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Catalog of State GHG Reduction Policy Actions Residential, Commercial, and Industrial (RCI)

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 statewide 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.

Residential, Commercial, and Industrial (RCI)

Note that this listing will be developed more fully during the RCI Technical Work Group (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
RCI-1	ENERGY EFFICIENCY PROGRAMS, FUNDS, AND GOALS					
1.1	Utility Demand-Side Management (DSM) Programs for Electricity	H	M			<ul style="list-style-type: none"> - Some DSM programs focus on reducing energy use; some on reducing peak load. - DSM is a component of the Energy Efficiency Resource Standard (EERS), one of four major action items in KY’s energy strategy. - KY permits utilities to submit DSM plans for approval but does not give the Public Service Commission (PSC) the authority to mandate them.¹ - Possible consolidation with RCI-1.3?
1.2	Utility Demand-Side Management (DSM) Programs for Natural Gas, Propane, and Fuel Oil	H	M			DSM is a component of the KY EERS.
1.3	Demand-Side Management (DSM) Programs for Distribution Electric Utilities (Munis, Co-ops, etc.)	H	M			<ul style="list-style-type: none"> - DSM is a component of the KY EERS. - This option may not apply to KY because the PSC regulates most distribution cooperatives. - Possible consolidation with RCI-1.1?

¹ See KRS 278.285.

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1.4	Energy Efficiency Funds (e.g., Public Benefit Funds [PBF]) Administered by State Agency, Utility, or Third Party (e.g., Energy Trust)	H	M			PBF is a component of the KY EERS.
1.5	Regional Market Transformation Through Alliances, Technology Development Programs, and Education	H	L	Include research and technology.		
1.6	Reduced-Cost or Free Residential Energy Audits	H-M	L			- Possible consolidation with RCI-1.7, RCI-1.8, and RCI-9.7?
1.7	Reduced-Cost Energy Audits or Technical Assistance for Commercial Businesses	M	L			- Possible consolidation with RCI-1.6, RCI-1.8, and RCI-9.7?
1.8	Reduced-Cost Energy Audits or Technical Assistance for Industry Sectors	M	L			- Overlaps with RCI-9.7. - Possible consolidation with RCI-1.6, RCI-1.7, and RCI-9.7?
1.9	Low-Cost Loans for Energy Efficiency Improvements	M	M	Loan programs' success depends heavily on programs' design.		

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1.10	Saving Energy, Savings Sales Tax	U	U	Sales tax holidays often simply shift sales from one period to another.		Tax incentives cited as a possible component of the KY EERS.
1.11	Reduce Energy Use by 10% or More in State-Owned Buildings	M	L			<ul style="list-style-type: none"> - Some overlap with RCI-1.11, RCI-2.11, RCI-5.7, and RCI-9.1. - Government lead-by-example (GLE) is one of four major action items in KY's energy strategy; recommended targets are 15% reduction in energy consumption from 2009 levels by 2015 and 25% by 2025. - This policy is already largely in place due to HB-2.
1.12	Encourage Integrated Lean Manufacturing and Energy Use Reduction Technical Assistance to Industrial and Commercial Facilities	M-H	L			
1.13	Develop Investment Tax Credits for Energy Efficiency Improvements in Industrial or Commercial Facilities	M?	M?			Tax incentives are cited as a possible component of the KY EERS.
1.14	Inverted Block Rates to Encourage Energy Efficiency	M	L			<ul style="list-style-type: none"> - Also included as RCI-5.4. - Possible consolidation with RCI-5.4.

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1.15	Allow and Promote On-Bill Financing of Energy Efficiency Investments	U	L			<ul style="list-style-type: none"> - Enables improvements to be funded by utilities, which are repaid through charges on the utility bill. - Examples in SC. - May need legislative authorization and/or PSC approval.
RCI-2	BUILDINGS AND FACILITIES					
2.1	Improved Building Codes for Energy Efficiency	H	M	Affects only new buildings or substantial retrofits.		<ul style="list-style-type: none"> - The High-Performance Building Advisory Committee will set aggressive standards for state buildings as part of GLE. - Possible consolidation with RCI-2.2?
2.2	Training of Building Code and Other Officials in Energy Code Enforcement	M-H	L	High-value effort; best building code efforts incorporate training elements.		<ul style="list-style-type: none"> - KY is participating in the Energy Code Ambassadors Program (ECAP), a pilot partnership with the International Code Council (ICC) and the Building Codes Assistance Project (BCAP) to train code enforcement officials as regional ambassadors to local code enforcement authorities. - Possible consolidation with RCI-2.1? - Possible move to or consolidation in RCI-4?

