



Draft- 1/18/10

www.kyclimatechange.us

Catalog of State GHG Reduction Policy Actions Transportation and Land Use (TLU)

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.

Transportation and Land Use (TLU)

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
TLU-1	LIGHT-DUTY VEHICLES: TECHNOLOGY AND OPERATION					
1.1	Clean Car Program (Pavley Standards)			EPA approved. Implementation in 2010. Unlikely to be a priority now that EPA has linked federal and California standards.		Kentucky 7-Point Strategy for Energy Independence: Transportation energy efficiency programs will contribute another two percent reduction representing energy savings corresponding to approximately 500 million gallons of motor fuel annually.
1.2	Fuel-Efficient Tires					
1.3	Black Carbon Control Technologies (e.g., Use of Particulate Traps, Other Complementary Technologies)			Trapping particulates from diesel engines.		

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
1.4	Procurement of Low-GHG Fleet Vehicles (Fuel Efficiency, Alternative Fuel)			EPA Smart-way Program encourages state participation		Kentucky 7-Point Strategy for Energy Independence: Kentucky will improve the energy efficiency of state-supported facilities and the fleet fuel efficiency of state-owned vehicles. State government will aggressively pursue achieving the requirements outlined in Sections 4-8, House Bill 2 and seek other opportunities that will reduce the energy consumed by all state-financed or state-owned buildings and vehicles.
1.5	R&D on Low-GHG Vehicle Technology (e.g., Fuel Cells)			Probably best coupled with federal dollars.		
1.6	Lower and/or Enforce Speed Limits					
1.7	Vehicle Maintenance and Driver Education (MPG Info, Operating for Max Efficiency, Tire Type and Inflation)			e.g., tire inflation, eco-driver training.		
1.8	Reduce Vehicle Miles Traveled			Focus on transit planning and incentives.		
TLU-2	LIGHT-DUTY VEHICLE INCENTIVES AND DISINCENTIVES					
2.1	Feebates (State-Specific or Regional)			Regional or statewide.		

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
2.2	GHG-linked Registration Fees			Link to fuel efficiency, alternative fuel, VMT, etc.		
2.3	Tax Credits for Low-GHG Vehicles (Tax Rebates for Fuel Efficiency, Alternative-Fuel Vehicles)			Federal Tax Code provides tax credits for alternative-fuel vehicles.		Kentucky 7-Point Strategy for Energy Independence.
2.4	Incentives for Low-GHG Vehicles (Preferential Parking, Use of HOV Lanes, Lower Tolls)					
2.5	Tax Credits or Incentives to Retire or Improve Older High-GHG Vehicles (All Types)			Emission standards and retrofit incentives.		
2.6	Vehicle Scrappage					
2.7	Establish a Fleet Replacement Grant Program					
2.8	Provide a Tax Incentive for Adult Bicycles					
2.9	Support Alternative Travel in Advertising Mainstream					
2.10	Adopt and/or Enforce Anti-Idling Regulations for Light Duty Vehicles					

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
TLU-3	ALTERNATIVE FUEL-RELATED MEASURES					
3.1	Low-GHG Fuel Standard (Renewables Such as Ethanol and/or Biodiesel)			Also called Low-Carbon Fuel Standard (LCF), includes infrastructure development and state leadership.		<p>Kentucky 7-Point Strategy for Energy Independence:</p> <p>By 2025, Kentucky will derive from biofuels 12 percent of its motor fuels demand (775 million gallons per year, which represents approximately 20 percent of Kentucky's current transportation fuels demand), while continuing to produce safe, abundant, and affordable food, feed, and fiber.</p>
3.2	Fuel Quality Standards			e.g., ASTM standards for ethanol/biodiesel.		

