

**FACILITATION OF CLIMATE CHANGE ACTION PLAN RECOMMENDATIONS**  
 Revised with bold notes from Implementation Subcommittee Meetings on 8/4/10, 9/10/10, 11/3/10

Work Plan	Specific Recommendation	Implementation Mechanisms					
		Legislation	Regulation	Education & Outreach	Executive Order	Gov't. Incentives	Markets
Elec 2	Require additional MWh reductions via Act 129. <b>Encourage whole building EE.</b>		X				
Elec 3	Require additional MWh reductions via Act 129		X				
Elec 5	Require development of and use of Carbon Capture & Sequestration (CCS)	HB 2450					
Elec 6	Require 5% increase in power plant efficiency	X					
Elec 7	Require SF6 reductions of between 10% - 20% through Best Mgmt. Practices (BMP) <b>Reach out to generators.</b>	X					X
Elec 7	Require record keeping and reporting of activities and SF6 emissions/reductions	X					
<b>Elec 9</b>	Increase development & utilization of commercial/industrial Combined Heat & Power. <b>High capital investment; Incentives needed.</b>			X		X	
<b>Elec10</b>	Support 1,050 MW of nuclear uprates						X
<b>Elec10</b>	Support development of new nuclear power generation (PPL Bell Bend plant). <b>More information needed.</b>		X	X			
Elec 11	Develop GHG performance standards for new electricity generation. <b>NQ; Expert analysis required. Bureau of Air Quality.</b>		X				
Elec 12	Reduce Transmission & Distribution losses. <b>NQ; Expert analysis required.</b>	X	X PUC?	X		X	X
<b>RC 1 (#1)</b>	<b>Commonwealth-owned</b> and Commonwealth-funded construction projects must meet LEED Silver plus an Energy Star rating of 85 or above. <b>9/24/10: A letter of support from CCAC for HB444/SB728 was sent to all legislators.</b>	<b>HB 444 SB728</b>	X	X	X	X	
RC 1	Revise Guaranteed Energy Savings Act (GESA) & Energy Service Company (ESCO) language to incorporate Energy Star performance requirements	X			X		
RC 1	Require all GESA & ESCO projects to adopt Energy Star performance-based requirements	X	X		X		
RC 1	Existing Commonwealth-owned and leased facilities must meet Energy Star rating of 75 or above by 2020 and the equivalent of LEED-EB Silver by 2020. <b>Ongoing objectives w/DGS. One year timeframe.</b>				X		
RC 1	Require U.S. Environmental Protection Agency (EPA) Energy Star Portfolio Manager benchmarking for all commonwealth-owned and -leased facilities. <b>Ongoing objectives w/DGS. One year timeframe.</b>				X		
RC 1	Require PUC to develop and mandate that all PA utilities conform to a uniform billing structure and format to allow automated billing data entry into the Energy Star Portfolio Manager database		X				

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RC 1	Commonwealth agencies should include in their decision-making processes appropriate and careful consideration of GHG emission effects from proposed actions by requiring analysis of GHG impacts in all award and approval (permits, grants, procurements, etc) decisions.				X		
RC 1	Establish a Pennsylvania Community and Local Government Climate Change Collaborative Clearinghouse to assist communities in developing climate action plans and identify and overcome barriers to progress on climate change actions.	X		X	X		
RC 2	Require EPA Energy Star Portfolio Manager benchmarking for all commonwealth-owned and -leased educational facilities by 2010.	X			X		
RC 2	Establish a goal of minimum Energy Star rating of 75 for all public school buildings by 2020. <b>Long term; not part of HB 444.</b>	X					
RC 2	Continue efforts of Pennsylvania State System of Higher Education (PASSHE) Energy Consumption Reduction and seek new energy saving initiatives to meet or exceed the 1.5 percent annual energy use intensity (EUI) reduction goal	X		X			
