



Governor’s Action Team on Energy and Climate Change

State of Florida

Catalog of State Actions

Agriculture, Forestry, and Waste Management Technical Work Group

A catalog of state-level, GHG-reducing actions and policy options based on actions undertaken or considered by state, local and private actors.

Key to Future Rankings of Options in the Following Tables

Potential GHG Emission Reductions*	Potential Cost or Cost Savings* [†]
High (H): At least 1.0 million metric tons of carbon dioxide equivalents (MMtCO ₂ e) per year by 2020	High (H): \$50 per tCO ₂ e or above
Medium (M): From 0.1 to 1.0 MMtCO ₂ e per year by 2020	Medium (M): \$15–\$50/tCO ₂ e
Low (L): Less than 0.1 MMtCO ₂ e per year by 2020, or 1 MMtCO ₂ e by 2050	Low (L): Less than \$15/tCO ₂ e
Uncertain (U): Not able to estimate at this time	Negative (Neg): Net cost savings
	Uncertain (U): Not able to estimate at this time

* Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.

[†] Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.

Definition of “Priorities for Analysis”:

High: High priority options will be analyzed first.

Medium: Medium priority options will be analyzed next, time and resources permitting.

Low: Low priority options will be analyzed last, time and resources permitting.

Notation of Options:

Options marked in bold and asterisk (*) indicate some of the related state actions that are approved or underway, as described further in the companion options description document. Technical Work Group (TWG) members are encouraged to provide information on other relevant actions.

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Energy Security, Externalities & Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Florida
AFW-1	AGRICULTURE—PRODUCTION OF ENERGY AND MATERIALS					
1.1	Expanded Utilization of Biomass Feedstocks for Electricity, Heat, or Steam Production			Consider potential invasiveness of species when evaluating use of feedstocks. Related to 6.1 and 9.1.		EO 07-127 includes a request to establish a Renewable Portfolio Standard that would require utilities to obtain 20% of generation from renewable sources—may include biomass feedstocks.
1.2	In-state Liquid Biofuels Production					Current efforts include: Sales tax exemption for fueling equipment <ul style="list-style-type: none"> • Corporate income tax credit for production and fueling equipment • DACS Florida Farm to Fuel program • FDEP Renewable Energy Technologies Grant Program • Funding to UF IFAS for cellulosic ethanol. New cellulosic ethanol pilot plant being built in FL.
1.3	Manure Digesters/Other Waste Energy Utilization					EO-07-127 RPS request for renewable sources
1.4	Improving Energy Capture from Biomass Heat					

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1.5	Expand Production/Use of Bio-based Materials and Chemicals					
1.6	Improved Commercialization of Biomass Conversion Technologies					
AFW-2	AGRICULTURE—LIVESTOCK					
2.1	Manure Management & Utilization					Florida law authorizes the development of best management practices for manure management & utilization
2.2	Changes in Animal Feed					
2.3	Technology Improvements to Increase Water Conservation					
AFW-3	AGRICULTURE—CROP PRODUCTION					
3.1	Soil Carbon Management					Refer to the paper by Sabine Grunwald called "Role of Florida soils in carbon sequestration"

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3.2	Nutrient Management					IFAS, DEP & DACS have developed Best Management Practices for row crops in Florida; includes irrigation, fertilization, and pest management practices
3.3	Technology Improvements to Increase Efficiency					See 3.2
3.4	Water Management					DEP has a non-point source management program for agriculture IFAS, DEP & DACS have identified the best way to manage for better crop production
3.5	Drainage Management					Permitting requirements currently do not allow for standing water.
AFW-4	AGRICULTURE—LAND USE CHANGE					
4.1	Land Use Management that Promotes Permanent Cover			Concern with taking land out of production.		IFAS, DEP & DACS have developed BMPs related to water quality protection associated with various agricultural concerns.
4.2	Preserve Open Space/Agricultural Land					Florida Rural and Family Lands Protection Act of 2001 authorizes the purchase of conservation easements by DACS