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
3.3	Low GHG Fuel Mandates for State/Local Fleets					<p>Kentucky 7-Point Strategy for Energy Independence:</p> <p>Kentucky will establish an escalating renewable fuel standard (RFS) for the state vehicle fleet.</p> <p>Establish an escalating renewable fuel standard (RFS) for the state vehicle fleet.</p> <ul style="list-style-type: none"> • The state will establish an initial RFS of 10 percent, or 560,000 gallons (10 percent of an estimated 5.6 million gallons consumed annually by all state fleet vehicles) for E10 biofuel. • The state will require all eligible fueling stations under government contract to provide, at a minimum, E10 gasoline and B2 biodiesel by 2012.

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
3.4	Alternative Fuel Production Incentives (Reduced Fuel Taxes, Production Tax Credits, Loans, etc.)			Low-carbon fuel (LCF) infrastructure development, High carbon fuel tax, Rural job development		<p>2007(s) 1 HB1 34 45A.625 Procurement strategy for greater use of alternative-fuel motor vehicles — Reports.</p> <p>Kentucky 7-Point Strategy for Energy Independence:</p> <p>Goal: By 2025, Kentucky will derive from biofuels 12 percent of its motor fuels demand (775 million gallons per year, which represents approximately 20 percent of Kentucky’s current transportation fuels demand), while continuing to produce safe, abundant, and affordable food, feed, and fiber.</p>

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
3.5	Targeted State Fuel Procurement to Encourage Alternative Fuel Production (Pennsylvania Example)					Kentucky 7-Point Strategy for Energy Independence: Incentives will be created to encourage production, distribution, and demand for biofuels in Kentucky in an environmentally sustainable manner.
3.6	Alternative-Fuel Infrastructure Development					

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
3.7	Research and Development for a Full Range of Renewable Transportation Fuels					<ul style="list-style-type: none"> • 2007 (s) 1 HB 1 12 141.421 Tax incentives for alternative fuel, gasification, and renewable energy facilities. • 2007 (s) 1 HB 1 20 141.422 Definitions for KRS 141.422 to 141.425. • 2007 (s) 1 HB 1 21 141.423 Nonrefundable credit for biodiesel producer, biodiesel blender, or renewable diesel producer. • 2008 139 HB 2 22 141.424 Biodiesel credit distribution for pass-through entities • 2007 (s) 1 HB 1 24 141.4242 Nonrefundable credit for producers of ethanol. • 2007 (s) 1 HB 1 23 141.4244 Nonrefundable credit for producers of cellulosic ethanol. • 2007 (s) 1 HB 1 25 141.4246 Ethanol or cellulosic ethanol credit distribution for pass-through entities. • 2007 (s) 1 HB 1 26 141.4248 Transfer of unused ethanol or cellulosic ethanol tax credit caps established by KRS. 141.4242 and 141.4244. • 2005 168 HB 272 139 141.425 Authorization for administrative regulations to administer biodiesel credit
Kentucky Climate Action Plan Council www.arclimatechange.us				10		Center for Climate Strategies www.climatestrategies.us

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
3.8	Sustainable Fuel Standard					
TLU-4	LAND USE AND LOCATION EFFICIENCY					
4.1	Infill, Brownfield Redevelopment					
4.2	Transit-Oriented Development			Tax Increment Financing (TIF) Districts; support of transit investments by local gov'ts.; location of state facilities near transit facilities/targeting of infrastructure investments.		
4.3	Smart Growth Planning, Modeling, and Tools			Development alternatives, including Neighborhood Development LEED standards (also see RCI).		
4.4	Targeted Open-Space Protection			Conservation easements and funding mechanisms.		
4.5	"Fix-It-First" and Location-Efficient Funding Strategies					
4.6	Land Use, Zoning, Tax, and Building Code Reform					
4.7	State Congressional Advocates for Federal Action					
4.8	Use of Flexible Federal Transportation Funding					

