



**Agriculture, Forestry, and Waste Management Technical Work Group**  
**Summary List of Priority Policy Options for Analysis**

<b>Draft Option #</b>	<b>Draft Policy Option Name</b>	<b>Straw Proposal Volunteers</b>
AFW-1	<b>Expanded Use of Forest and Farm Feedstocks and Bi-Products for Energy Production</b>	<u>Gary Allen</u> , Chris Rice
AFW-2	<b>In-State Liquid Biofuels Production</b>	<u>Eric Sprague</u> , Chris Rice
AFW-3	<b>Nutrient Trading with Carbon Benefits</b>	<u>George Kelly</u> , Bob Ensor, Elmer Weibley
AFW-4	<b>Protection &amp; Conservation of Agricultural Land, Coastal Wetlands and Forested Land</b>	<u>James Remuzzi</u> , Eric Sprague, Joel Dunn
AFW-5	<b>Afforestation, Reforestation and Restoration of Forests and Wetlands</b>	<u>Laura Miller</u> , Gary Allen, James Remuzzi, Joel Dunn
AFW-6	<b>Mitigation of Forest Loss Due to Insects, Disease, Pests and Invasive Species</b>	James Remuzzi, Laura Miller, Elmer Weibley
AFW-7	<b>Forest Management for Enhanced Carbon Sequestration</b>	<u>James Remuzzi</u> , Eric Sprague, Gary Allen, Joel Dunn, (Laura Miller)
AFW-8	<b>Managing Urban Trees and Forests for Greenhouse Gas Benefits</b>	Gary Allen, Cindy Parker
AFW-9	<b>“Buy Local” Programs for Sustainable Agriculture, Wood and Wood Products</b>	Cindy Parker, (Laura Miller)
AFW-10	<b>Waste Management through Source Reduction &amp; Advanced Recycling</b>	<u>Cindy Parker</u>

## Straw Proposal

### AFW-1 Expanded Use of Forest and Farm Feedstocks and Bi-Products for Energy Production

#### Policy Description

Sustainable forest and farm practices produce bi-products and feed stocks. These are renewable sources of energy. This policy option should increase the utilization of biomass from urban and rural feed stocks including processing byproducts for generation of electricity, thermal energy, and transportation fuels. Additionally, this option should reduce the amount of methane emissions from livestock manure by installing manure digesters and energy recovery projects.

All sources will be considered and implementation strategies will ensure the sustainability of supply. Energy from forest and farm feed stocks and bi-products are used to create heat or power, which offsets fossil fuel-based energy production and associated greenhouse gas (GHG) emissions.

[Note: Need to add reductions from municipal sources of methane.]

#### Policy Design

**Goals:** Need to try to establish general goals by dates so benefits and costs can be quantified. What is the desired goal(s) in terms of carbon emission reductions over time in MD? Need goals to 2025.

- Install manure digesters and energy recovery projects
- Many questions about biomass supply remain making projections that drive technology and policy difficult to estimate. Given the current information, it may be too early in the development process to predict goals. Therefore preliminary goals should include
  - Develop benchmarks to implement mechanisms for improvements
  - Developing processes and identifying resources to capture data
  - Develop metrics and methodology of data collection and analysis
- **Timing:** TBD (no measurable goals therefore no timeline to come into compliance)
- **Parties Involved:** Maryland Energy Administration, DNR, MDE, municipalities, power producers (Mirant and Constellation), local electric utilities (distributors), Board of Education, rural community entities (hospitals, community colleges, and universities)
- **Other:**

#### Implementation Mechanisms

TBD

PLACE HOLDER:

- Outreach and education
- Change present laws to add incentives (such as Maryland Clean Energy Act)

- Increase incentives through programs such as Fuels for Schools, tax-forgiveness
- Department of General Service could provide equal credit to efficient design, energy efficiently loan programs, etc.

### **Related Policies/Programs in Place**

PLACE HOLDER:

Modify the Renewable Portfolio Standards requiring local sources of renewable energy

### **Types(s) of GHG Reductions**

- **CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>:** Displaces emissions from fossil fuel combustion.