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2.3	Improved Design and Construction, "Government Lead by Example"	M	L	Impact depends on amount of new government construction.		<ul style="list-style-type: none"> - Some overlap with RCI-1.11, RCI-2.11, RCI-5.7, and RCI-9.1. - GLE is one of four major action items in KY's energy strategy, targeting new state buildings and new or renovated schools. - Should include leasing and purchasing too, not just construction. - Possible consolidation with one or more above options?
2.4	Increased Use of Blended Cement (Substituting Fly Ash or Other Pozzolans for Clinker)	U	L-M			
2.5	Support for Energy-Efficient Community Planning: "Smart Growth," Cluster Development, etc.	U	U			Often covered more comprehensively as a Transportation and Land Use option.
2.6	Promotion and Incentives for Improved Design and Construction (e.g., LEED, Green Buildings) in the Private Sector	H	L-M			
2.7	Feebate Program to Encourage Energy Efficiency in Building Design	U	L			
2.8	Incentives for Retrofit of Existing Residential, Commercial, Institutional, and Industrial Buildings	H	L			<ul style="list-style-type: none"> - Some overlap with RCI-2.13 and RCI-9.4. - Possible consolidation with one or more above options?

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2.9	Training and Education for Builders and Contractors (e.g., Heating, Ventilation, and Air Conditioning, Sizing, Duct Sealing)	M-H	L			<ul style="list-style-type: none"> - Should include new construction and retrofits. - Possible move to or consolidation in RCI-4?
2.10	Energy Management Training/Training of Building Operators	M	L			<ul style="list-style-type: none"> - Possible move to or consolidation in RCI-4?
2.11	Energy Efficiency in State and Local Government Buildings	M	M	Construction and equipment.		<ul style="list-style-type: none"> - Some overlap with RCI-1.11, RCI-2.11, RCI-5.7, and RCI-9.1. - GLE is one of four major action items in KY's energy strategy, targeting new state buildings and new or renovated schools. - Possible consolidation with one or more above options?
2.12	Require New Government Buildings to Utilize Sustainable Building Design Standards	M	L-M			<ul style="list-style-type: none"> - Some overlap with RCI-2.11 and RCI-9.2. - e.g., LEED Gold Certification, ASHRAE Green Building Design Standard (189.1), etc. - New public buildings in KY >\$25 million must be LEED Silver or higher.² - A new International Green Construction Code is now being developed. - Possible consolidation with one or more above options? - Possible consolidation with RCI-2.6 with a shorter timeframe for govt?

² House Bill 2 (2008). See <http://governor.ky.gov/pressrelease.htm?PostingGUID={D415AE6F-856A-4D6B-ABE3-F4BE5B89E8CF}>

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2.13	Create Incentives and Targets for Retrofit of Existing Commercial or Industrial Buildings	H	M			- Some overlap with RCI-2.8 and RCI-9.4. - Possible consolidation with one or more above options?
2.14	Develop a Modified Cap-and-Trade Program for Commercial Buildings	L	H			
2.15	Building Commissioning and Recommissioning, Including Energy Tracking and Benchmarking	H	L			- Included under GLE in KY's energy strategy, for new state-funded buildings.
2.16	Explore Advanced Metering Technologies That Can Monitor Energy Usage and Allow Homeowners and Managers to Adjust Energy Use Remotely	U	U	Metering can be an expensive plan; remote power controls may not be critical.		
2.17	Require Solar-Ready Building Infrastructure in New Buildings	H	M			- Possible consolidation with RCI-2.18, RCI-2.21, and RCI-2.22?
2.18	Promote, Encourage, and Incentivize Solar Hot-Water Systems in New Buildings	M-H	M			- Possible consolidation with RCI-2.17, RCI-2.21, and RCI-2.22?
2.19	Implement a Building Energy Labeling Program	U	U			- e.g., ASHRAE Building Energy Quotient program, or Seattle's Energy Use Benchmarking Ordinance #123226. ³ - Data may be available from similar programs in the European Union (EU).

³ See <http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?s1=energy&s3=&s4=&s2=&s5=&Sect4=AND&l=20&Sect2=THESON&Sect3=PLURON&Sect5=CBORY&Sect6=HITOFF&d=ORDF&p=1&u=%2F~public%2Fcbory.htm&r=2&f=G>.