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AFW-5	AGRICULTURE—FARMING PRACTICES					
5.1	Increase On-Farm Energy Production and Efficiency					
5.2	Promotion of Farming Practices that Achieve GHG Benefits					Required by Florida Statute 570.954, which promotes the farm to fuel initiatives. This promotes the use of Florida crops and agricultural wastes as a source of renewable energy
5.3	Programs to Support Local Farming/Buy Local					Florida Agricultural Promotional Campaign (FAPC) promotes local farming and agricultural products in Florida
5.4	Promotion of Urban Agriculture, Community Gardens, and Green Roofs					
AFW-6	FORESTRY—PRODUCTION OF ENERGY AND MATERIALS					
6.1	Expanded Use of Forest Biomass Feedstocks for Electricity, Heat and Steam Production					Florida Division of Forestry promotes the development of woody biomass. See also 1.1 above
6.2	In-state Liquid Biofuels Production					See 1.2 above

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6.3	Improved Energy Capture from Wood Waste Combustion					
6.4	Improved Commercialization of Biomass Conversion Technologies					
6.5	Expanded Use of New, Used, & Recycled Wood Products for Building Materials					
AFW-7	FORESTRY—BIOMASS PROTECTION AND MANAGEMENT					
7.1	Forest Protection—Reduced Clearing And Conversion to Non-forest Cover					Florida has aggressively pursued the acquisition of conservation lands over the past 25 years preserving more than 2M acres with the Preservation 2000 and Florida Forever programs.
7.2	Urban Forestry					The Urban & Community Forestry Program in DACS works in promoting urban forestry and provides grants.
7.3	Afforestation and/or Restoration of Non-forested Lands					
7.4	Forest Management for Carbon Sequestration					

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7.5	Mitigation of Forest Carbon Sequestration Loss and Emissions Due to Wildfire					Florida's wildlands fire prevention program is organized by the Division of Forestry in DACS and executed by water management districts, DEP, the Fish & Wildlife Conservation Commission, as well as federal land managers.
7.6	Mitigation of Forest Loss Due to Insects/Disease					All land managing agencies in Florida use prescribed fire and other means in order to prevent insect and/or disease outbreaks.
AFW-8	FORESTRY—WOOD PRODUCTS AND WASTE					
8.1	Improved Mill Waste Recovery					
8.2	Improved Logging Residue Recovery					
8.3	Silviculture Improvements					BMPs developed by DACS, DEP, and IFAS related to water quality protection and water conservation
AFW-9	WASTE MANAGEMENT—WASTE MANAGEMENT STRATEGIES					

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9.1	Expanded Use of Yard Waste Biomass Feedstocks for Electricity, Heat, and Steam Production					Related to 1.1 and 6.1. Existing statutory prohibitions promote separate collection of yard waste biomass.
9.2	In-State Liquid Biofuels Production					Related to 1.2 and 6.2
9.3	Advanced Recycling and Composting			Markets for recovered materials will determine feasibility.		DEP administers a Waste Reduction program which includes recycling grants to local government; a loan program for recycling businesses; & a recycling business assistance center. Florida counties must implement a recycling program with a minimum 30% MSW reduction objective.
9.4	Promotion of Bioreactor Technology (Advanced Municipal Solid Waste Management Practices)					DEP and the UF Hinkley Center for Solid and Hazardous Waste Management currently funding three demonstration projects in Florida. See www.bioreactor.org

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9.5	Source Reduction Strategies					The Pollution Prevention Program and the waste reduction section are involved with the implementation of waste reduction strategies throughout the state.
9.6	Resource Management Contracting					
9.7	Enhanced Management of Organic Waste					
9.8	Improved Commercialization of Biomass Conversion Technologies					
AFW-10	WASTE MANAGEMENT—LANDFILL GAS STRATEGIES					
10.1	Flare Landfill Methane at non-NSPS (smaller) Sites					DEP regulates through permits
10.2	Methane and Biogas Energy Programs					Promoted by the Hinkley Center at UF
10.3	Landfill Methane Energy Programs					Florida is a partner in the EPA's Landfill Methane Outreach Program
AFW-11	WASTE MANAGEMENT—WASTEWATER ACTIVITIES					
11.1	Energy Efficiency Improvements					

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11.2	Lower Waste Processing Needs (lower water consumption, waste production)					DEP seeks to reduce waste process through various programs (wastewater & waste) and best management practices
11.3	Install Digesters and Turbines or Engines					
11.4	Algae and Bio-Oils					