PLACE HOLDER:

Determine how many tons of carbon for methane is avoided. [NOTES ARENT CLEAR FOR THIS COMMENT!?!?!?!] CCS is responsible for quantification.

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

### **Level of Group Support**

TBD – [blank until MWG meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MWG/MCCC]

## Straw Proposal

### AFW-2 In-State Liquid Biofuels Production

#### Policy Description

Increase production of ethanol and/or biodiesel fuel from agriculture and/or forestry feedstocks and/or municipal solid and other waste (raw materials) to displace the use of fossil fuels. Favor the use of cellulosic and non-food source starches in ethanol production and monitor to ensure the sustainability of feedstocks and soil health. (moved the rest to Policy Design)

#### Policy Design

- Develop a state strategy for increasing production of biofuels
  - Based on the MEA/Salisbury University study results of statewide feedstock supply (December 2007), determine opportunities for appropriately-scaled, cellulose-based biofuels facilities
  - Policy options could include:
    - Ensure wood-based energy is given weight equal to wind and solar-based energy in renewable energy credits (move to AFW 1?)
    - Provide “bonus” renewable energy credits for fuels generated in-state or from fuels derived from in-state sources
    - Access to long-term, low-interest financing for new cellulosic ethanol facilities and supporting infrastructure
    - Tax credits and grant programs designed to reduce capital costs of new cellulosic ethanol facilities and supporting infrastructure
    - Foster partnerships between users, suppliers, corporations, and adjacent communities
    - Provide incentives to communities that provide supply (e.g. woody debris) to biofuels industries
    - Provide reliable and predictable supply of cellulose from state lands while ensuring sustainable management
    - Incentivize local production of biofuels
      - Change current Renewable Fuels Incentive to include cellulosic ethanol production specifically and give a larger incentive to it
    - Establish tax credit and grant program for E85 filling stations
    - Change existing gasoline specifications in Maryland so that ethanol can be blended into conventional fuel
- Integrate state strategy with regional activities to serve as a market for Maryland supply

- Promote the development of technologies to fractionate black liquor (from paper mills) which can be refined into valuable products using a thermo-chemical or other processes
- Provide financial incentive to research the production of bio-oils from algae grown in wastewater effluents

**Goals:** Develop specific policies based on cellulosic feedstock and value added byproduct study due in December 2007

- **Timing:** Startup in 20xx and ramp up to higher levels in 20xx and 20xx, consistent with goals.
- **Parties Involved:** Suppliers of feedstocks, ethanol producers, distributors, communities adjacent to potential facilities, environmental groups, etc. Associated agencies would include: Maryland Department of Natural Resources, MD Energy Administration, Department of Agriculture, Department of Business and Economic Development, etc.

**Other:**

Currently there are no commercial cellulosic ethanol plants in the United States. One large plant is under construction in Georgia, **one has just broken ground in Montana** and a few others are being planned across the country. There are no plants proposed in MD, except for corn-based plants.

There are two biodiesel plants in the state totaling 5 million gallons per year.

### Implementation Mechanisms

TBD

### Related Policies/Programs in Place

- Renewable Fuels Incentive Act
- Cellulosic feedstock and value-added by-product study (MEA)
  - Feasibility studies
- Renewable Fuels Task Force (created by statute)
- Grants for E85 refueling stations (MEA- but very limited funds- \$50,000 total)
- Increase E85 use in State Government
- US DOE construction grants (for bio-fuels plants?)
- Federal loan guarantees (for bio-fuels plants?)
- Potential 2007 Farm Bill programs (do we have any specifics on this?)

### Types(s) of GHG Reductions

**CO<sub>2</sub>:** Lifecycle emissions are reduced to the extent that biofuels are produced with lower embedded fossil-based carbon than conventional (fossil) fuel. Feedstocks used for producing biofuels can be made from crops or other biomass, which contain carbon sequestered during photosynthesis (e.g., biogenic or short-term carbon).