RC 2	Increase utilization of campus energy managers (typically funded out of energy consumption and unit cost savings achieved through the work of an energy manager) <b>Dept. of Treasury has established loan fund for higher ed EE.</b>			X			X
RC 2	Implement a Green Campus Initiative for all Pennsylvania colleges, universities, private schools, and secondary schools to minimize environmental impacts and create "learning labs" for sustainability.			X			
RC 3	Tax credits for private-sector construction projects that meet a performance level equivalent to a minimum of LEED Silver plus an Energy Star rating of 85. <b>Loan &amp; grant program through DCED CFA.</b>					X	
RC 3	Require energy information to be included in a "seller's disclosure" for commercial real estate transfers. Alternatively, require an Energy Star portfolio manager energy use index. <b>Realtors are opposed.</b>	X					
RC 3	Implement an Airport Efficiency Initiative via Executive Order by the Governor requesting all Federal Aviation Regulation (FAR) Part 139 airports to improve their energy efficiency by 10 percent. The individual airports (which include all facilities leased or owned by the airport) need to be given flexibility to achieve the efficiency goal. This will allow each facility to find the most cost-effective options to meet the target. Under the Executive Order, applicable airports would be encouraged to			X			

	coordinate with Pennsylvania Department of Transportation's (PennDOT's) Air Services Committee to develop plans to achieve the energy efficiency goal						
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RC 4 (#2)	Incorporate green building requirements in the <b>statewide building code (UCC)</b> requiring all new residential construction in Pennsylvania to achieve a minimum of LEED certification. <b>IGCC green bld. code legislation has been drafted. Should be priority for 2011. Could be part of local bld. codes.</b>	X					
RC 4	Provide tax credits for private-sector construction projects that meet a performance level equivalent to a minimum of LEED Silver plus an Energy Star rating of 85					X	
RC 4	Require energy information or an energy audit as part of "seller's disclosure" information in a residential sales transaction. <b>May be part of federal legislation.</b>	X		X			
RC 4 (#3)	<b>Retool the Keystone HELP program</b> to offer a greater degree of assistance (much lower loan rates) to homeowners implementing energy-saving measures based on a whole-house energy audit. <b>Modeled on weatherization program. Loan program expected to open in October. Funding is nearly depleted and more needed.</b>	X					
RC 4	Require that all new homes have an Energy Star rating (15 percent more energy efficient than code-compliant construction). <b>IGCC bld. code takes care of this.</b>	X					
RC 4	Implement a Pennsylvania Home Climate Champion Collaborative to provide vision, clarity, and access to human and physical resources so that 100,000 homes will achieve substantial (greater than 60 percent) energy reductions, while maintaining or improving indoor air quality, resilience to storms and power outages, adaptability, comfort, and affordability between now and 2025. Five percent of these demonstration projects should achieve the German PassivHaus energy independence goals of 90 percent energy reduction, with 10 percent met by renewable energy. <b>No funding available.</b>			X		X	X
RC 4	Develop energy improvement mortgages or energy-efficient mortgages and promote these products in PA. <b>Ongoing.</b>			X			X
RC 4	Offer the commonwealth residential sector an incentive for implementing whole-house performance, provide consumer and contractor education, create jobs, spur marketplace development, and significantly improve PA's existing housing stock while reducing energy consumption and associated GHG emissions. <b>Keystone HELP funding problem.</b>			X		X	X