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
4.9	Downtown Revitalization					
4.10	Balance Economic Development With Agriculture, Protection of Natural Resources and Preservation of Rural Character					
TLU-5	TRANSPORTATION EFFICIENCIES IN PLANNING, INFRASTRUCTURE, AND USE					
5.1	Transportation System Management			Roundabouts, signal synchronization, improved traffic flow, HOV lanes, intelligent transportation systems, etc.		
5.2	Improve Transit Service (Frequency, Convenience, and Quality)					
5.3	Transit Marketing, Promotion, and Pricing Incentives					
5.4	Expand Transit Infrastructure (Rail, Bus, Bus Rapid Transit)					
5.5	Transit Prioritization (Signal Prioritization, HOV Lanes)					
5.6	Create Regional Multimodal Transportation Centers					
5.7	Bike and Pedestrian Infrastructure					
5.8	High-Occupancy Vehicle Lanes					

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
5.9	Van Pooling and Car Pooling					
5.11	Park-and-Ride Lots					
5.12	Car-Sharing Programs					
5.13	Telecommute, Live-Near-Your-Work, and Compressed Work Week					
5.14	Require Government Agencies to Use Telecommuting					
5.15	Telecommuting Centers, Support, and Incentives					
5.16	Make Full Use of Federal Congestion Mitigation Air Quality Funds			CMAQ funds are available.		
5.17	Thorough Analysis of Future Infrastructure Capacity					
5.18	Traffic Calming					
5.19	Street Connectivity					
5.20	Comprehensive Municipal Bicycle and Pedestrian Plans					
TLU-6	LOW-GHG TRAVEL OPTION INCENTIVES					
6.1	Commuter Choice/Parking Cash-Out					
6.2	Adopt Best Work Places for Commuters Policies					
6.3	Issue Free Bus Passes to Downtown Workers, Students, and Retirees					
6.4	Transit Pricing Incentives					

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
6.5	Free Downtown Parking for Car Poolers					
6.6	Reserve Parking Spaces for High-Occupancy Vehicles and Car-Share Programs					
6.7	Guaranteed Ride Home					
6.8	Benefits for Low-GHG Vehicles (Preferential Parking, Use of HOV Lanes)			Preferential parking, use of HOV lanes.		
6.9	Vehicle-Miles-Traveled Charges					
6.10	Increased Fuel Tax (With Targeted Use of Revenue Toward Travel Alternatives)					
6.11	“Pay-As-You-Drive” Auto Insurance			May require changing state insurance regulations.		
6.12	E-Commerce Incentives					
6.13	Congestion Pricing (With Targeted Use of Revenue Toward Travel Alternatives)					
6.14	Emission-Based Tolls (With Targeted Use of Revenue Toward Travel Alternatives)					
6.15	Urban and Intercity Road Tolls (With Targeted Use of Revenue Toward Travel Alternatives)					

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
6.16	Cordon Pricing and/or Allocations			Area pricing or controlled entry to high-congestion areas.		
6.17	Parking Pricing, Excise Tax and/or Supply Restrictions					
6.18	VMT/GHG Offset Requirements for Large Developments					
6.19	Research the Impact of GHG Emission Reduction Strategies on Transportation Revenue Sources					
6.20	Research Alternative Transportation Funding That Creates Incentives to Drive Less					
6.21	CO ₂ Conformity Requirements					
6.22	Encourage Coordination and/or Consolidation of Transit Agencies					
6.23	Cyclist Education Programs					
TLU-7	HEAVY-DUTY VEHICLE TECHNOLOGY					
7.1	Freight Vehicle Technology Improvements (e.g., Aerodynamics)			EPA emission standards took effect in 2007. See EPA "Smart Way" Program for examples.		

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
7.2	R&D on Low-GHG Vehicle Technology					
7.3	Black Carbon Control Technologies					
7.4	Facilitate Adoption of New Clean Technologies—Rail and Marine Engines					
7.5	Tire Technologies			Single-wide, aluminum wheels, low-rolling resistance radials, auto inflation.		
TLU-8	HEAVY-DUTY VEHICLE OPERATIONS					
8.1	Freight Logistics Improvements					
8.2	Lower and/or Enforce Speed Limits					
8.3	Improve Traffic Flow					
8.4	Allow Increased Size and Weight of Trucks			Fuel-efficient goods movement vs. road wear and tear.		
8.5	Pre-Clearance at Scale Houses					
8.6	Truck Stop Electrification					
8.7	Adopt and/or Enforce Anti-Idling Regulations for Buses/Trucks			Include voluntary programs with incentives, state-lead-by-example.		