## Estimated GHG Reductions and Net Costs or Cost Savings

According to studies conducted by the U.S. Department of Energy's Argonne National Laboratory, one of the benefits of cellulosic ethanol is that it reduces greenhouse gas emissions (GHG) by 85% over reformulated gasoline. By contrast, starch ethanol (e.g., from corn), which most frequently uses natural gas to provide energy for the process, reduces GHG emissions by 18% to 29% over gasoline.

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

## Key Uncertainties

Cost competitiveness of biofuels will depend on cost of oil

Does Maryland have enough supply to sustain a cellulosic ethanol plant?

Construction of pilot scale lignocellulosic ethanol plants requires considerable financial support through grants and subsidies.

Will cellulosic ethanol plants be commercially viable?

Current costs for pilot programs translate into \$7/annual gallon in capital investment costs. This seems to be high because these are pilot plants; in the near future, these costs may drop to 2.5 - 4 times the capital costs of a corn ethanol plant. For comparison, corn to ethanol plants cost roughly \$1 - \$3/annual gallon capacity.

In June 2006, a U.S. Senate hearing was told that the current cost of producing cellulosic ethanol is US \$2.25 per US gallon (US \$0.59/litre). This is primarily due to the current poor conversion efficiency. At that price it would cost about \$120 to substitute a barrel of oil (42 gallons), taking into account the lower energy content of ethanol. However, the Department of Energy is optimistic and has requested a doubling of research funding. The same Senate hearing was told that the research target was to reduce the cost of production to US \$1.07 per US gallon (US \$0.28/litre) by 2012.

Potential for biodiversity impacts

## Additional Benefits and Costs

Unlike corn ethanol, does not compete with the production of food

Far less impacts than corn ethanol on water quality and could actually reduce nutrient loads in some circumstances

Permanent new source of income for farmers and foresters

Just current waste streams could replace 30% of current US fuel consumption. Incorporating other sources provides an almost unlimited capacity to replace our on gasoline and our dependence on foreign oil.

Environment

Recycling money in local economies

**Feasibility Issues**

TBD – [as needed and approved by the TWGs]

**Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

**Level of Group Support**

TBD – [blank until MWG meeting #5]

**Barriers to Consensus**

TBD – [blank until final vote by the MWG]

## Straw Proposal

### AFW-3 Nutrient Trading with Carbon Benefits

#### Policy Description

Nutrient trading, particularly trading between point sources (such as waste water treatment plants) and non-point sources (such as agricultural operations), provides the opportunity to create significant carbon sequestration benefits in Maryland.

Nutrient trading is a flexible and cost-effective means to achieve water quality improvements while also providing significant carbon benefits. Nutrient trading is the transfer of credits created through nutrient reduction from one source, specifically nitrogen and phosphorus. For example, buyers who need to apply or release more nutrients than currently permitted under state-law could obtain credits from sellers who have produced excess nutrient credits. Opportunities exist to apply this policy to also promote and register any carbon reductions associated with nutrient reduction practices. These polices would apply to agriculture, wastewater treatment plants, industrial dischargers, highway contractors and developers.

Besides creating economic benefits, nutrient trading encourages improved efficiency of fertilizer use and other nitrogen-based soil amendments through best management practices and advanced technologies. Advanced technologies such as GPS and GreenSeeker can assist in precision application of nitrogen on crops.

Many of the best management practices that would be incentivized under the nutrient trading program would also result in significant greenhouse gas reductions, such as no-till, conservation tillage, improved irrigation management, conservation buffers, grassland plantings, green infrastructure, afforestation, reforestation and restoration of wetlands.

Note: Excess nitrogen not metabolized by plants can leach into groundwater and/or be emitted to the atmosphere as  $N_2O$  which has 310 times the effect as one unit of  $CO_2$ . Better nutrient utilization can lead to lower nitrous oxide emissions from run-off.

#### Policy Design

**Goals:** Build on existing point source nutrient trading policy document being developed by the Maryland Department of the Environment and develop a complimentary agricultural non-point source policy to include carbon and nutrients. This can be accomplished through regulation and guidance.

Good goal for developing the policy but what is the desired goal(s) in terms of carbon emission reductions over time in MD? Need goals to 2025.