RC 5	Promote the common practice of performing commissioning and retro-commissioning processes on newly constructed, renovated, and existing buildings			X		X	X

	for the purpose of ensuring optimal performance of building systems. <b>This has begun and needs funding.</b>						
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RC 6	<p><i>Lighting Performance goals. Stringent lighting standards are included in IGCC bld. code.</i></p> <ul style="list-style-type: none"> <li>Require new construction to achieve a Lighting Power Density (LPD) of 0.9 watt/sq.ft. connected load as maximum for all workplaces</li> <li>Require the same for existing buildings by 2020, with a linear percentage increase in performance each year.</li> </ul>	X		X			
RC 6	<p><i>Fixture Performance</i></p> <p>Require a 70% Lighting Output Ratio (an index of fixture effectiveness) minimum for all new construction, all building types, and all fixture replacements</p>	X		X			
RC 6	<p><i>Lamp Performance</i> (for all new lamp purchases, for all points of sale by 2015)</p> <p>Require/support establishment of a standard of:</p> <ul style="list-style-type: none"> <li>90 mean lumens/watt</li> <li>Mercury not to exceed 80 picograms per lumen-hour, 5 milligrams of mercury per lamp</li> <li>CRI (color rendering index) minimum of 85</li> <li>92% luminance maintenance (lamp depreciation) over rated life</li> </ul>	X		X			
RC 6	<p><i>Controls and System Performance</i> (new and existing construction by 2015)</p> <ul style="list-style-type: none"> <li>Require/encourage individual lighting controls for 90% of occupants</li> <li>Require/encourage occupancy sensors in single-occupancy rooms or short time-of-use rooms</li> <li>Require/encourage commissioning of installed lighting systems, including controls</li> </ul>	X		X			
RC 6	<p><i>Daylight</i> (all non-residential buildings)</p> <ul style="list-style-type: none"> <li>Establish a standard requiring 25 foot candles (fc) of daylight to 90% of occupied spaces</li> <li>Establish a standard requiring seated daylight access for 90% of occupants</li> <li>Establish a standard requiring glazing with visible light transmission of over 50%, a solar heat gain coefficient (SHGC) of under 50% or a 1.5 ratio of visible light divided by SHGC in summer (whenever replacements are made)</li> <li>Establish a standard requiring window blinds/shades to ensure natural</li> </ul>	X		X			

	daylighting and view without glare and overheating (all buildings 2015) <ul style="list-style-type: none"> <li>Establish a standard requiring daylight-responsive controls for all fixtures within 15 feet of a window (all buildings 2012)</li> </ul>						
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RC 6	<i>Exit Lighting</i> (for all new construction and existing buildings by 2012) Establish a standard requiring a maximum of 5 watts per fixture or "face"	X					
RC 6	<i>Site Lighting</i> (for all new construction and existing locations by 2012) <ul style="list-style-type: none"> <li>Establish a standard requiring a maximum LPD of 0.15 watt/sq.ft. max</li> <li>Establish a standard requiring zero night sky pollution (0 light emittance above a 90° cutoff)</li> <li>Require zone-occupancy controls in large parking lots</li> <li>Require Light-emitting diode (LED) traffic lights</li> </ul>	X		X			
RC 6	<i>No- or Low-Cost Education Campaign</i> <ul style="list-style-type: none"> <li>Wash reflectors, lenses to maximize light output</li> <li>Install occupancy and daylight sensors</li> <li>Promote the Turn It Off campaign</li> <li>Delamp where light levels are not needed</li> <li>Raise or tilt the blinds and use daylight</li> </ul>			X			
