



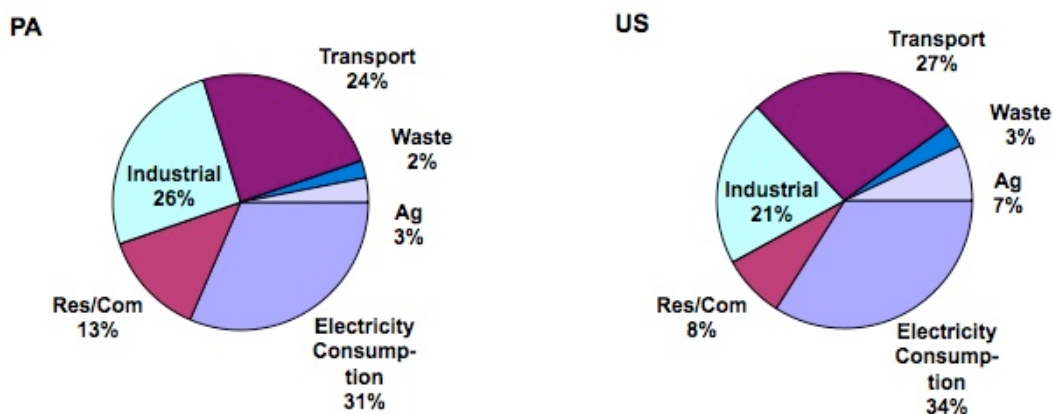
Pennsylvania Climate Work Plan Overview

Pennsylvania's Climate Change Act, Act 70 of 2008, was signed into law by Governor Edward G. Rendell on July 9, 2008. Act 70 requires the following actions, among others, of the Department of Environmental Protection:

- Develop a report on the climate change impacts and opportunities for Pennsylvania
- Develop a greenhouse gas (GHG) inventory and establish a baseline from which future emissions projections can be made
- Create a GHG inventory for emissions and emissions reductions
- Develop a climate change action plan

Act 70 also required the establishment of a Climate Change Advisory Committee (CCAC) composed of representatives that could offer a diversity of viewpoints from the scientific, business and industry, transportation, environmental, social, outdoor and sporting, labor and other affected communities. The Governor, the state Senate and House each selected six members. By law, three ex-officio members include the Secretaries of Conservation and Natural Resources and Community and Economic Development and the Chair of the Public Utility Commission. The PA Department of Environmental Protection is now considering the CCAC's recommendations for inclusion in the state's draft Climate Action Plan; expected to be available by October 9, 2009.

Gross GHG Emissions by Sector, 2005: Pennsylvania and U.S.



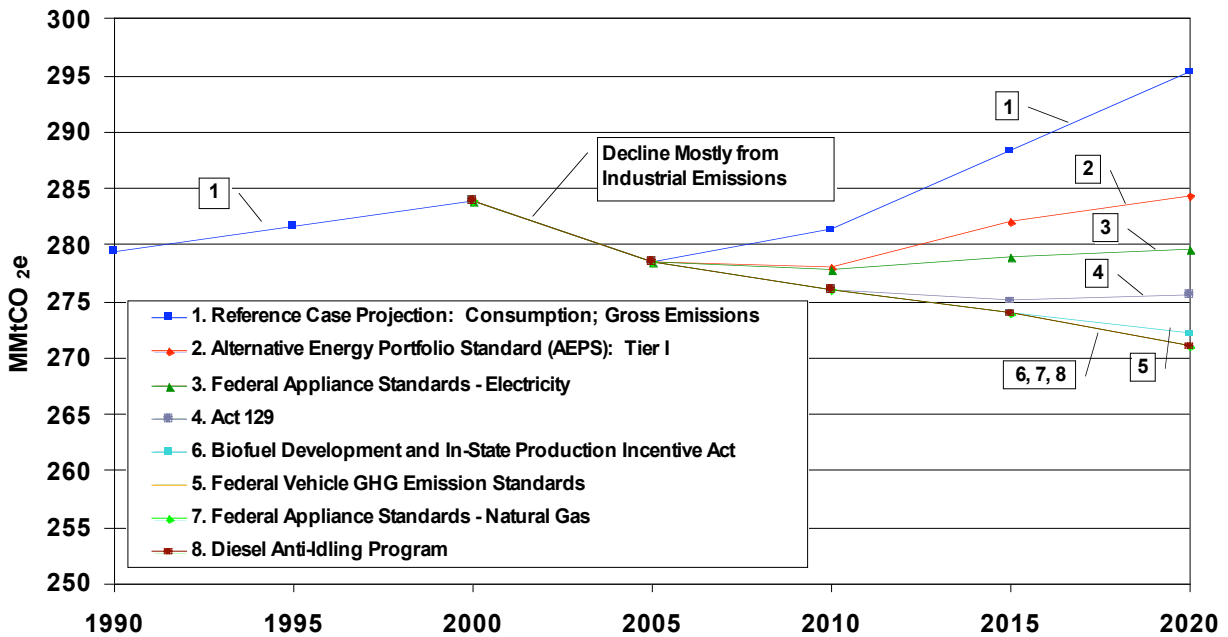
GHG = greenhouse gas; Res/Com = residential and commercial sectors.