- **Work Group:** Agricultural Nutrient Trading Advisory Committee formed and convened November 20, 2007. A draft policy on the non-point source policy is slated for public review by February, 2008.
- **Timing:** Adopt policy by first quarter 2008, stakeholder meetings in spring, and finalize by June, 2008.
- **Parties Involved:** Agricultural and urban non-point sources; municipal wastewater treatment plants; industrial and commercial dischargers; **Soil Conservation Districts**, Maryland Department of the Environment and Maryland Department of Agricultural.
- **Other:** Septic system owners; other non-point sources; Chesapeake Bay Foundation; University of Maryland; World Resources Institute; Maryland Association of Municipal Wastewater Agencies; Soil Conservation Service.

### Implementation Mechanisms

A nutrient/carbon trading policy could be implemented through watershed-based MDE general permit that authorizes trading to occur. The non-point source trading policy would be developed and finalized by the MDE and MDA. Any credits produced would be certified and the carbon sequestered could be placed on the state registry and eligible for sale in the event such credits meet applicable standards under emerging state and federal laws/policies on greenhouse gasses.

### Related Policies/Programs in Place

- Chesapeake Bay Program, Nutrient Trading, Fundamental Principles and Guidance, March, 2001.
- MDE point source trading document, to be issued by end of 2007.
- EPA Water Quality Trading Policy, 2003.
- EPA, Water Quality Trading Took Kit for Permit Writers, 2007.
- Maryland Nutrient Management Act of 1998.
- Virginia Chesapeake Bay Watershed Nutrient Credit Exchange Program, 2005
- Pennsylvania Policy and Guidelines on Trading of Nutrient and Sediment Reduction Credits, 2006.

### Types(s) of GHG Reductions

- **N<sub>2</sub>O:** reductions occur when nitrogen run-off and leaching are reduced, which leads to the formation and emission of N<sub>2</sub>O.
- **CO<sub>2</sub>:** Carbon is sequestered through riparian buffers; soil sequestration; and constructed wetlands.
- **CH<sub>4</sub>:** Methane is reduced through agricultural best management practices or captured for renewable energy.

## Estimated GHG Reductions and Net Costs or Cost Savings

- **Data Sources:** See reference documents regarding carbon sequestration rates from reforestation. For example, see the USDA Forestry Inventory and Analysis “look up tables”, USDOE’s 1605 (b) look up table; Winrock carbon uptake model; Chapman – Richards growth model. See reference documents regarding carbon sequestration rates from no-till practices, such as Va. Tech Rainfall Simulate Research. Also, see research analysis from USDA/ARS in Fort Collins, Colorado, which included analysis on deep core soil samples for baseline data under NLEAP and CEQUESTER models.
- **Quantification Methods:**
- **Key Assumptions:**

## Key Uncertainties

Due to weather and drought conditions there may be a discrepancy between estimated and actual nutrient and GHG reductions. This poses some uncertainty in certifying credits in advance of project construction.

## Additional Benefits and Costs

Ancillary conservation benefits; wildlife corridors; enhanced biodiversity, and leveraged private capital in ecosystem restoration projects.

## Feasibility Issues

## Status of Group Approval

MDA – Work group convened November 20, 2007 with MDE; slated to have policy in place by February 2008.

Pending – [until MWG moves to final agreement at meeting #5 or #6]

## Level of Group Support

General support from MAMWA, industrial dischargers, developers and agricultural community. Environmental community needs to be better educated on the benefits.

This will be fully answered when we conclude the process.

## Barriers to Consensus

- Baseline issues: what are the minimum standards below which credits will be generated
- When should trading occur – now or in the future after implementation of certain regulatory standards?
- Duration of trade: 10 years or life of BMP?

This will be fully answered when we conclude the process.

**The Straw Proposal for this Option needs to be developed.**

## Sample Draft Policy Option Template

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

#### Policy Description

Reduce the rate at which agricultural lands are converted to developed uses, while protecting private property rights and responsibilities. This retains the above- and below-ground carbon on these lands, as well as the carbon sequestration potential of these lands. Transportation emissions will be reduced indirectly through more efficient development and lower vehicle use.