RC 7	Re-Roof PA – light-colored, insulated roofs. <b>Component of managing stormwater.</b>	X				X <sup>1</sup>	
RC 7	Re-Roof PA – green roofs	X				X <sup>1</sup>	
RC 7	Re-Roof PA – solar PV roof	X				X <sup>1,2,3</sup>	
RC 8	PA Buys Energy Efficient (EE) Appliances. <b>Legislation has been drafted.</b>	X <sup>4</sup>			X <sup>5</sup>	X <sup>2,6,7</sup>	
RC 9	Geothermal Heating & Cooling. <b>CFA has program. Federal loan capital program (\$5M) will open soon for training contractors and work force.</b>	X <sup>8</sup>		X		X <sup>9</sup>	
RC 10	DSM – Natural Gas. <b>Needs Federal legis. Similar to Act 129.</b>	X				X <sup>2,7</sup>	
RC 11	Conservation and Fuel Switching for Heating Oil. <b>Federal rebate program (\$11M) for furnaces, hot water heaters has resulted in some fuel switching. Erickson bill would add biodiesel req. to heating oil &amp; off-road diesel w/ resulting reductions in sulfur.</b>	<b>SB1282 HB2578</b>	X <sup>10</sup>			X <sup>2,7</sup>	
RC 13	DSM – Water. <b>IGCC impact</b>	X <sup>11</sup>	X <sup>12</sup>	X			
RC 14	Renew PA Buildings – PA Values Embodied Energy in Building Materials, Including				X <sup>13</sup>	X <sup>1,2,14</sup>	

	Historic Structures. <b>IGCC impact</b>						
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RC 15	Sustainability Education Programs. <b>This is being done as focus of Gov's Green Govt. Council.</b>			X			
RC 16	Adaptive Building Reuse. <b>IGCC impact</b>				X <sup>13</sup>	X <sup>14</sup>	
	<sup>1</sup> DCED's High Performance Building (HBP) Program – financing for loans & grants						
	<sup>2</sup> DCED's Alternative & Clean Energy (ACE) Program – financing for loans & grants						
	<sup>3</sup> DEP's Sunshine Solar Program/Solar Energy Program (SEP)						
	<sup>4</sup> HB 15 (Special Energy Session of 2007-08); NEEP – regional EE legislation; Energy Efficient Appliance Standards bill (draft currently being prepared)						
	<sup>5</sup> Executive Order 2005-07 (Fuel & Energy Conservation Plan); since rescinded; state agencies still operate under the plans						
	<sup>6</sup> ACT 129 provides Electric Distribution Companies w/ \$ for EE appliances						
	<sup>7</sup> PA's Home Heating Equipment Rebate Program (HHERP) via ARRA funding						
	<sup>8</sup> legislation in the form of tax credits for capitol costs or a similar incentive						
	<sup>9</sup> CFA's Renewable Energy Program (REP) – low interest loans						
	<sup>10</sup> Low Carbon Fuel Standard (LCFS) program currently under development						
	<sup>11</sup> Product performance standards could be introduced						
	<sup>12</sup> Elimination of water regs. & plumbing code barriers that hinder stormwater reuse						
	<sup>13</sup> Reissue of Executive Order 1980-3 (Life Cycle Costing) {or equivalent legislation}						
	<sup>14</sup> Financial incentives for urban revitalization w/ historic building reuse						
I –1	Coal Mine Methane Recovery. <b>Driven by price of gas; currently being done.</b>						X
I –2	Industrial Natural Gas & Electricity BMP. <b>DEP to outreach to IECPA and Industrial Resource Centers.</b>			X			
I –3	Reduce Lost & Unaccounted For Natural Gas. <b>DEP to outreach to Marcellus Shale Coalition.</b>	X		X			
W–1	Landfill Methane Displacement of Fossil Fuels. <b>Federal tax incentive needed. Limitation is industry proximity to landfill. Marcellus Shale has changed supply/demand for high BTU projects.</b>					X	X
W–2	Statewide Recycling Initiative. <b>Markets fluctuate. Innovative programs: Recycle Bank in Phila &amp; Single stream in Pittsburgh. Some malls, ball parks, airports don't recycle. Partner w/ Recycling Markets Center. Outreach to DGS for state-owned buildings.</b>	X	X	X	X		X
W–4	Improved Efficiency at Wastewater Treatment Plants. <b>Need staff. PSATS &amp; PMAA</b>			X		X	X

