



[www.mdclimatechange.us](http://www.mdclimatechange.us)

**Catalog of State Actions  
Mitigation Working Group  
Energy Supply Technical Working Group**

**DRAFT**

**A catalog of state-level, GHG-reducing actions and policy options prepared by the Center for Climate Strategies (CCS), Maryland Department of Environment, and others based on actions undertaken or considered by Maryland and other states, including regional, state, local and private actions.**

***Important Note: The GHG Reduction Policy Options below are numbered solely for convenience in referencing them. Their numbers do NOT reflect a ranking or prioritization of the policy options.***

**Key to Future Rankings of Options in the Tables that Follow:**

Potential GHG Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
<b>High (H):</b> At least 1.0 million metric tons (MMt) carbon dioxide equivalent (CO <sub>2</sub> e) per year by 2020	<b>High (H):</b> \$50 per metric ton CO <sub>2</sub> e (tCO <sub>2</sub> e) or above
<b>Medium (M):</b> From 0.1 to 1.0 MMtCO <sub>2</sub> e per year by 2020	<b>Medium (M):</b> \$5-50/tCO <sub>2</sub> e
<b>Low (L):</b> Less than 0.1 MMtCO <sub>2</sub> e per year by 2020, or 1 MMtCO <sub>2</sub> e by 2050	<b>Low (L):</b> Less than \$5/tCO <sub>2</sub> e
<b>Uncertain (U):</b> Not able to estimate at this time	<b>Negative (Neg):</b> Net cost savings
	<b>Uncertain (U):</b> Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
<u>2/</u> 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.

### Energy Supply (ES)

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in MD
<b>ES-1</b>	<b>EMISSIONS POLICIES AND OVERARCHING ITEMS</b>					
1.1	GHG cap-and-trade					Regional Greenhouse Gas Initiative (RGGI), a cap-and-trade program covering electric generating units in 10 Northeast states.  Emphasize renewable energy and energy efficiency in meeting program goals.  Add offset types to RGGI.
1.2	Carbon (GHG) tax					
1.3	Generation performance standards and/or mitigation requirements for electricity					
1.4	Integrated resource planning (IRP) with or without re-regulation and/or state energy plan					UMD & Johns Hopkins have technology transfer efforts underway
1.5	Voluntary GHG commitments					
1.6	Technology Research & Development					
1.7	Clean energy fund that is bond-funded to provide for revolving loan fund					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in MD
<b>ES-2</b>	<b>RENEWABLE ENERGY AND ENERGY EFFICIENCY</b>					
2.1	Renewable and/or Environmental Portfolio Standard (e.g., add CHP and/or EE to RPS as additional tier) and/or Energy Efficiency Portfolio Standard					Existing RPS of 9.5% by 2022, with 2% solar tier
2.2	Grid-based renewable energy incentives and/or barrier removal					Clean Energy Incentive Act, Production Tax Credit
2.3	Distributed renewable energy incentives and/or barrier removal (including, e.g. RGGI offsets for RE)					NOx set-aside program can support renewables
2.4	Green power purchases and marketing, including a requirement on utilities to offer voluntary green power purchases as part of consumer utility bills.					NOx Set-Aside Program/County Wind Purchases

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in MD
2.5	<p><u>Clean Distributed Generation</u> Standards, Incentives and Barrier Removal for Distributed Generation, including Combined Heat and Power (CHP), district heating and cooling, landfill gas, solar, fuel cells and other forms of renewable energy. Such standards, incentives and barrier removal should include consideration of, e.g., standby charges, interconnection rates, offsets of other emissions, time varying rates, expanding legislative authority for performance contracting to include renewable energy, and the need for long-term contracting authority for renewables, and strategies for replacing dirty diesel generators.</p>					
2.6	Renewable energy development issues (zoning, siting, etc.)					
2.7	Technology-focused initiatives (biomass co-firing, energy storage, fuel cells, etc.)					Cellulosic Ethanol Study
2.8	Promote long-term contracts for renewable energy facilities					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in MD
<b>ES-3</b>	<b>FOSSIL FUEL AND NUCLEAR ELECTRICITY</b>					
3.1	Advanced fossil fuel technology (e.g. IGCC, CCSR) incentives, support, or requirements, including completion of inventory of geological sequestration potential in MD					Need to identify potential locations in the state.
3.2	New Nuclear Power					
3.3	Relicensing/Uprating Existing Nuclear Power					
3.4	Efficiency improvements and repowering existing plants					
3.5	Technology-focused initiatives					
3.6	Address environmental barriers at the federal level					
<b>ES-4</b>	<b>FUEL PRODUCTION, PROCESSING AND DELIVERY</b>					
4.1	Oil and gas production: GHG emission reduction incentives, support, or requirements					
4.2	Natural gas transmission and distribution					
4.3	Oil Refining: GHG emission reduction incentives, support, or requirements					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in MD
4.4	Coal Production: GHG emission reduction incentives, support, or requirements					
4.5	Coal-to-liquids Production: GHG emission reduction incentives, support, or requirements					
4.6	Low-GHG Hydrogen production incentives and support					
4.7	Renewable Fuels					Renewable Fuels Incentive Act; Mandate for B5 for 50% of the State Distillate Assets, 2001 Executive Order for E85 to be used in 50% of flex-fuel vehicles
4.8	Low Carbon Fuel Standard to improve carbon profile of fossil and renewable fuels					
<b>ES-5</b>	<b>CARBON CAPTURE AND STORAGE OR REUSE</b>					
5.1	CCSR incentives, requirements and/or enabling policies (administration, regulation, liability, incentives)					
5.2	R&D for CCSR, and actively pursue opportunities for federal funding for R&D and demonstration projects.					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in MD
<b>ES-6</b>	<b>OTHER ENERGY SUPPLY OPTIONS</b>					
6.1	Transmission system upgrading, including new transmission facilities					
6.2	Reduction of transmission and distribution line losses					
6.3	Environmental (GHG emissions) disclosure					
6.4	Landfill Gas Recovery (see also Waste), including offering an offset against other emissions					MDE could put pressure on landfills that do not capture and use methane beneficially
6.5	Adequately Staff Government Agencies Charged with Energy Supply Responsibilities					
6.6	Performance contracts covering renewable energy					
6.7	R&D, Deployment and Outreach for start-up companies and environmental consultants					
6.8	Develop additional quality RGGI offset types					
6.9	Phase out the incandescent bulb					
<b>ES-7</b>	<b>ADVOCATE FOR FEDERAL ACTION</b>					