Agricultural land conversion may be prevented through conservation land grants and conservation easements facilitated through non-profit land preservation organizations.

Reduce the rate at which existing forests are cleared and converted to developed uses. Much of the carbon stored in forest biomass and soils can be lost as a result of such a land use conversion.

Reverse the rate at which coastlines and associated wetlands are converted to developed uses. Coastal wet zones provide the highest levels of carbon sequestration of land types in Maryland.

Examine tax policy for obstacles and deterrents to protection of lands, or ones that incentivize development. Consider transfer tax for conversion of agriculture, forests lands or coastal wetlands to other uses.

An ancillary benefit is that conservation programs allow for better planning and smart growth vs. sprawl by channeling development, interspersed with open space.

#### Policy Design

**Goals:** CCS drafts based on inputs from volunteers for straw proposals and then moves proposed text to the full TWG for review/revision, then on to the MWG at the next meeting: e.g. see AFW-2.

- **Timing:** see AFW-2.
- **Parties Involved:** see AFW-2.
- **Other:** see AFW-2.

#### Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

## **Related Policies/Programs in Place**

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## **Types(s) of GHG Reductions**

**CO<sub>2</sub>:** Preventing release of carbon from conversion of forests, wetlands, and agricultural lands to development. Maintain annual carbon sequestration from forest growth, thriving wetlands and productive agricultural lands. Reduce urban sprawl thus avoiding additional emissions from vehicle miles traveled.

## **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

## **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

## **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

## **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

## **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

## **Level of Group Support**

TBD – [blank until MWG meeting #5]

## **Barriers to Consensus**

TBD – [blank until final vote by the MWG]

## Straw Proposal

### AFW-5 Afforestation, Reforestation and Restoration of Forests and Wetlands

#### Policy Description

Establish forests on land that has not, in recent history, been forested (e.g., agricultural land) (afforestation) where current beneficial practices are not displaced. Promote forest cover and associated carbon stocks by regenerating or establishing forests in areas with little or no present forest cover (reforestation). In addition, implement practices such as soil preparation, erosion control, and supplemental planting to ensure conditions that support forest growth. Identify areas, including coastal wetlands, that are in need of physical intervention to return the habitats to full vigor. Additional areas of concern are linking islands of fragmented forests to restore function, recovering severely disturbed lands such as strip mines and reversing the effects of continued toxicity on plant productivity.

#### Policy Design

- **Goals:**
- **Timing:**
- **Parties Involved: Soil Conservation Districts**
- **Other:**

#### Implementation Mechanisms

[CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

#### Related Policies/Programs in Place

See example from Washington County in implementation of the Forest Conservation Act.

#### Types(s) of GHG Reductions

CO<sub>2</sub>: Increasing annual carbon sequestration from increased forest growth and cover, and restoring wetlands.

#### Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

### **Level of Group Support**

TBD – [blank until MWG meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MWG]

## Straw Proposal

### AFW-6 Mitigation of Forest Loss Due to Insects, Disease, Pests and Invasive Species

#### Policy Description

Programs that reduce damage from insects and disease, and reduce pressures by pests and invasive species on forests also reduce GHG emissions by maintaining the carbon sequestration achieved in healthy forests. Some native species, such as white tail deer, due to overpopulation, undermine reforestation efforts, and therefore sustainability, due to excessive browsing.

#### Policy Design

**Goals:**

- **Timing:**
- **Parties Involved:** Soil Conservation Districts
- **Other:**

#### Implementation Mechanisms

#### Related Policies/Programs in Place

#### Types(s) of GHG Reductions

CO<sub>2</sub>: Maintenance of annual carbon sequestration from forest growth and reforestation success and preventing the release of carbon from dead and dying trees. Reduce wildfire emissions by maintaining healthy forests.

#### Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

#### Key Uncertainties

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

### **Level of Group Support**

TBD – [blank until MWG meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MWG]

## Straw Proposal

### AFW-7 Forest Management for Enhanced Carbon Sequestration

#### Policy Description

Healthy, sustainable and productive forests provide a vast array of benefits. Sustainable forest management enhances environmental benefits and increases social and economical benefits, as well. This policy enhances productivity of healthy sustainable forests. Benefits from this option include increased rates of carbon dioxide (CO<sub>2</sub>) sequestration in forest biomass through healthier forests, and increased amounts of carbon stored in harvested, durable wood products.

