TWGs have completed tasks 1-4 and are currently working on 5-7. Where feasibility issues are identified, alternatives should also be outlined if at all possible.

Tad Aburn suggested that many of the goals expressed could be implemented soon. There is no reason to delay implementation unnecessarily.

Policy Option Draft Review

Agriculture, Forestry and Waste

Gloria Flora presented an overview of the nine policy options. There are currently four people working on quantification issues for AFW, reviewing a variety of fuel sources. Currently, 2002 dollars are being used, as that data is widely available. These values will be adjusted to 2006 dollars later in the process.

There are four components to these options: agriculture, forest, wetlands and coastal. There is a lack of data for the wetlands and coastal components. Members are requested to forward data sources for these areas.

Note that MLPF is the acronym for the Maryland Land Preservation Foundation.

Each option is summarized below:

There are no substantial changes to the goals for AFW-1-3. Updated land use change data will be available in early March. This data will be incorporated at that time.

AFW-1 - Forest Management for Enhanced Carbon Sequestration with Mitigation of Forest Loss Due to Insects, Disease, Pests and Invasive Species

Approved to proceed by MWG

AFW-2 - Managing Urban Trees and Forests for Greenhouse Gas Benefits with Mitigation of Forest Loss Due to Insects, Disease, Pests and Invasive Species

Approved to proceed by MWG

AFW-3 - Afforestation, Reforestation and Restoration of Forests and Wetlands

Approved to proceed by MWG.

AFW-4 - Protection and Conservation of Agricultural Land, Coastal Wetlands and Forested Land

Approved to proceed by MWG with no objections.

There are four areas to quantify for this policy option: Agriculture, Forest, Wetlands and Coastal. There is a lack of available data for Wetlands and Coastal models, so these areas

have not been quantified. Members are asked to provide data sources for these areas, if possible.

AFW-5 - “Buy Local” Programs for Sustainable Agriculture, Wood and Wood Products

Approved to proceed by MWG

As noted in Table B, there is a direct correlation between the availability of produce from Farmers’ Markets and consumption of local produce. The reduction of GHGs from this shift is quantifiable, but not enormous.

The cost data is still under development.

AFW-6 - Expanded Use of Forest and Farm Feedstocks and Bi-Products for Energy Production

Approved to proceed by MWG.

The use of solid, not liquid waste byproducts are included. These include forest and agricultural residues, such as methane from livestock.

Biomass costs are based on the figures in the Inventory and Forecast.

There are two means of reducing emissions used in the quantification, capture and utilization. Table G of the I&F show the offset of electric produced from fossil fuels.

Note that 100% of the coal offset will be used in the quantification of the policy option.

AFW-7 - In-State Liquid Biofuels Production

Approved to proceed by MWG with inclusion of lifecycle issues.

Cellulosic fuel feedstocks are emphasized in the quantification. The use of food-based fuels do not reduce GHGs globally, they impact local food supplies and the costs are not beneficial.

The cellulosic feedstocks reviewed include forestry based feedstocks and MSW. Diesel fuel is assumed to be generated from vegetable oils, CH₄ and EtOH. Note that the current level of 100% soy used for biodiesel will be reduced over time. Since cellulosic ethanol has a lower imbedded energy, the maximum availability will likely be reached. Beyond this point, undesired deforestation will occur.

The use of chicken litter should be included in biomass calculations.

There is a wide range of values generated. The MWG agreed to analyze three scenarios:

- Scenario A: Production based goals. These will be adjusted according to price and availability assumptions. Initial quantification shows that there may not be sufficient cellulosic EtOH available to meet the goal. This will support the use of other scenarios.
- Scenario B: Quantification will be based on the upper bounds of the assumptions.

- Scenario C: Quantification is based on new technology development to meet production goals using instate feedstocks.

As these quantifications are developed, baselines will be used for comparison.

AFW-8 - Nutrient Trading with Carbon Benefits

Approved to proceed by MWG.

This concept is being addressed by many different groups nationally, with a consolidation of efforts underway.

Nutrient trading focuses on water quality, on a watershed basis. A member asked if vehicular emissions are included, since such emissions are deposited in water from the atmosphere. At present, these emissions are not included in the model. Estimates of vehicular miles vs. water absorption are very complicated and generally do not significantly impact these programs.

