

Kentucky Climate Action Plan Council



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Catalog of State GHG Reduction Policy Actions Energy Supply (ES)

A catalog of state-level, greenhouse gas (GHG)-reducing actions and policy options prepared by the Center for Climate Strategies (CCS) and the Kentucky Climate Action Plan Council, based on actions undertaken or considered in state-wide climate change action plans by multi-stakeholder groups in a wide cross-section of U.S. states and by state, local, and private participants.

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

Potential GHG Emission Reductions ¹	Potential Cost or Cost Savings ^{1, 2}
High (H): At least 1.0 million metric tons (MMt) carbon dioxide equivalent (CO ₂ e) per year by 2020	High (H): \$50 per metric ton CO ₂ e (tCO ₂ e) or above
Medium (M): From 0.1 to 1.0 MMtCO ₂ e per year by 2020	Medium (M): \$5 to \$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 \$5/tCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
¹ Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently of other measures.	
² 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.

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.

Energy Supply (ES)

Note that this listing will be developed more fully during the CCI TWG process. TWG members are encouraged to provide input on policies and programs in place in Kentucky to assist in defining baselines. The “Notes” column should be used to record recently enacted policies and programs in Kentucky relevant to state actions in the catalog.

Option No.	Greenhouse Gas (GHG) Reduction Policy Option	Potential GHG Emissions Reduction	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Kentucky
ES-1	EMISSION POLICIES AND OVERARCHING ITEMS					
1.1	GHG Cap and Trade					
1.2	Carbon/GHG Tax					
1.3	Generation Performance Standards and/or Mitigation Requirements for Electricity					
1.4	GHG Targets or GHG Performance Standards					
1.5	Technology Research and Development					
1.6	Integrated Resource Planning					
1.7	Carbon Markets					
ES-2	RENEWABLE ENERGY AND ENERGY EFFICIENCY					
2.1	Renewable and/or Environmental Portfolio Standard					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) recommends the adoptions of Energy Efficiency Resource

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						Standards (EERS) sufficient to meet a 2025 goal of a 16% reduction below BAU energy requirements through efficiency, and implement an RPS with the goal to triple the generation of renewable energy to 1000 MW.
2.2	Grid-Based Renewable Energy Incentives and/or Barrier Removal					.
2.3	Distributed Renewable Energy Incentives and/or Barrier Removal					
2.4	Combined Heat and Power (CHP) Incentives and/or Barrier Removal					
2.5	Green Power Purchases and Marketing					
2.6	Pricing Strategies to Promote Renewable Energy (e.g., Net Metering)					
2.7	Renewable Energy Development Issues (Zoning, Sitting, etc.)					
2.8	Demand-Side Energy Efficiency					

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	(RCI focus)					
2.9	Small Hydro Efficiency Improvements, Capacity Increase and Barrier Removal					
2.10	Utility Energy Efficiency Incentives and Barrier Removal					
2.11	Consumer Energy Efficiency and Barrier Removal					
2.12	Research and Development for Renewable Technologies					
2.13	Co-Location or Integration of Energy-Producing Facilities					
ES-3	FOSSIL FUEL AND NUCLEAR ELECTRICITY					
3.1	Advanced Fossil Fuel Technology incentives, Support, or Requirements (IGCC, CCSR, etc.)					
3.2	Efficiency Improvements and Repowering Existing Plants					
3.3	Biomass Co-firing at New Fossil Fuel Power Stations					"Intelligent Energy Choices for Kentucky's Future" (7-point energy plan) states KY's forest resources can potentially contribute more than 50 percent of Kentucky's renewable energy potential, and calls for the

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						state to review its policies and regulations to encourage the responsible, sustainable use of woody biomass.
3.4	Nuclear Power Review, Support, and Incentives					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) calls for legal hurdles to the successful inclusion of nuclear power in Kentucky’s energy mix to be examined. Specifically, removal or revision of the legislative ban on new nuclear power plants must be addressed, and Incentives that reduce the risk of capitalizing and financing a new power plant should be considered.
3.5	Relicensing/Up-rating Existing Nuclear Power					
3.6	New Nuclear Energy Capacity					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) calls for research to be conducted to assess the desirability of co-locating nuclear power plants with advanced coal conversion plants to assess the effects on reducing carbon dioxide emissions, provide ready access to electricity and/or steam, and possibly use waste heat for the coal conversion process.