Practices may include: supplemental planting on poorly stocked lands, age extension of managed stands, thinning and density management, fertilization and wood waste recycling, expanded use of short rotation woody crops (for fiber and energy), expanded use of genetically preferred species, modified biomass removal practices, and/or fire management and risk reduction.

#### Policy Design

**Goals:** **Need numeric goals and dates so quantification is possible.**

- Increase the level of sustainable forest management on private land
- Increase private lands in sustainable forest management programs
- Manage public lands using sustainable management practices
- Implement programs for no-net-loss of forests
- Use offset funds to enhance forest management on private lands and reduce conversion to other land uses
- Develop mechanism to aggregate smaller land holdings to compete in meaningful markets
- Include sustainable forest management in the RGGI Carbon Rule
  
- **Timing:** short term for policy implementation and up to 20? to begin to see on the ground changes in practices
- **Parties Involved:** : DNR, MDE, MDA, DNR, counties, SHA, Chesapeake Bay Program, NRCS, USFS, private land owners, public land owners, private sawmills, artisan community,
- **Other:.**

#### Implementation Mechanisms

PLACE HOLDER:  
Outreach and education  
Revise FCA

Support Sustainable Forestry Act

### **Related Policies/Programs in Place**

PLACE HOLDER:

FCA

Sustainable Forestry Act

### **Types(s) of GHG Reductions**

**CO<sub>2</sub>:** Enhancement of annual carbon sequestration from forest growth and reforestation through forestry management programs. Removal of fuels that contribute to wildfire emissions. Maintain carbon sequestration through the production of durable wood products. Reduce emissions by reducing use of fossil fuels replaced by energy from woody biomass.

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

### **Level of Group Support**

TBD – [blank until MWG meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MWG]

## Straw Proposal

### AFW-8 Managing Urban Trees and Forests for Greenhouse Gas Benefits

#### Policy Description

Healthy, sustainable urban forests are essential to our social, economical, and environmental welfare. This policy option maintains and improves the health and longevity of trees in urban and residential areas. Trees in urban areas avoid emissions from power production, maintenance of built structures and infrastructure, and store carbon. Urban trees contribute to lower summertime temperatures in urban areas reducing and the formation of ground-level ozone and the evaporation and volatization of organic compounds from vehicles. Also, VOCs, NOx, fine PM, and other pollutants are reduced.

This option increases the utilization of wood recovered from urban trees for energy production or in value-added products for long-term carbon storage.

Also, this option expands the tree canopy in urban areas, encourages species diversity while extending survival and longevity rates;

#### Policy Design

**Goals:** Need numeric goals and timeline so quantification of savings from increased sequestration is possible. It's our responsibility to do the following.

- Enhance green infrastructure planning including tying green areas together
- Develop incentives to better use urban wood recovery highest order wood product
- Develop urban tree canopy goals – this is what we need to do now
- **Timing:** short timeframe Need to develop policy specific dates short and long term. Where do we want to be by 2025 and how fast do we want to get there?
- **Parties Involved:** DNR, MDE, MDA, DNR, counties, municipalities, SHA, Chesapeake Bay Program, NRCS, USFS, private land owners, public land owners, private sawmills, artisan community, landscaping industry, nursery industry, MD Cooperative Extension and Master Gardeners, arborist industry
- **Other:**

#### Implementation Mechanisms

PLACE HOLDER:

- Outreach and education
- Monitor and report plantings at local level

- Provide enhanced funding from conservation programs like Program Open Space to local jurisdictions to implement policies (like wood recovery and canopy goals) and/or plant trees

### **Related Policies/Programs in Place**

PLACE HOLDER:

Strengthen, fund, and support the Urban Community Forestry Act

Add urban tree canopy goals to act

### **Types(s) of GHG Reductions**

- **CO<sub>2</sub>:** Avoidance of emission of carbon dioxide and associated GHGs through the reduction of heating and cooling needs in urban areas. Reduction of surface temperatures reducing volatilization of gasses from vehicles. Maintaining carbon sequestration by creating durable wood products. Reduce use of fossil fuels by using wood waste for energy.