The Department of Environmental Protection contracted with the [Center for Climate Strategies \(CCS\)](#) to provide technical and analytical support to assist the CCAC’s five sector-based subcommittees in assessing the GHG reduction potentials and cost effectiveness of the measures considered by the CCAC. The subcommittees include:

- Agriculture and Forestry
- Energy Generation, Transmission and Distribution
- Industry and Waste
- Land Use and Transportation
- Residential and Commercial

During the course of CCAC’s deliberations new actions affected the outlook for emissions in Pennsylvania that had not been part of the state’s reference case forecast. As shown in the graph below, federal energy efficiency requirements for new appliances and, for new light-duty vehicles, and alignment of federal requirements with the California car standards will lower emissions. Recent state actions including the Alternative Energy Portfolio Standard and Act 129’s requirements for electric energy savings and demand reductions, new diesel/truck idling controls, and the cleaner fuels from Biofuel Development and In-State Production Incentive Act will also lower emissions from previously projected levels.

Estimated Emission Reductions Associated with the Effect of Recent State and Federal Actions in Pennsylvania



MMtCO₂e = million metric tons of carbon dioxide equivalent.

The CCAC’s recommendations for work plans to be included in the state’s Climate Action Plan will offer additional GHG reductions beyond state and federal actions from multiple sectors. The following draft CCAC Tables list recommendations to reduce emissions from the built environment — including the Residential and Commercial sector and the Land Use and Transportation sector (items 10 and 11), which address smart growth.

DRAFT CCAC Residential and Commercial Work Plan Recommendations							
Work Plan No.	Work Plan Name	Annual Results (2020)			Cumulative Results (2009-2020)		
		GHG Reductions (MMtCO ₂ e)	Costs (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	GHG Reductions (MMtCO ₂ e)	Costs (NPV, Million \$)	Cost-Effectiveness (\$/tCO ₂ e)
1-4	High-Performance Buildings (Total for RC-1 Through RC-4)	31.9	-\$256.3	-\$8.0	139.7	-\$1,653	-\$11.8
1	High-Performance State and Local Government Buildings	2.7			11.3		
2	High-Performance School Buildings	1.9			7.8		
3	High-Performance Commercial (Private) Buildings	9.0			37.4		
4	High-Performance Homes (Residential)	18.3			83.1		
5	Commissioning and Retro-commissioning PA Buildings	1.5	-\$17	-\$11.2	9.6	-\$71	-\$7.4
6	Re-Light Pennsylvania	12.9	-\$823	-\$64	103.2	-\$4,020	-\$39
	Residential	3.5	-\$328	-\$95	30.0	-\$1,887	-\$63
	Commercial—lighting power density	5.3	-\$367	-\$69	30.7	-\$806	-\$26
	Commercial—fixture performance	4.0	-\$136	-\$34	33.9	-\$1,039	-\$31
	Commercial—daylighting	0.8	-\$64	-\$82	5.0	-\$204	-\$41
	Commercial—controls	2.1	\$108	\$52	14.3	\$511	\$36
	Commercial—parking lot lighting	1.1	-\$117	-\$103	10.5	-\$613	-\$58
	Commercial—exit signs	0.0	-\$1	-\$64	0.1	-\$6	-\$44
7	Re-Roof Pennsylvania	1.4	\$472	\$327	4.3	\$1,064	\$247
	Light-colored, insulated roofs	0.2	-\$4	-\$18	0.8	\$13	\$17
	Green roofs	0.1	\$77	\$614	0.3	\$147	\$462
	PV roof	1.1	\$399	\$359	3.2	\$903	\$282
8	PA buys EE appliances	1.9	-\$68	-\$36	12.4	-\$291	-\$24
9	Geothermal Heating and Cooling	1.4	\$224	\$158	8.0	\$879	\$109
10	DSM - Natural Gas	7.3	-\$51	-\$7	40.5	-\$357	-\$9
11	Conservation and Fuel switching for Heating Oil	5.7	-\$21	-\$4	35.8	\$140	\$4
13	DSM - Water	0.1	-\$255	-\$1,944	0.8	-\$1,011	-\$1,285
14	Renew PA buildings PA Values Embodied Energy in Building Materials, Including Historic Structures	Not quantified					
15	Sustainability Education Programs	Not quantified					
16	Adaptive Building Reuse	Not quantified					
Sector Total After Adjusting for Overlaps		32.25	-\$538	-\$17	214.5	-\$3,668	-\$17
Reductions From Recent Federal		5.07	-\$145	-\$28	29.9	-\$567	-\$19.0
Federal Appliance Standards - Electricity		4.77			28.7		
Federal Appliance Standards - Natural Gas		0.3			1.2		
Sector Total Plus Recent Actions		37.4	-\$683	-\$18	244.4	-\$4,235	-\$17