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W-5	Waste-to-Energy Digesters					X	
W-6	Waste-to-Energy Municipal Solid Waste. <b>Need to understand barriers for expanding existing facilities.</b>					X	<b>X</b>
LUT 1	PA Clean Vehicles Program & Federal Vehicle GHG Emissions/CAFE Standards		X <sup>1,2</sup>				
LUT 2	Biofuel Development and In-State Production Incentive Act	X <sup>3</sup>		X		X <sup>4,5</sup>	X
LUT 3	Low-Rolling Resistance (LRR) Tires. <b>Discuss w/BAQ</b>		X <sup>6</sup>	X			
LUT 4	Diesel Anti-Idling Program	X <sup>7</sup>				X <sup>8</sup>	
LUT 5	Eco-Driving – Pay As You Drive (PAYD) Insurance	X				X <sup>9</sup>	
LUT 5	Eco-Driving – Feebates – higher efficiency vehicle purchases. <b>Gov. support.</b>	X <sup>10</sup>					
LUT 5	Eco-Driving – Driver Training. <b>Education module.</b>			X			
LUT 5	Eco-Driving – Tire Inflation. <b>Work w/AAA.</b>			X			
LUT 5	Eco-Driving – Speed Reduction	X					
LUT 6	Utilizing Existing Public Transportation Systems – Capital Investments. <b>Dedicated funding needed. Special legislative session.</b>	X (\$)		X			
LUT 7	Increasing Participation in Efficient Passenger Transit. <b>Model EPA policies for PA - telecommuting.</b>	X <sup>11</sup>		X		X	
LUT 8	Cutting Emissions from Freight Transportation. <b>PennDOT, TCI.</b>			X		X <sup>5</sup>	
LUT 9	Increasing Federal Support for Efficient Public Transit & Freight Transport in PA			X		X	
LUT 10	Enhanced Support for Existing Smart Growth/Transportation & Land Use Policies. <b>Multiple benefits beyond GHG reduction.</b>	X <sup>12</sup>		X		X <sup>13</sup>	
LUT 11	Transit-Oriented Design, Smart Growth Communities & Land Use Solutions. <b>DCED programs.</b>	X <sup>12</sup>		X		X	
	<sup>1</sup> PA Clean Vehicles Program						
	<sup>2</sup> EPA regulations re: vehicle GHG emissions/CAFÉ standards						
	<sup>3</sup> Federal Renewable Fuels Standard (RFS)						
	<sup>4</sup> PA Biofuel Development and In-State Production Incentive Act						
	<sup>5</sup> <b>DCED's Alternative &amp; Clean Energy (ACE) Program – funding is active</b>						
	<sup>6</sup> DEP has the authority thru its consumer protection reg. auth. to propose LRR regs						
	<sup>7</sup> Diesel-Powered Motor Vehicle Idling Act (Act 124 of 2008)						
	<sup>8</sup> DEP Small Business Advantage Grant Program to purchase/install auxiliary power units for idling reduction						
	<sup>9</sup> Dept. of Insurance is pursuing grant opportunities from FHA to promote driving recording devices for use in a PAYD program						

	<sup>10</sup> PA DOT would need to alter the existing fee structure or create a new fee						
	<sup>11</sup> creation of inter-city tolls and sales tax exemptions						
	<sup>12</sup> PA legislative changes to the Municipalities Planning Code (MPC)						
	<sup>13</sup> <b>DCED's Land Use Planning Technical Assistance Program (LUPTAP) – funding reduced</b>						
Ag 1	Foodshed development strategy. <b>Review PDA's program and analyze existing information for potential research.</b>			X		X	X
Ag 2	Next generation biofuels. <b>Rob Davidson, PDA: New market opportunities w/ multiple benefits for WQ (Chesapeake Bay) &amp; GHG reduction. Currently addressed through LCFS; develop criteria &amp; standards for sustainability. USDA.</b>	X (fed RFS)		X		X*	X
Ag 3	Management-intensive grazing. <b>PDA convenes Ag stakeholders to identify/develop incentives.</b>			X		X (REAP) <sup>***</sup>	
Ag 4	Manure digester implementation support (dairy/swine). <b>DEP Energy Harvest Grants have supported many digester installations; smaller farms &amp; community digesters (W5) are cost-effective; DEP will continue to facilitate available resources.</b>			X		X <sup>**</sup>	