### **Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

### **Level of Group Support**

TBD – [blank until MWG meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MWG]

## Straw Proposal

### AFW-9 “Buy Local” Programs for Sustainable Agriculture, Wood and Wood Products

#### Policy Description

Promote the sustainable production and consumption of locally produced agricultural goods, which displace the consumption of those transported from other states or countries. GHG reductions occur from reduced transportation-related emissions, reduced production-related emissions (how might this be accomplished?) and enhanced forest health.

Using local wood for construction, furniture or other value-added wood products will enhance local economies while reducing carbon emissions by lowering transportation distances and sequestering carbon in those products.

The use of wood products displaces GHG emissions associated with processing high-energy input materials such as steel, plastic and concrete.

Increased demand for local wood products increases opportunities for forest management treatments that improve forest health and sustainability, thereby improving sequestration and nutrient absorption.

#### Policy Design

**Goals:** Several projects are being proposed in Maryland that would result in the increase of local farmer’s markets in Maryland by 25% by 2015 and 50% by 2020. Of the food Marylanders consume, 80% would be grown or produced locally by 2050. The amount of locally grown and processed lumber would displace imported wood by 20% by 2015 and 50% by 2050.

- **Timing:** Startup in 2009 and ramp up to higher levels in 2015 and 2020, consistent with goals.
- **Parties Involved:** Agricultural and wood product primary producers such as Maryland farmers, lumber mills, farmer’s market associations and promoters; value-added producers such as Maryland caterers, producers of packaged food for retail, furniture makers, construction businesses, wholesalers and retailers of construction and do-it-yourself products, architects and designers; applicable trade associations, Dept. of Agriculture, Dept. of Natural Resources, LEED certification entities.
- **Other:** As needed, identify incentives that encourage the sustainable growing and harvesting of local agricultural and wood products.

#### Implementation Mechanisms

Specific incentives recommended:

Care must be taken to ensure that the wood and agricultural products are sustainably harvested and produced to create a net carbon sequestration and reduction in emissions.

How do you want to incorporate the following?

Discussion:

*Maryland has been a LEED (rating system for green building) leader, but hasn't been given credit for wood products, especially local woods as contributing to energy efficiency and carbon emission reductions. This is an issue in several states. TWG needs to put removing that obstacle into Policy Implementation design. MWG is aware of this problem and supports resolution.*

*Encourage the creation of value-added products from local woods in lieu of shipping raw materials.*

**Related Policies/Programs in Place**

The Maryland Dept. of Agriculture has recently been revitalized and is actively promoting a Buy Local program by (list specific actions and incentives here).

**Types(s) of GHG Reductions**

**CO<sub>2</sub>:** Extending carbon sequestration in durable wood products and wood construction. Maintaining carbon sequestration in healthy forests. Avoidance of emissions through reduced transportation miles. Avoidance of emissions through reduced use of high-energy input construction materials.

**Estimated GHG Reductions and Net Costs or Cost Savings**

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

**Key Uncertainties**

TBD – [as needed and approved by the TWGs]

**Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

**Feasibility Issues**

TBD – [as needed and approved by the TWGs]

**Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

**Level of Group Support**

TBD – [blank until MWG meeting #5]

**Barriers to Consensus**

## Straw Proposal

### AFW-10 Waste Management through Source Reduction & Advanced Recycling

#### Policy Description

Reduce the volume of waste from residential, commercial, and government sectors through programs that reduce the generation of wastes and enhance reuse of product components and manufacturer's lifetime product responsibility. Reduction of generation at the source reduces both landfill emissions as well as upstream production emissions. Increase recycling and reduce waste generation in order to limit greenhouse gas emissions associated with the production of raw materials.

Reduce methane emissions associated with landfilling by reducing and recycling the biodegradable fraction of waste emplaced.