The concept of a cap has been introduced by the TWG and is in development. The TWG is approaching the GHG reduction goals through the quantification of nitrogen in fertilizer. Emissions will be reviewed based on current applications of fertilizers. The TWG will determine the types of costs involved for the quantification. A member also asked that the TWG determine the impact of a 20% reduction of the increase in efficiency on GHG emissions.

The current quantification focus is on NO₂. The TWG will expand this to other forms. The administrative costs of a nutrient trading program will also be costed.

Nutrient trading programs use water quality data from watersheds as basis. A member asked if vehicular emissions are included in the calculations, as these emissions can be deposited in water bodies from the atmosphere. Such emissions are not currently included, as the necessary models are too complex for currently available data.

AFW-9 - Waste Management through Source Reduction & Advanced Recycling

Approved to proceed by MWG.

Specific reduction goals for this policy option will be reviewed through 2050. New figures are not yet available, but will be incorporated as they become available. The waste stream composition is based on recycling and composting components.

The quantification is based on reductions of 17.6 tons by 2015, 29.3 tons by 2020 and an aggregate reduction of 187 tons from 2008-2020. The savings will be costed at \$6/ton CO₂e emissions.

The EPA Waste Reduction Model is being utilized for this quantification. Baselines are based on current MD recycling levels and forecasts.

Note that mercury waste is not included in this model. Fuel costs for recycling are very high due to federal requirements. Local means to dispose or destroy mercury waste will need to be developed for mercury waste in order to bring costs down.

Ed Dexter of MDE is a resource for waste issues.

Cross Cutting Issues

The first four sections of the templates have been completed for all policy options.

CC-1 - GHG Inventory and Forecasting

Approved to proceed with no objections

The TWG recommends that a periodic forecast be performed, in 5-10 yr. increments, extending out for 20 years. All six GHGs should be included.

CC-2 - GHG Reporting and Registry

Approved to proceed with no objections

A forecast as described in CC-1 is included.

There is no conflict between this option and EPA efforts in this area. It is likely that EPA will use *The Climate Registry* to develop its program. However, there are likely to be different priorities for Maryland not included in an EPA program. For example, poultry processing may not be included in a federal program, but certainly impacts Maryland.

CC-3 - Statewide GHG Reduction Goals and Targets

Approved to proceed with no objections

The section on “Implementation Mechanisms” has been completed.

CC-4 - State and Local Government GHG Emissions (Lead-by-Example)

Approved to proceed with no objections

This option is the same as RCI-4. Quantification sections will be addressed by RCI, while CC will address conceptual options.

CC-5 - Public Education and Outreach

Approved to proceed with no objections

This option contains an extremely comprehensive list of goals. Elements were added to the implementation section.

The TWG should consider emphasizing research and development in this section or other as appropriate.

CC-6 – Tax and Cap Policies

Approved to proceed with no objections

There were no questions or comments.

CC-7 – Review Institutional Capacity to Address Climate Issues Including Seeking Funding for Implementation of MWG Recommendations**Approved to proceed with no objections**

There is no requirement that funding be identified at this time. Any suggestions should be forwarded to the TWG. The TWG is asked to put greater emphasis on the responsibilities of Department of Economic Development.

Note that the TWG should include principles to require private lending that encourages climate change solutions and does not impede such efforts. The specific policy option to which this concept is assigned should be determined by the TWG.

The TWG is asked to list identified creative funding options, such as public-private partnerships, by bullet points in the POD.

CC-8 – Promote and Participate in Regional, Multi-State and National GHG Reduction Efforts**Approved to proceed with no objections**

There were no questions or comments.

CC-9 - Promote Economic Development Opportunities Associated with Reducing GHG Emissions in Maryland**Approved to proceed with no objections**

This option needs more work to expand on the basic concepts. The TWG asks for any suggestions to be forwarded. Members will consult the MD Dept of Business and Economic Development.

CC-10 - Develop Tools to Explicitly Address Policy Issues in an “After Peak Oil” Context**Approved to proceed with no objections**

There were no questions or comments.

CC-11 - Evaluate Climate Change Policy Options to Determine Projected Public Health Risks, Costs, and Benefits**Approved to proceed with no objections**

Public health issues should be considered. The TWG will work with representatives of the ARWG HHSW TWG.

CC-12 – Review Institutional Capacity to Address Climate Issues, especially Leadership Development.**Approved to proceed with no objections**

Energy Supply

Note that all quantifications presented are for that policy option. Any reductions due to multiple options have not yet been resolved. Only changes from previous drafts are noted.

