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Agriculture, Forestry, and Waste Management (AFW) Technical Work Group

Summary List of Pending Priority Policy Options for Analysis

	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2009–2025			
AFW-1	Expanded Use of Agriculture and Forestry Biomass Feedstocks for Electricity, Heat, or Steam Production	*Not Yet Quantified*					Pending
AFW-2	Advanced Recovery and Recycling	*Not Yet Quantified*					Pending
AFW-3	Forest Management and Establishment for Carbon Sequestration	*Not Yet Quantified*					Pending
AFW-4	Expanded Use of In-State Liquid Biofuels	*Not Yet Quantified*					Pending
AFW-5	Manure Management	*Not Yet Quantified*					Pending
AFW-6	Promotion of Farming Practices that Achieve GHG Benefits	*Not Yet Quantified*					Pending
AFW-7	End of Use Waste Management Practices	*Not Yet Quantified*					Pending
AFW-8	Improved Water Management and Use	*Not Yet Quantified*					Pending
AFW-9	Expanded Use of Locally Produced Farm and Forest Products	*Not Yet Quantified*					Pending

Note: The numbering used to denote the above pending priority policy options is for reference purposes only; it does not reflect prioritization among these important draft policy options.

AFW-1. Expanded Use of Agriculture and Forestry Biomass Feedstocks for Electricity, Heat, or Steam Production

Policy Description

Increasing the amount of biomass available from forests or agriculture for generating electricity can displace the use of fossil energy sources. This strategy also encourages the capture of waste heat at facilities using biomass (or fossil fuels), wherever possible. The waste heat could be used for cogeneration of electricity or other purposes that displace fossil fuel use. Arkansas could increase the amount of biomass available for generating electricity and displacing the use of fossil energy sources. Local electricity or steam production yields greatest net energy payoff.

Policy Design

TBD

Goals: TBD – [as approved by the TWG]

Timing: TBD – [as approved by the TWG]

Parties Involved: TBD – [as approved by the TWG]

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

TBD – [as approved by the TWG]

Estimated GHG Reductions and Costs or Cost Savings

TBD – [as approved by the TWG]

Data Sources: [TBD, as approved by the TWG]

Quantification Methods: [e.g., Full life cycle analysis with supply/demand equilibrium adjustments on TWG approval]

Key Assumptions: [TBD, as approved by the TWG]

Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

TBD – [as needed and approved by the TWG]

Status of Group Approval

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

AFW-2. Advanced Recovery and Recycling

Policy Description

Increasing waste recovery and recycling and reducing waste generation limits GHG emissions associated with landfill methane generation and with the production of raw materials. Additional actions include increasing recycling programs, creating new recycling programs, providing incentives for recycling construction materials, developing markets for recycled materials, and increasing average participation/recovery rates for all existing recycling programs.

Policy Design

TBD

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Timing: TBD – [as approved by the TWG]

Parties Involved: TBD – [as approved by the TWG]

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWG]

Type(s) of GHG Reductions

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Key Uncertainties

TBD – [as needed and approved by the TWG]

Additional Benefits and Costs

TBD – [as needed and approved by the TWG]

Feasibility Issues

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Level of Group Support

TBD – [blank until GCGW meeting #7 or #8]

Barriers to Consensus

TBD – [blank until final vote by the GCGW]

AFW-3. Forest Management and Establishment for Carbon Sequestration

Policy Description

This strategy establishes forests on land that has not historically been forested, such as agricultural land ("afforestation"); promotes forest cover and associated carbon stocks by regenerating or establishing forests in areas with little or no present forest cover ("reforestation" or "restoration"); helps maintain and improve the health and longevity of trees in urban and residential area (urban forestry); and implements such practices as site preparation, erosion control, and stand stocking to ensure conditions that support forest growth. Forest management activities promote forest productivity and increase the rate of CO_2 sequestration in forest biomass and soils and in harvested wood products. Additionally, specific trees could be selected that sequester other non-GHG chemicals in addition sequestering CO_2. Practices may include increased stocking of poorly stocked lands, age extension of managed stands, thinning and density management, fertilization and waste recycling, expanded short rotation of woody crops (for fiber and energy), expanded use of genetically preferred species, modified biomass removal practices, fire management and risk reduction, and pest and disease management.

