



## Catalog of State Actions Energy Supply (ES) Technical Work Group

A catalog of state-level, greenhouse gas (GHG)-reducing actions and policy options prepared by the Center for Climate Strategies (CCS), Arkansas Governor's Commission on Global Warming, and others based on actions undertaken or considered by Arkansas and other states, including regional, state, local, and private actions.

**Important Note: The state actions are numbered in this catalog solely for convenience in referencing them. Their numbers do NOT reflect a ranking or prioritization of the actions.**

### Key to Future Rankings of Options in the Tables That Follow

Potential GHG Emission Reductions*	Potential Cost or Cost Savings* <sup>†</sup>
<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/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>Uncertain (U):</b> Not able to estimate at this time
	<b>Negative (Neg):</b> Net cost savings

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

<sup>†</sup> 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.

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in AR
<b>ES-1</b>	<b>EMISSIONS POLICIES AND OVERARCHING ITEMS</b>					
1.1	GHG cap-and-trade	L if in-state only H U	H  L H			Won't work well for AR alone; to be effective, must be applied at least regional if not national, international; important to participate if a regional/national program evolves
1.2	Carbon (GHG) tax	H, U	L, H			Same as 1.1
1.3	Generation performance standards and/or mitigation requirements for electricity	U, M, M, H	L in LT H, H			
1.4	Integrated resource planning (IRP)	M	H			Timely cost recovery emphasis PSC has developed stds for 2008 that has implications for a GPS
1.5	Voluntary GHG commitments	L, L	U			
1.6	Technology Research and Development	H H	U L			Ratepayers already funding R&D via EPRI; more state support for more national participation could be helpful.
1.7	Cost recovery for GHG reduction investments	H	L			Act 755 – timely cost-recovery
<b>ES-2</b>	<b>RENEWABLE ENERGY AND ENERGY EFFICIENCY</b>					
2.1	Renewable and/or Environmental Portfolio Standard (RPS/EPS)	H H M		L-H		Need transmission to help import low emitting generation; AR will need to develop more in-state resources – wind, solar

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in AR
2.2	Grid-based renewable energy incentives and/or barrier removal	M-H	L-M			Costs here would be lower than for 2.1 because 2.1 is a mandate
2.3	Distributed renewable energy incentives and/or barrier removal	L	L			
2.4	Green power purchases and marketing	H	L			Coops will have green purchase options for consumers avail. soon; shouldn't include nuclear as "green"
2.5	Combined Heat and Power (CHP) standards, incentives and/or barrier removal	H	L			
2.6	Pricing strategies to promote renewable energy and/or CHP (e.g., net metering)	M	L-M			AR already has some net metering provisions but can/should be strengthened
2.7	Renewable energy development issues (zoning, siting, etc.)	H	L			
2.8	Technology-focused initiatives (biomass co-firing, energy storage, fuel cells, etc.)	L-M	U			Crop-based biomass not a net advantage for GHG emissions – needs R&D support
2.9	Public Benefits Charge	L-M	L			
2.10	Explore regional economies of scale for cost-effective implementation of renewable energy and EE practices	H-M	U M-H			<b>Costs will be M-H if the focus is on infrastructure</b>
<b>ES-3</b>	<b>FOSSIL FUEL AND NUCLEAR ELECTRICITY</b>					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in AR
3.1	Advanced fossil fuel technology (e.g., IGCC, CCSR) incentives, support, or requirements	H	U-H L in LT			Need funding support at the national level.
3.2	New Nuclear Power	H	L			
3.3	Relicensing/Up-rating Existing Nuclear Power	H	L			Both AR units have been relicensed and upgraded; life extensions already granted for existing units; no new opportunities for ~ 25 years
3.4	Efficiency improvements and re-powering existing plants	H	M			
3.5	Technology-focused initiatives	L-M	U			Should be combined w/other technology options
3.6	Geological underground sequestration for new plants	H	H			Plum Pt. & Hemsted, capacity for 2 more units
<b>ES-4</b>	<b>FUEL PRODUCTION, PROCESSING AND DELIVERY</b>					
4.1	Oil and gas production: GHG emission reduction incentives, support, or requirements	L	U			Significant gas potential in AR, declining oil potential
4.2	Natural gas transmission and distribution	L	U			
4.3	Oil Refining: GHG emission reduction incentives, support, or requirements	L-M	U			
4.4	Coal Production: GHG emission reduction incentives, support, or requirements	L	U			Likely to expand for liquid fuels production, but lignite sources in other states are cheaper than AR

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4.5	Coal-to-liquids Production: GHG emission reduction incentives, support, or requirements	L	U			
4.6	Low-GHG Hydrogen production incentives and support	L in ST H in LT	U			
4.7	Oil and gas tax as a funding mechanism for GHG reduction options or R&D	H	U			Could be an excise tax, severance tax, etc.
<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)	H	L in LT U-H			Need to explicitly explore role of carbon injection for enhanced oil recovery – combine w/3.1
5.2	R&D for CCSR	H	L in LT			Need to identify and evaluate suitable sites in AR for geologic storage – combine w/3.1
<b>ES-6</b>	<b>OTHER ENERGY SUPPLY OPTIONS</b>					
6.1	Transmission system upgrading	M-H, M	H			
6.2	Reduction of transmission and distribution line losses	M-H	H			DOE new transformer measures by 2010
6.3	General distributed generation support (interconnection rules, net metering, etc.)	L-M	L-M			AR has a net metering law; PSC has developed rules for implementation
6.4	Environmental (GHG emissions) disclosure	L	L			Generation sector already reports this
6.5	Landfill Gas Recovery (see also Waste)	M	M			

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6.6	Waste to Energy (see also Waste)	<b>U</b>	<b>U</b>			
6.7	N <sub>2</sub> O Reduction Co-benefit	<b>H</b>	<b>U-M</b>			
6.8	Smart Grid	<b>M-H</b>	<b>H</b> <b>L-H</b>			Transmission and distribution to the end-user; should include broadband to home-owners; driven by reliability; cost will depend upon the timeframe