ES-1 - Promotion of Renewable Energy Sources, including Zoning, Siting, Incentives to Promote Centralized Facilities, Long-term Contracting and Performance-based Contracting

Approved to proceed with no objections

The only change made was the addition of the fourth bullet, “Make use of long-term contracts for offshore wind and renewables”.

ES-2 - Technology-focused Initiatives for Electricity Supply (Biomass Co-firing, Energy Storage, Fuel Cells, Landfill Gas, Clean Energy Incentives)

Approved to proceed with no objections

No changes were made.

ES-3 - GHG Cap and Trade

Approved to proceed with no objections

Quantification is slightly behind the other options.

ES-4 - CCSR Incentives, Requirements and/or Enabling Policies including Administration, Regulation, Liability and Incentives)

Approved to proceed with no objections

New language has been added, changing ‘as is feasible by 2020’ to ‘using best available technology’. This is intended to recognize that as-yet-unimagined technologies will be developed over time.

The quantification is based on the 2003 GHG inventory. There are uncertainties due to the technology that make quantification difficult. Costs range from \$53.4 - \$93.5/tCO₂e. The average of \$79.2 was used.

Note that quantifications should be done for 2012 and 2020 to align with the stated Maryland goals.

Review the trajectory of the forecast forward to better estimate 2050 reductions. Include estimates of the elimination of certain fuels over time.

Rounding errors will be corrected as quantifications are completed.

ES-5 - Clean Distributed Generation Standards, Incentives and Barrier Removal, including Combined Heat and Power (CHP), District Heating and Cooling, Landfill Gas, Solar, Fuel Cells and others

Approved to proceed with no objections

No changes

ES-6 - Integrated Resource Planning (IRP) including Re-Regulation, if necessary, and/or a State Energy Plan

Approved to proceed with no objections

Note that the use of IRP is being reconsidered nationally.

ES-7 - Renewable and/or Environmental Portfolio Standard and/or Energy Efficiency Portfolio Standard

Approved to proceed with no objections

This option is currently being quantified, assuming RPS at 9% in 2008, increasing to 20% by 2020. There is a narrow range of uncertainty.

Note that there are clauses in the language of this POD that will need coordination with current proposed legislation.

ES-8 - Efficiency Improvements and Repowering Existing Plants

Approved to proceed with no objections

The quantification of this option is outlined in the POD. The goal of this option is to displace the use of coal with biomass, beginning in 2013. An upper limit of 8% biomass is assumed. This limit can be increased if adequate supplies are created.

The midrange heat values of biomass were used in the quantification. Change the value of \$6.75 to \$6.68. The process used to reach these values will be included in the POD at the next meeting.

ES-9 – Carbon (GHG) Tax

Approved to proceed with no objections

This policy option has been expanded, based on two main points:

- In some sectors, transportation fuels would not be supported under a Cap & Trade program. This option would fill that gap.
- The creation of an Advisory Group to develop the specifics of a Carbon Tax program similar to the Market Advisory Group in CA.

ES-10 – Generation Performance Standards and/or Mitigation Requirements for Electricity

Approved to proceed with no objections

Load serving entities must meet a portfolio standard. The TWG recommends that the upper limit of the performance standard be set at the current levels of good plants.

Note that this policy focuses on reductions in energy consumption, not energy production.

While carbon capture storage on IGCC units is not commercially available yet, it is not unrealistic to expect it to be so by 2020. Data sources for estimating these costs will be researched. Note that the initial cost capital required for this retrofit would be offset by reduced operating costs in CO plants.

Residential, Commercial, Industrial Policy Options

Chris James presented an overview of all RCI policy options with assistance by Alice Napoleon.

All policy options should be reviewed based on the cost of the option and the percent GHG reduction from 1990 levels, from negative cost to neutral to positive costs. The baseline reference case is from 1990-2020, using 2006 dollars.

No policy options will be renumbered. Combined options will be so indicated in documentation.

RCI-1 - Improved Building and Trade Codes for Energy Efficiency

Approved to proceed with no objections

The TWG asked the MWG to combine RCI-1 and RCI-6, as there is significant overlap. There were no comments by MWG members.

RCI-2 - Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity and Natural Gas (Including Expansion of Existing Programs and Peak Load Reduction)

Approved to proceed with no objections

The TWG assumed that 100% of RGGI offsets are directed to implement this measure. A preliminary study by the University of Maryland has shown potentially high administrative costs, where previously it had been assumed that they would be low and without major impact on the funds available. This assumption should be reviewed by the MWG.