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2.20	Require Designers of State and Local Government Buildings to Be Certified as High-Performance Building Design Professionals	U	U			- e.g., LEED Accredited Professional (AP) certification ⁴ or equivalent.
2.21	Promote, Encourage, and Incentivize More Efficient Hot-Water Systems	H	L			- Some overlap with RCI-2.18. - i.e., not only solar, not only in new buildings. - Ideally, include a performance level (e.g., 20% more efficient). - Possible consolidation with RCI-2.17, RCI-2.18, and RCI-2.21?
2.22	Promote, Encourage, and Incentivize More Efficient Heating, Ventilation, and Air Conditioning (HVAC) Systems	H	L			- Possible consolidation with RCI-2.17, RCI-2.18, and RCI-2.21?
RCI-3	APPLIANCE STANDARDS					
3.1	Expansion of State-Level Appliance Efficiency Standards	H	L-M			- Expand/raise state standards, but use a common market standard, not one unique to Kentucky alone.
3.2	Support for Higher Federal Appliance Efficiency Standards	U	U			
3.3	Require High-Efficiency Appliances in New Construction and Retrofits	H	L			- Some overlap with RCI-5.7.

⁴ See <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1815>.

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RCI-4	EDUCATION AND OUTREACH					
4.1	Consumer Education Programs	U	U	Extend to businesses, retailers, teachers, and students.		- Education, outreach, and marketing (EOM) is one of four major action items in KY's energy strategy. - Possible consolidation into one RCI-4 option?
4.2	Energy Efficiency School Curriculum	U	U			- Kentucky has at least two programs in place: (1) the Kentucky National Energy Education Development (NEED) Project; ⁵ and (2) the Kentucky Green and Healthy Schools Program. ⁶ - Possible consolidation into one RCI-4 option?
4.3	Truth-in-Advertising Campaign	U	U			- Possible consolidation into one RCI-4 option?
4.4	In-Home Energy Displays	U	U			- Overlaps with RCI-6.10. - Possible consolidation into one RCI-4 option?

⁵ See <http://www.need.org/states/kentucky/>.

⁶ See <http://greenschools.ky.gov/>.

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4.5	Create a High-Tech Research and Development Center That Focuses on Renewable Energy and Energy Efficiency	U	U			<ul style="list-style-type: none"> - Also, potentially a business incubator or commercialization center. - The Conn Center at the University of Louisville provides leading-edge research in renewable energy (RE) and energy efficiency (EE). - The Kentucky Science and Technology Corporation supports and incubates small business development in RE/EE. - Research projects are ongoing at other state universities in cooperation with the Department for Energy Development and Independence. - Possible consolidation into one RCI-4 option?
4.6	Information and Technical Support for a Broad Spectrum of Climate Change Actions	U	U			<ul style="list-style-type: none"> - Possible consolidation into one RCI-4 option?
RCI-5	PRICING AND PURCHASING					
5.1	Green Power Purchasing for Consumers	H	M			<ul style="list-style-type: none"> - Often overlaps with Energy Supply (ES). - Currently, E.ON U.S., Duke Energy Kentucky, Kentucky Power, East Kentucky Power Cooperative, and Big Rivers Electric Corporation have received approval from the PSC to offer such green energy tariff programs. - Perhaps incentivize customer participation?

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5.2	Net Metering for Distributed Generation	U	U			- Often overlaps with ES. - KY allows net metering for generators up to 30 kilowatts. ⁷
5.3	Time-of-Use Rates	M	M–H	Seasonal use rates.		- Often overlaps with ES. - Cost is M–H when/if advanced metering infrastructure is necessary (reference RCI-2.16)
5.4	Tiered (Increasing-Block) Rates for Electricity and Natural Gas Use	U	U			- Also included as RCI-1.14. - Possible consolidation with RCI-1.14?
5.5	Bulk-Purchasing Programs for Energy Efficiency or Other Equipment (Public or Private Sector)	U	U			
5.6	Incentives and Research for Conversion to Low-Carbon and Renewable Energy Sources	U	U			- Some overlap possible with RCI-8.1.
5.7	Establish Minimum Energy Performance Criteria for State Procurement of Appliances and Equipment	M	L			- Included under GLE in KY’s energy strategy.
5.8	Green Power Sales from Distributed Generation Sources	H	M			
RCI-6	CUSTOMER-SITED DISTRIBUTED ENERGY AND COMBINED HEAT AND POWER (CHP)					
6.1	Incentives for Renewable Energy Systems at Residential, Commercial, and Industrial Sites	H	M–H			

⁷ See KRS 278.465 et seq.