Ag 5	Regenerative farming practices. <b>Determine if PDA coordinates w/Federal NRCS Farm Bill; determine if funding is available for pilot studies &amp; research projects from Rodale &amp; PSU. Is there a fact sheet?</b>			X		X (REAP) <sup>***</sup>	
Ag 5	Soil sequestration from continuous no-till agronomic systems. <b>Benefits are decreased fuel use &amp; soil carbon credit through nutrient credit trading programs.</b>			X		X (REAP) <sup>***</sup>	
	* includes PA Biofuel Development and In-State Production Incentive Act						
	** includes REAP, Energy Harvest Grant, PA Grows program, PA Alternative Energy Investment Act						
	*** includes carbon credits/offsets						
	RFS = Renewable Fuels Standard						
	<b>REAP = Resource Enhancement And Protection Program – tax credits have been documented (Mary Bender, Sate Conservation Comm.)</b>						
F 1	Forest Protection Initiative – Easement Purchase. <b>Conservation easements that are privately owned. Growing Greener programs are existing w/DCNR. More funding needed. NCR's Working Woodlands program involves long-term protection, improved forest management (F5) &amp; revenue from carbon &amp; forest products.</b>	X <sup>1</sup>				X <sup>2</sup>	
F 2	Woodnet. <b>Supports local forestry production. Linked to F6.</b>			X		X <sup>3</sup>	X
F 3	Forestland Protection and Avoided Conversion – Land Acquisition. <b>Conservation easements that are acquired by direct fee. Multiple environmental benefits &amp;</b>	X <sup>1</sup>				X <sup>2</sup>	



	<b>need for communication through increased awareness. DCNR service foresters w/forest stewardship program. Better outreach strategy via NRCS Farm Bill to provide technical assistance &amp; funding. Agencies can take action through interim steps.</b>						
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<b>F 4</b>	Reforestation, Afforestation & Regeneration. <b>Review status of DCNR Treevitalize program. Linked to F7; overlaps w/CREP program for riparian buffers.</b>	X <sup>1</sup>		X			
<b>F 5</b>	Improved Forest Management. <b>Agencies can take action through interim steps. DCNR has existing programs. Federal Farm Bill.</b>	X <sup>1</sup>		X			X
F 6	Durable Wood Products. <b>DEP &amp; DCNR can engage NGBC to review LEED standards for potential changes to sustainably grown &amp; harvested wood products.</b>	X <sup>1</sup>		X		X <sup>3,4</sup>	X
F 7	Urban Forestry. <b>Green infrastructure; multiple enviro. benefits. Funding mechanism needs to be in place to buy &amp; plant trees. Recommend a letter to Joe Manko, PENNVest Chair, to discuss F7 &amp; request information from Phila. Case study for stormwater management as way to justify local government decision making.</b>	X <sup>1,5</sup>		X		X <sup>6</sup>	
F 8	Wood-to-Electricity. <b>Ecological sustainability &amp; AEPS as reliable source of heat.</b>	X <sup>7</sup>				X <sup>8</sup>	X
F 9	Biomass Thermal Energy Initiatives – CHP. <b>Linked to E9.</b>	X <sup>1</sup>		X		X <sup>8</sup>	
<b>F 9</b>	Biomass Thermal Energy Initiatives – Fuels for Schools. <b>DEP is looking to fund this program.</b>	X <sup>1</sup>		X		X <sup>8,9</sup>	
	<sup>1</sup> Conservation & Natural Resources Act						
	<sup>2</sup> Growing Greener II (expires 12/2010)						
	<sup>3</sup> Alternative & Clean Energy (ACE) and High Performance Buildings (HBP) via CFA						
	<sup>4</sup> periodic Timber Product Output Study (currently non-existent)						
	<sup>5</sup> PA Municipalities Planning Code (MPC)						
	<sup>6</sup> DCED's Land Use Planning Technical Assistance Program (LUPTAP)						
	<sup>7</sup> Alternative Energy Portfolio Standards (AEPS) Act						
	<sup>8</sup> PEDA and DCED's ACE programs						
	<sup>9</sup> HB 1040 – transfer \$15M from CFA to Dept of Ag to establish grant program						