Offsets are being priced at \$3/ton, which the TWG feels is a low estimate. The combination of this low price estimate could balance the 100% application estimate, if all RGGI funds are not used for this implementation.

A key difference between RCI-2 and RCI-10 is the funding source. A DSM program will require funding, which could come from other sources. The TWG is viewing RCI-2 as being funded by RGGI, while RCI-10 is not.

The MWG reminded the TWG that it is not required to identify funding sources, although recognition of potential sources is welcomed and encouraged. Specification of the required funding level is necessary. The MWG supports the \$100M funding level,

although the source is still unconfirmed. There will be many other requests and suggestions for the use of the RGGI funds, such as AFW's Carbon Sequestration goal.

The MWG stated that the language of the POD funding discussion be changed to language such as "public benefit fund such as RGGI". There is no objection to the \$100M funding level.

RCI-3 - Low-cost Loans for Energy Efficiency

Approved to proceed with no objections

More analysis is needed for this policy option.

RCI-4 - Improved Design, Construction, Appliances, and Lighting in New and Existing State and Local Government Buildings: "Government Lead-by-Example"

Approved to proceed with no objections

This is not a major GHG reduction policy option. Placeholder amounts have been used pending a review of data sources. MWG members are asked to review the included list and transmit comments to the facilitators.

RCI-5 - Energy Efficiency and Environmental Impacts Awareness and Instruction in School Curriculum

Approved to proceed with no objections

This goal has not been and will not be quantified. It will be reviewed with the Cross-Cutting TWG as there is overlap with CC-5.

RCI-6 - Promotion and Incentives for Improved Design and Construction (e.g., LEED, Green Buildings, or Minimum % Improvement Beyond Code) in the Private Sector

Approved to proceed with no objections

The original goal set for this policy option was to reach 70% of homes by 2020. The TWG feels that this is too strong a goal at this time.

There is overlap with RCI-1. In order to resolve this issues, the LEED elements can be retained in RCI-6 and removed from RCI-1. RCI-1 should focus on Building and Trade codes, leaving the other codes to be addressed in RCI-6.

The MWG would entertain combining RCI-1 and RCI-6, however, the TWG does not yet recommend this.

A suggestion was made that a 'grandfather' clause be inserted for an 'early action credit' that would encourage 2008 implementation, rather than waiting to receive the credit at a later date. Early action should not be penalized due to implementation dates.

RCI-7 - More Stringent Appliance/Equipment Efficiency Standards (State-level, or Advocacy for Regional or Federal-level Standards)**Approved to proceed with no objections**

Federal law on this topic was recently signed by the President, which will reset the baseline used for analysis.

This policy option also included RCI-11, Phase-out of Incandescent Light Bulbs.

RCI-8 - Rate structures and Technologies to Promote Reduced GHG Emissions (Including Peak Pricing and Inverted Block Rates)**Approved to proceed with no objections**

Analysis will be done using block rate values of \$0.11, not \$0.0973. Members are asked to review the data sources as listed in the Policy Option Description.

The generation rate in Maryland is set by a periodic bid process, which is applied to retail sales, not wholesale bids.

Frank Heinz is available to attend these meetings.

RCI-9 - GHG or Carbon Tax**Approved to proceed with no objections**

This topic of policy option is also included in ES-3 and Cross-Cutting Issues.

RCI-10 – White Roofs, Rooftop Gardens, and Landscaping (including Shade Tree Programs) and Solar Electric Panels**Approved to proceed with no objections**

This option has not yet been quantified, pending figures from the ES TWG.

RCI-11 – Energy Efficiency Resource Standard (EERS)**Approved to proceed with no objections**

This policy option is also the focus of federal legislation. The federal goal for the average of new bulbs is 45 lumens/watt by 2020, with the Maryland goal currently 25 lumens/watt by 2012. Assuming a smooth line to meet the federal goal, the Maryland goal is on target with the federal goal.

Debate continues on the TWG about compliance targets for this policy option. Mandatory vs. voluntary programs will be analyzed to compare GHG reduction levels.

LED illumination is included in this policy option without specification by the lumen standards used.

Transportation and Land Use Policy Options

Jim Wilson presented an overview of all TLU policy options. Quantification is proceeding with tonnage values. No dollar values are yet available. Overall goals are reviewed on the basis that 1 MMtCO₂e in 1990 is currently estimated to grow to 42 in 2020. VMT/capita need to be reduced 26% from 2020 in order to reach 1990 levels.