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent; NPV = net present value; EE = energy efficiency;

Note: Negative numbers indicate costs savings.

DRAFT CCAC Land Use and Transportation Work Plan Recommendations								
Work Plan No.	Work Plan Name	Annual Results (2020)			Cumulative Results (2009-2020)			
		GHG Reductions (MMtCO ₂ e)	Costs (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	GHG Reductions (MMtCO ₂ e)	Costs (NPV, Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	
3	Low-Rolling-Resistance Tires	0.68	-\$212	-\$310	4.1	-\$1,244	-\$300	
5	Eco-Driving	PAYD	0.43	-\$277	-\$651	1.76	-\$1,065	-\$605
		Feebates	0.41	-\$133	-\$320	2.74	-\$810	-\$296
		Driver Training	0.62	-\$129	-\$206	4.53	-\$605	-\$134
		Tire Inflation	0.09	-\$27	-\$282	0.58	-\$137	-\$238
		Speed Reduction	1.96	\$185	\$94	23.0	\$4,153	\$181
6	Utilizing Existing Public Transportation Systems	0.05	\$300	\$6,000	0.55	\$3,000	\$5,454	
7	Increasing Participation in Efficient Passenger Transit	0.12	<\$0	<\$0	2.02	<\$0	<\$0	
8	Cutting Emissions From Freight Transportation	0.99	-\$293	-\$295	6.67	-\$1,495	-\$224	
9	Increasing Federal Support for Efficient Transit and Freight Transport in PA	1.17	\$92	\$78	12.87	\$1,008 ¹	\$78	
10	Enhanced Support for Existing Smart Growth/Transportation and Land-Use Policies	0.76-1.84	<\$0	<\$0	3.79-9.18	<\$0	<\$0	
11	Transit-Oriented Design, Smart Growth Communities, & Land-Use Solutions	Included in T-10	<\$0	<\$0	Included in T-10	<\$0	<\$0	
Sector Total After Adjusting for Overlaps		6.6	-\$494	-\$75	60.1	\$2,805	\$47	
Reductions From Recent State and Federal Actions		15.7	-\$109 ³	-\$31 ³	72.0	-\$380 ²	-\$25 ³	
1	Pennsylvania Clean Vehicles (PCV) Program	0.095	0.0	0.0	1.27	0.0	0.0	
	Federal Vehicle GHG Emissions and CAFE Standards	12.2	NQ	NQ	57.3	NQ	NQ	
2	Biofuel Development and In-State Production Incentive Act	3.47	-\$89	-\$26	14.8	-\$203	-\$14	
4	Diesel Anti-Idling Program	0.07	-\$20	-\$273	0.7	-\$177	-\$238	
Sector Total Plus Recent Actions		22.3	-\$603	-\$27	132	\$2,425	\$18	

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent; NPV = net present value; NQ = not quantified; PA = Pennsylvania; PAYD = Pay-As-You-Drive; CAFE = Corporate Average Fuel Economy.

Work plan numbers 1, 2, and 4 are recent state actions that are being implemented by the state; and the federal government will be implementing national vehicle GHG emissions and corporate average fuel economy (CAFE) standards starting in 2012.

¹ T-9 uses federal dollars exclusively, cost figures for T-9 are calculations of how many federal dollars—not state dollars—would be required to implement the work plan.

² This cost per ton value excludes the emission reductions associated with the “Federal Vehicle GHG Emissions and CAFE Standards” since costs (savings) were not quantified for this recent federal action.