For products that can not be reused, increase recycling programs, create new recycling programs, provide incentives for the recycling of construction materials, develop markets for recycled materials, and increase average participation/recovery rates for all existing recycling programs to enhance and encourage upcycling (where the remanufactured product is equal to or higher in quality than the original product).

Electronics recycling and recovery of industrial gases from foam products are included.

#### Policy Design

**Goals:** Waste stream will be reduced by 15% in 2012, 25% by 2015, 35% by 2020, and 80% by 2050. Recycling stream will increase by 10% by 2012, 20% by 2015, 30% by 2020, then gradually decrease to 10% by 2050 as more products and their components are reused and new source use also decreases.

- **Timing:** Startup in 2010 and ramp up to higher levels in 2012 and 2015, consistent with goals
- **Parties Involved:** Manufacturers, relevant trade associations, consumer's associations, all state and local agencies,
- **Other:** As needed, identify incentives that encourage the reuse of materials and products, recycling of materials and products, and discourages the single-use waste of products. In addition, identify incentives to reduce the amount of raw materials used. Increase quality as a means to enhance product longevity with innovative programs to reward manufacturers for quality. Identify and phase out any subsidies that discourage waste reduction, reuse of components, or improved quality and longevity of products. Work with cross-cutting TWG to include education regarding the wisdom of these policies to all segments of the population including the public.

## Implementation Mechanisms

All government agencies would be required/encouraged to preferentially purchase goods made from reused and recycled materials and goods from manufacturers who take “cradle to cradle” responsibility for their products,

**How does the TWG want to incorporate the following?**

*Recently, an area of focus in the solid waste industry has been in increase recycling of organic wastes (lawn & garden waste, food waste, wood, paper, etc.) using different conversion technologies, including composting, anaerobic digestion, or hybrids of these technologies. These tend to be problematic and can have negative impacts not only in smell but in groundwater pollution.*

*The European Union has WEEE (Waste Electronic and Electrical Equipment) Directive. Manufacturers of all electronic and electrical equipment sold in Europe are required to take back all products when no longer useful or desired by the purchaser. This encourages interchangeable, reusable parts; elimination of toxins and heavy metals; and maximum recycling, significantly reducing waste.*

## Related Policies/Programs in Place

*Recent Actions in MD: No cradle-to-cradle programs in place but MDE does have an aggressive e-cycling program.*

## Types(s) of GHG Reductions

- **CH<sub>4</sub>:** Methane reductions because of reduced volumes in landfills. Diverting biodegradable wastes from landfills will result in a decrease in methane gas releases from landfills.
- **CO<sub>2</sub>:** Upstream Energy Use Reductions – The energy and GHG intensity of manufacturing a product is generally less using recycled feedstocks than from using virgin feedstocks.

## Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Quantification of carbon emissions of associated transportation of solid waste may be a useful figure.

## Key Uncertainties

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

Pending – [until MWG moves to final agreement at meeting #5 or #6]

### **Level of Group Support**

TBD – [blank until MWG meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote until final MWG meeting]

**PROPOSED ORDER CHANGE IN NUMBERING POLICY OPTIONS:**

<b>New Order</b>	<b>Draft Policy Option Name</b>
AFW-7	<b>Forest Management for Enhanced Carbon Sequestration</b>
AFW-8	<b>Managing Urban Trees and Forests for Greenhouse Gas Benefits</b>
AFW-5	<b>Afforestation, Reforestation and Restoration of Forests and Wetlands</b>
AFW-6	<b>Mitigation of Forest Loss Due to Insects, Disease, Pests and Invasive Species</b>
AFW-4	<b>Protection &amp; Conservation of Agricultural Land, Coastal Wetlands and Forested Land</b>
AFW-9	<b>“Buy Local” Programs for Sustainable Agriculture, Wood and Wood Products</b>
AFW-1	<b>Expanded Use of Forest and Farm Feedstocks and Bi-Products for Energy Production</b>
AFW-2	<b>In-State Liquid Biofuels Production</b>
AFW-3	<b>Nutrient Trading with Carbon Benefits</b>
AFW-10	<b>Waste Management through Source Reduction &amp; Advanced Recycling</b>