The TWG still must review the VMT figures of statewide, Baltimore metro area and DC metro area projections and eliminate overlap. The I&F projections and assumptions must also be verified.

General comments include the omission of speed limit reductions which is in the catalog, but not in this round of analysis. Increased telecommuting should be encouraged.

TLU-1- Increased Fuel Tax

Approved to proceed with no objections

A low elasticity value of 0.1 is used in these calculations. The MWG is asked to comment on the division of revenue between commuter programs and transit options.

There are dual benefits to this policy. The primary benefit is to generate revenue which can be used to fund GHG reduction efforts, such as rail infrastructure, etc. Secondly, VMT should be reduced. Auburn noted that reliance solely on VMT can limit the vision, such as reducing GHG emissions by limiting engine idling. The true goal is to reduce mobile emissions.

TLU-2 Land Use and Location Efficiency

Approved to proceed with no objections

Reducing emissions by 7.5 MMtCO₂e from the 'business as usual' is the target. Efforts are being made to determine what is truly feasible.

TLU-3 Transit

Approved to proceed with no objections

The TWG is assuming that mass transit capacity will be doubled by 2020. Concern was expressed that this is an impossible goal to achieve in 12 years, therefore including it in this report will degrade the credibility of the report. The MWG agreed that strenuous efforts must be made to achieve goals such as this and that they have to pass the 'straight-face test', however, the vision must not be limited.

The TWG is asked to quantify what is required to achieve the doubling of capacity, on the basis of the number of trips per day, etc.

TLU-4 Low Greenhouse Gas Standard

Approved to proceed with no objections

The TWG is asked to ensure that consistency is used in choosing and applying standards such as AFCI, LCFS-CA, etc.

There is still significant uncertainty in the figures used in the POD. The TWG is asked to provide analysis against sensitivities. For example, use \$3.00, \$3.50 and \$4.00 per gallon and show the resultant ranges.

TLU-5 Intercity Travel: Aviation, High Speed Rail, Bus

Approved to proceed with no objections

Much of this is incorporated in the VMT reduction goal. The ultimate goal is to get people off planes and onto trains. The TWG is asked to review freight issues, such as shifting more freight to rail, etc.

TLU-6 Pay-as-you-Drive Insurance

Approved to proceed with no objections

Studies in Arizona have shown that VMT can be reduced by 8-20% through PAYD programs. The TWG has established benchmark goals of 10% in 2012 and 80% in 2020.

Clarify the phrase 'pays attention to equity'.

Assess the impacts of voluntary and mandatory PAYD programs.

TLU-7 VMT Reductions

Approved to proceed, for now, with no objections

This goal is closely aligned with TLU-2.

Restructure the goal as a plan to return to 1990 levels.

Aburn suggested a CO₂ cap that is linked to transportation funding. A cap can be assigned to a region, allowing that region to determine the mean(s) to meet the goal. This linkage would work to create at least a tenuous partnership between federal, state and local efforts. A VMT focus could conceivably exclude a CO₂ cap, but can be included as a component of the CO₂ cap.

The proposed plan would reduce VMT in Maryland by 20% including all growth in the state.

The impact of new, approved highway projects should be included in reference case baselines. New proposed projects should be assessed for VMT reductions before the project is added to the state highway plan.

TLU-8 Bike and Pedestrian Infrastructure

Approved to proceed with no objections

No changes were made to the POD. Quantification has not yet been done.

TLU-9 Pricing Measures

Approved to proceed with no objections

Questions regarding enforcement of the policy option were raised. Appropriate mileage charges need to be determined.

TLU-10 Off-Road Engines/Vehicles

Approved to proceed with no objections

Expand the idling time goals to other off-road vehicles. Idling by all vehicles, not just off-road should be reduced.

Reference the bill on idling to be introduced as part of this POD to add credibility to both the bill and the POD.

Lawn mowers should also be added.

TLU-11 Evaluate the GHG Emissions Impacts of Major Projects

Approved to proceed with no objections

Currently approved projects should be included in the baseline. New projects should be analyzed according to this POD.

Actual data for BRAC and ICC should be determined and included.

Next Steps:

Quantification will be expanded and reviewed.

Future Meetings:

The next meetings are scheduled for February 21, March 19 and April 22. A final meeting may be scheduled in May.