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ES-4	FOSSIL FUEL PRODUCTION, PROCESSING, AND DELIVERY					
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					
4.4	Coal Production: GHG Emission Reduction Incentives, Support, or Requirements					<p>“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) states Kentucky will produce the equivalent of 100 percent of its annual natural gas requirement by 2025 by augmenting in-state natural gas production with synthetic natural gas (SNG) from coal-to-gas (CTG) processing. The plan calls for more research by the Center for Applied Energy Research and a Public Service Commission (PSC) administrative case should be initiated to ensure that Kentucky local distribution companies and customers are not harmed by direct sales of gas from SNG producers to industrial plants.</p>

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4.5	Coal-to-Liquids and Gas-to-Liquids Production: GHG Emission Reduction Incentives, Support, or Requirements					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) states the goal for Kentucky to develop a coal-to- liquids (CTL) industry that will use 50 million tons of coal per year to produce 4 billion gallons of liquid fuel per year by 2025. To accomplish this, the plan calls for Kentucky to sanction two 500-million-gallon-per-year (approximately 35,000 barrels per day) CTL fuel facilities in both 2013 and 2014, and then two additional 480-million-gallon-per-year CTL fuel facilities by 2018, and two more by 2025, for a total of eight new CTL facilities. The plan advises Kentucky to evaluate its current coal mining capabilities to ensure that it can achieve the necessary levels of coal production to support both coal-fired electricity generation and the development of a CTL industry in the near term.
4.6	Low-GHG Hydrogen Production Incentives and Support					
ES-5	CARBON CAPTURE AND STORAGE OR REUSE (CCSR)					
5.1	CCSR Enabling Policies (Administration, Regulation,					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy

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	Liability)					plan) states the goal that by 2025, Kentucky will have evaluated and deployed technologies for carbon management, with use in 50 percent of KY's coal-based energy applications. Also, legal hurdles to successful CCS are to be examined, with recommended legislative solutions provided to the 2010 General Assembly.
5.2	CCSR Incentives and Infrastructure					
5.3	CCSR Research and Development					"Intelligent Energy Choices for Kentucky's Future" (7-point energy plan) calls for more support of the Carbon Management Research Group (CMRG), which will carry out a 10-year program of research to develop and demonstrate cost-effective and practical technologies for reducing and managing carbon dioxide emissions in existing coal-fired electric power plants. Also, the Energy and Environment Cabinet (EEC) should work closely with university researchers and industry partners to undertake one large-scale carbon mitigation project to utilize algae to capture carbon from flue

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						gases, and then convert the algae to biofuels.
5.4	Enhanced Oil Recovery Using CO ₂					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) states that the Consortium for Carbon Storage, which was established by the Kentucky Geological Survey with a seed grant from the EEC, should be supported. The Consortium will determine the potential for sequestration and for enhanced oil and gas recovery and enhanced coal-bed methane recovery using carbon dioxide.
ES-6	OTHER ENERGY SUPPLY OPTIONS (Including enabling policies)					
6.1	Transmission System Upgrading					
6.2	General Distributed Generation Support (Interconnection Rules, Net Metering, etc.)					
6.3	Reduce Transmission and Distribution Line Losses					
6.4	Environmental/GHG Emissions Disclosure					
6.5	Public Benefits Charge Funds					“Intelligent Energy Choices for Kentucky’s Future” (7-point energy plan) recommends the adoption of

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						public benefits charge funds to support non-utility investments in energy efficiency (see ES-2.1) and observes that a Kentucky Public Benefits Charge(PBF) of 1 mil per kilowatt-hour would generate approximately \$67 million annually, based on 2006 retail sales of 66,886,000 megawatt-hours by Kentucky's regulated investor-owned and cooperative utilities.
6.6	Regulatory Reform for Electric Co-ops					
6.7	N ₂ O Reduction Co-Benefit					
6.8	Smart Grid Policies					

CCI = Cross-Cutting Issues; CHP = combined heat and power; CCSR = carbon capture storage and reuse; GHG = greenhouse gas; IGGC = integrated gasification combined cycle; N₂O = nitrous oxide; RCI = Residential, Commercial, and Industrial; T&D = transmission and distribution; TWG = Technical Work Group.

Note: There is some overlap with and repetition with RCI.