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
6.2	Incentives and Resources to Promote Combined Heat and Power (CHP, Co-generation Units)	H	L-M			
6.3	Efficient Transformers on the Customer Side of the Meter	L-M	L-H			- Costs vary; low for new construction or installations, but medium-to-high in retrofits.
6.4	Incentives and Resources for Passive Solar Heating	M	L-M			- Overlaps with RCI-6.7.
6.5	White Roofs, Rooftop Gardens, and Landscaping (Including Shade Tree Programs)	U	H			
6.6	Focus on Specific End-Users and Consumer Products and Technologies	M	L			
6.7	Passive Solar Heating Design	M	L-M			- Overlaps with RCI-6.4.
6.8	Passive Solar Hot-Water Heating	M	L-M			- Overlaps with RCI-2.18 and RCI-2.21.
6.9	Appliance Recycling/Pickup Programs	U	U			
6.10	Metering Technologies for Load Management and Choice	U	U			- Some overlap with RCI 2.16, RCI-4.4, and RCI-5.3.
RCI-7 NON-ENERGY GHG EMISSIONS (HFCS, PFCS, SF₆, CO₂ PROCESS EMISSIONS)						
7.1	Voluntary Industry-Government Partnerships	U	U			

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7.2	Promotion and Funding for Leak Reduction/Capture, Recovery, and Recycling of Process Gases	L-M	L			
7.3	Promotion and Funding for Process Changes/Optimization	U	U			
7.4	Use of Alternative Gases (Other HFCs, Hydrocarbon Coolants/Refrigerants, etc.)	U	U			
RCI-8	GREENHOUSE GAS EMISSION-SPECIFIC GOALS AND POLICIES					
8.1	Support for Switching to Less Carbon-Intensive Fuels (Coal and Oil to Natural Gas or Biomass)	H	L-M			- Some overlap possible with RCI-5.6.
8.2	Industry-Specific Emissions Cap-and-Trade Program	U	U			
8.3	Negotiated Emissions or Energy Savings Agreements	U	U			
8.4	Local Government Program for Voluntary Emission Targets by Businesses	U	U			
8.5	Provide Tools and Information for Residents, Businesses, and Communities to Perform GHG Inventories	U	U			
8.6	Carbon Tax	U	H			

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
RCI-9	OTHER					
9.1	Government Agency Requirements and Goals (Including Procurement)	U	L			- Some overlap with RCI-1.11 and RCI-5.7. - Included under GLE in KY's energy strategy.
9.2	State Buildings Carbon-Neutral Requirement	H	L-M			- Some overlap with RCI-2.11, RCI-2.12, and RCI-9.1.
9.3	Municipal Energy Management	M	L			- Funding for energy management systems (EMS), audits, etc.
9.4	Statewide Effort to Retrofit Existing Buildings (Residential, Commercial, Public, and Industrial) for Energy Efficiency	H	H			- Some overlap with RCI-2.8 and RCI-2.13. - Included under GLE in KY's energy strategy for state-funded buildings.
9.5	Focus on Energy Efficiency Efforts on Specific Market Segments (Low-Income Housing, Small and Medium Enterprises, etc.)	M	M			- Focus on specific consuming sectors is included in EOM in KY's energy strategy.
9.6	Energy Efficiency Reinvestment (Revolving Loan) Funds	U	U			
9.7	Industrial Energy Audits	U	M			- Overlaps with RCI-1.8. - Possible consolidation with RCI-1.6, RCI-1.7, and RCI-1.8?
9.8	Focus on Industrial Ecology/By-product Synergy	U	U			

ASHRAE = American Society of Heating, Refrigerating and Air-Conditioning Engineers; CCI = Cross-Cutting Issues; CHP = combined heat and power; CO₂ = carbon dioxide; DSM = demands-side management; EE = energy efficiency; EERS = Energy Efficiency Resource Standard; ES = Energy Supply; GHG = greenhouse gas; GLE = government lead-by-example; HFCs = hydrofluorocarbons; LEED = Leadership in Energy and Environmental Design; PBF = Public Benefits Fund; PSC = Public Service Commission; RCI = Residential, Commercial, and Industrial; RE = renewable energy; TWG = Technical Work Group.

Note: Some RCI policies overlap with or are repeated in Energy Supply (ES) policies. One state combined RCI and ES into one sector.