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
8.8	Clean Freight Operating Improvements					
8.9	Freight Villages/ Consolidation Centers					
TLU-9	INCREASING LOW-GHG HEAVY-DUTY TRANSPORTATION OPTIONS					
9.1	Intermodal Freight Initiatives					
9.2	Feeder Barge Container Services					
9.3	Increase Rail Capacity and Address Rail Freight System Bottlenecks					
9.4	Shift Freight Movements From Truck to Rail					
9.5	Promote Strategies to Move Freight in More GHG-Efficient Ways					
9.6	Promote Consumption of Locally-Produced Goods and Services					
TLU-10	HEAVY-DUTY VEHICLE INCENTIVES AND DISINCENTIVES					
10.1	Procurement of Efficient Heavy-Duty Fleet Vehicles					
10.2	Tax Credits and Incentives for New Equipment or to Retire or Improve Older, Less Efficient Vehicles					

10.3	Maintenance and Driver Training					
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
10.4	Increased Emission-Based Truck Tolls or Highway User Fees					
TLU-11	INTERCITY PASSENGER TRAVEL: AVIATION, HIGH-SPEED RAIL, BUS					
11.1	High-Speed Rail					
11.2	Integrated Aviation, Rail, Bus Networks: Planning, Governance and Investment					
11.3	Aircraft Emission Reductions			Seek to influence federal policy.		
11.4	Airport Operations and Ground Equipment					
11.5	Intercity Bus Incentives and Subsidies					
11.6	Improved Passenger Rail Service					

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
TLU-12 OFF-ROAD VEHICLES: CONSTRUCTION EQUIPMENT, OUTBOARD MOTORS, ATVs						
12.1	Incentives for Purchase of Efficient Vehicles and Equipment			Includes airport service vehicles, construction, industrial, lawn and garden, agriculture, light commercial, logging, recreational marine.		
12.2	Improved Operations and Operator Training					
12.3	Increased Use of Alternative Fuels or Low-Sulfur Diesel					
12.4	Adopt Green Port Strategy			Port-dwelling and cargo-handling equipment.		
12.5	Marine Vessel Efficiency Improvements					
12.6	Operational efficiencies to reduce ocean going vessel hoteling emission.					
12.7	After-treatment of ocean-going vessel stack emissions					
12.8	Truck operational efficiencies at port terminals					
12.9	Electrification of select truck activities at port terminals					

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
TLU-12 OFF-ROAD VEHICLES: CONSTRUCTION EQUIPMENT, OUTBOARD MOTORS, ATVs						
12.10	Cold-ironing (e.g. shore power) of ocean going vessels during hoteling at berth					
12.11	Accelerated truck replacement / retrofits.					
12.12	Accelerated replacement and/or retrofits of cargo handling equipment					
12.13	Vessel speed reduction for transiting ocean-going vessels.					
12.14	Idling Time Reduction for Vessels					
12.15	Locomotive Idling Reductions					
12.16	Idling Reduction Requirements for Construction Equipment					

ASTM = American Society of Testing Materials; ATVs = all-terrain vehicles; B2 = fuel mixture of 2% biodiesel and 98% gasoline; CCI = Cross-Cutting Issues; CO₂ = carbon dioxide; CMAQ = Congestion Management and Air Quality; E10 = fuel mixture of 10% ethanol and 90% gasoline; EPA = U.S. Environmental Protection Agency; GHG = greenhouse gas; HOV = high-occupancy vehicles; LCF = low-carbon fuel; LEED = Leadership in Energy and Environmental Design; MPG = miles per gallon; R&D = research and development; RFS = renewable fuel standard; TIF = tax increment financing; TWG = Technical Work Group; VMT = vehicle miles traveled.