



www.mdclimatechange.us

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

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

Sample Draft Policy Option Template

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

Policy Description

Increase the utilization of biomass from forest and farm feedstocks and from farm bi-products for generating electricity and heat thereby displacing the use of fossil energy sources. Local electricity or steam production yields greatest net energy payoff.

All sources will be considered and implementation strategies will ensure the sustainability of supply.

Reduce the amount of methane emissions from livestock manure by installing manure digesters and energy recovery projects on livestock operations. Energy from the manure digesters is used to create heat or power, which offsets fossil fuel-based energy production and the associated Greenhouse Gas (GHG) emissions.

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

Related Policies/Programs in Place

Types(s) of GHG Reductions

- **CO₂, N₂O, CH₄:** Displaces emissions from fossil fuel combustion.

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]

Sample Draft Policy Option Template

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.

Promote the development of cellulosic ethanol technologies and ethanol production systems that use renewable fuels to improve the embedded energy content of ethanol. Increased production and consumption in state give the highest benefits.

Favor the use of non-food source starches in ethanol production and monitor to ensure the sustainability of feedstocks and soil health. Mitigate any increased fertilizer application and run off through proper application rates, best practices, and nutrient trading.

Provide financial incentive to research the production of bio-oils from algae grown in wastewater effluents (would also reduce carbon, nitrogen and phosphorus).

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. “Several projects are being proposed in Maryland that would result in the production of x million gallons of ethanol annually in Maryland by 200x. Production incentives could increase this amount by x% beyond expected levels in 20xx, and x% by 20xx.

- **Timing:** Startup in 20xx and ramp up to higher levels in 20xx and 20xx, consistent with goals.
- **Parties Involved:** Suppliers of feedstocks, ethanol producers, and distributors. Associated agencies would include: xxx...

Other: As needed, identify incentives that encourage the growing and supply of feedstocks and the utilization of ethanol in transportation markets across the state.”]

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

Types(s) of GHG Reductions

CO₂: 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

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]

Sample Draft Policy Option Template

AFW-3 Nutrient Trading with Carbon Benefits

Policy Description

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, specifically nitrogen and phosphorus. For example, buyers who need to apply or release more nutrients than currently permitted under their state-regulated nutrient management plan could obtain credits from sellers who have produced excess nutrient credits from under-utilizing their allowed nutrient limits. Opportunities extend beyond agriculture to 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.

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.

Note: Excess nitrogen not metabolized by plants can leach into groundwater and/or be emitted to the atmosphere as N₂O which has 310 times the effect as one unit of CO₂. Better nutrient utilization can lead to lower nitrous oxide emissions from run-off.

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

Types(s) of GHG Reductions

- **N₂O:** reductions occur when nitrogen run-off and leaching are reduced, which leads to the formation and emission of N₂O.

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]

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

.

Types(s) of GHG Reductions

CO₂: 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]

Sample Draft Policy Option Template

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.

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

Types(s) of GHG Reductions

CO₂: 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]

Sample Draft Policy Option Template

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: 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

Types(s) of GHG Reductions

CO₂: 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]

Sample Draft Policy Option Template

AFW-7 Forest Management for Enhanced Carbon Sequestration

Policy Description

There is a need to ensure long-term health and productivity of forests because of their ability to sequester carbon, along with ancillary benefits. This option is designed to enhance greenhouse gas sequestration in two ways: first, through increasing the rate of carbon dioxide (CO₂) sequestration in forest biomass through healthier forests, and secondly, through increasing the amount 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, expanding 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: 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

Types(s) of GHG Reductions

CO₂: 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]

Sample Draft Policy Option Template

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

Policy Description

Maintain and improve the health and longevity of trees in urban and residential areas primarily to avoid emissions and secondarily to protect and enhance the carbon stored in tree biomass. Indirect emissions avoidance occurs by reducing heating and cooling needs as a result of planting shade trees. Also, urban trees contribute to lower summertime temperatures in urban areas and reduce the production of ground-level ozone and the evaporation and volatilization of organic compounds from vehicles.

Fully utilize wood recovered from urban trees for value-added products for long-term carbon storage and energy production.

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

Types(s) of GHG Reductions

- **CO₂:** 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]

Sample Draft Policy Option Template

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

Policy Description

Promote the 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, 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: 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

Types(s) of GHG Reductions

CO₂: 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

TBD – [blank until final vote by the MWG]

Sample Draft Policy Option Template

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.

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: 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

Types(s) of GHG Reductions

- **CH₄:** Methane reductions because of reduced volumes in landfills. Diverting biodegradable wastes from landfills will result in a decrease in methane gas releases from landfills.
- **CO₂:** 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]

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]