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Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

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Related Policies/Programs in Place

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Key Uncertainties

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Additional Benefits and Costs

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Feasibility Issues

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Level of Group Support

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Barriers to Consensus

TBD – [blank until final vote by the GCGW]

AFW-4. Expanded Use of In-State Biofuels

Policy Description

Increased production of ethanol and/or biodiesel fuel from agriculture and/or forestry feedstocks and/or municipal solid and other waste (raw materials) could displace the use of fossil diesel. Arkansas could also promote the development of cellulosic ethanol technologies and ethanol production systems that use renewable fuels to improve the embedded energy content of ethanol. Increased in-state production and consumption gives the highest benefits. This strategy increases production of ethanol and/or biodiesel fuel from agriculture and/or forestry feedstocks (raw materials) to displace the use of fossil diesel. It promotes 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.

Policy Design

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Implementation Mechanisms

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Related Policies/Programs in Place

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Additional Benefits and Costs

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Feasibility Issues

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Barriers to Consensus

TBD – [blank until final vote by the GCGW]

AFW-5. Manure Management

Policy Description

Potential manure management practices that reduce GHG emissions associated with manure handling and storage include (but are not limited to) manure composting (to reduce methane emissions), movement of manure from nutrient-rich to nutrient-deficient areas, and improved methods for application to fields (for reduced nitrous oxide [N_2O] emissions). Application improvements include incorporating manure into soil instead of surface spraying/spreading. Also, implementing digester and energy recovery projects at confined animal operations reduces methane emissions and uses the energy to displace fossil fuels. To date, most of these projects have been implemented at dairies and swine operations.

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Implementation Mechanisms

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Feasibility Issues

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Barriers to Consensus

TBD – [blank until final vote by the GCGW]

AFW-6. Promotion of Farming Practices that Achieve GHG Benefits

Policy Description

The state could provide incentives to farmers for using production processes that achieve net GHG benefits. For example, some organic farming practices could reduce GHG emissions compared with conventional farming, depending on the specific practices implemented (e.g., use of no-till cultivation and fewer chemicals).

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Implementation Mechanisms

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Barriers to Consensus

TBD – [blank until final vote by the GCGW]

AFW-7. End of Use Waste Management Practices

Policy Description

These programs use the renewable energy created at landfills by anaerobic digesters (methane) to make electric power, space heat, or liquefied natural gas. New processes for converting waste energy include biomass gasification and pyrolysis. A range of renewable products can be developed from these processes, including gaseous and liquid fuels, biochar, and chemical products. Existing processes include waste combustion and energy recovery (as electricity, steam, or both).

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Barriers to Consensus

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AFW-8. Improved Water Management and Use

Policy Description

Water Management has two main components: Drainage and Irrigation. The use of surface versus ground water is an issue along with captured water. Benefits of surface waster include reduced pumping energy consumption along with many ancillary benefits. Excess water can lead to runoff of nitrogen, with subsequent emission to the atmosphere as N_2O. Implementing best management practices improves the efficiency of water use. Managing and improving water consumption and nutrients spread on crops will result in a minimal loss of carbon from the soil. Reduced water consumption can also reduce energy use for water pumping. The reuse of water also becomes a nutrient management issue and must be considered when implemented. Water purification is an energy intensive process that is an issue for farmers and land users in addition to other sectors such as the residential, commercial and industrial sectors (this is related to options under RCI TWG). As such, water use in rural, suburban and urban areas must all be included. The impact of cat fish farms on GHG emissions could also be investigated.

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Barriers to Consensus

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AFW-9. Expanded Use of Locally Produced Farm and Forest Products

Policy Description

The production and consumption of locally produced agricultural goods displace the consumption of goods transported from other states or countries, and thus reduce transportation-related GHG emissions. Increasing the amount of renewable wood products used for residential and commercial building can increase carbon sequestration in wood products and displace GHG emissions associated with processing high-energy input materials, such as steel, plastic, and concrete. Also, using locally grown wood can lower transport-associated GHG emissions.

Policy Design

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Timing: TBD – [as approved by the TWG]

Parties Involved: TBD – [as approved by the TWG]

Other: TBD – [as needed and approved by the TWG]

Implementation Mechanisms

TBD – [as approved by the TWG]

Related Policies/Programs in Place

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Additional Benefits and Costs

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Feasibility Issues

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Barriers to Consensus

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