Pennsylvania Climate Change Advisory Committee
Residential Commercial Subcommittee

CCS recommendations for workplans with highest priority to quantification. April 15, 2009

In this document we have pulled together CCS' recommendations for a shortlist of strategies with highest prioritization for quantification. We selected for workplans with expected high reductions, low cost, and no major barriers to implementation (based on our experience in other states). We also combined workplans that provided implementation support. Based on this review, we recommend the 11 options in Table 1 as highest priority for quantification. Quantification of more workplans (e.g., individual workplans when several workplans are consolidated into one strategy) may be possible following the quantification of those strategies with highest priority.

Shortlist of Recommendations for Priority for Quantification

1. High Performance Buildings
2. Keystone Home Performance
3. Leadership for State/Local and School buildings
4. Lighting
5. Appliance Standards
6. Distributed Energy Systems (renewables and CHP)
7. DSM for natural gas
8. Water Conservation
9. DGS – state government leadership in energy conservation
10. B5 Bio-heat
11. Utility Incentives for DSM (electricity)

Notes:

- Colors are used to indicate workplan combinations.
- We recommend a single strategy "High Performance Buildings" that includes 11 existing workplans. Considering the GHG 2030 challenge as the umbrella goal for the workplan, the other workplans (including building codes, tax credits, audits and labeling, mortgages, and other information/incentive programs) can be considered implementation mechanisms that support the GHG 2030 challenge.
- We did not prioritize non-quantifiable workplans. Many of these are important for successful climate policy, but our focus was on setting priorities for the quantification portion of the CCAC work. We support the inclusion of non-quantified workplans in the CCAC recommendations. These workplans are included in Table 2.
- We included two workplans that are missing from the list provided by Vivian. We also included Utility DSM, although it will be quantified under the Energy Supply group.

- The recommended options for priority for quantification consolidate a total of **30** of the original Res/Com workplans. Of the remaining workplans (see Table 2), **8** are not quantifiable and the subcommittee is encouraged to continue to revise these and consider for inclusion in CCAC recommendations), **4** workplans were repeats or had significant overlap, and the remaining workplans had actions that were expected to yield savings of less than 0.5% of total Res/Com emissions (see Table 3).

Table 1: CCS' Recommendations for Quantification

Work Plan	Implem-entation Period	Goals	Data sources / assumptions / methods for GHG	Data sources / assumptions / methods for Costs	Parties Affected/ Implementing Parties	Notes
1. High Performance Buildings						
GHG 2030 Challenge	✔	✔	✘	✘	✘	
High Performance Building Codes (New Construction)	✔	✘	✘	✘	✘	
High Performance Building Construction Tax Credits	✘	✘	✘	✘	✘	Much more specification required for quantification
Energy audits for commercial real estate transfers	✘	✘	✘	✘	✘	Uncertainty in the expected response to audits
Building Performance Labels that Reflect Actual Utility Usage						No workplan? Part of buildings audits?
Energy Audits for Residential Real Estate Transfers	✘	✔	✔ [0.3 in first year]	✔	✘	GHG reduction assumes all new buyers will seal air leaks
Energy improvement mortgages						Implementation means
PA Encourages Commissioning and Retro-commissioning	✘	✘	✘	✘	✘	Include public building component
Re-Roof PA	✘	✘	✘	✘	✘	
Pennsylvania Home Climate Champion Collaborative (PHCCC) and 100,000 low energy homes	✔	✘	✘	✘	✘	Implementation element
2. Integrated Keystone Home Performance (KHP) [existing residential]	✔	✔ [100% implem-entation]	✔ [6.0 MMTCO2e]	✘	✔	
3. Leadership for State/Local and School buildings						Need estimate of fraction of building stock
Benchmarking All Existing Commonwealth-Owned Facilities	✔	✔	✘	✘	✔	

Work Plan	Implem-entation Period	Goals	Data sources / assumptions / methods for GHG	Data sources / assumptions / methods for Costs	Parties Affected/ Implementing Parties	Notes
High Performance Building Standards for Existing Commonwealth of PA Buildings	✔	✔	✘	✘	✔	
High Performance Pennsylvania Buildings [New construction]	✘	✔	✘	✘	✘	
Benchmarking All Existing PA Public PreK-12 Schools, AVTSs (Area Vocational Technical Schools) & CTCs (Career Technical Centers)	✔	✔	✘	✘	✔	
Pennsylvania State System of Higher Education (PASSHE) Energy Consumption Reduction	✘	✔	✔ [0.08 MMTCO2e]	✘	✘	Broaden to include secondary schools. Check reduction estimate with workplan author Steven Dupes (717) 720-4118 0.8 MMTCO2e or 0.08
4. Lighting						
Re-Light Pennsylvania	✘	✘	✘	✘	✘	
Expand energy efficiency funding for Lighting and Daylighting	?	?	?	?	?	
Increase lighting efficiency standards	✘	✘	✘	✘	✘	
5. Appliance Standards						
2005 EPA Appliance Standards	?	?	✔ [1.7 MMTCO2e]	✘	✘	Are these already mandated? If so they should be in the reference case (recent actions) rather then CCAC recommendations
Appliance Standards	✘	✘	✘	✘	✘	See “Appliance Standards Work Plan 32509.doc” Check for

Work Plan	Implem-entation Period	Goals	Data sources / assumptions / methods for GHG	Data sources / assumptions / methods for Costs	Parties Affected/ Implementing Parties	Notes
						ACEEE report updates
6. Distributed Energy						
Residential / commercial CHP	✘	✘	✘	✘	✘	
Renewable Heating and Cooling with Geothermal Infrastructure	✘	✘	✘	✘	✘	
PA Promotes Building-Integrated Photovoltaics (BIPV), Solar Thermal, Micro Hydro, and Micro Wind	✘	✘	✘	✘	✘	DEP suggest including with Energy Sector, under AEPS
Solar Rights Initiative	✔	✘	✘	✘	✘	Many assumption required
7. Demand Side Management (DSM) – Gas	✔	✘	✔ [2.34 MMTCO2e]	✘	✘	
8. Water Conservation (INCLUDE INDUSTRY)	✘	✘	✘	✘	✘	1.2 MMTCO2e based on 4% of total PA electricity use and 25% reductions
9. Department of General Services (DGS) - Initiative to Reduce Energy Use by State Government						Need workplan, group with State/Local with DEP
10. B5 Bioheat Initiative	✔	✘	✔	✔	✘	
11. Utility Incentives for Demand-Side Management Work Plan						**Included under energy supply**; res/com to provide comment, also included in commercial, review and sync with Technology options

Table 2: CCS' Recommendations for Workplans to be included without quantification

Number (temp.)	Grouping	Work Plan	Implem-entation Period	Goals	Data sources / assumptions / methods for GHG	Data sources / assumptions / methods for Costs	Parties Affected/ Implementing Parties	Notes
B	Mandating audits, benchmarks and building labels/ reporting							
B-1		Green Strings						Not quantifiable – large # of potential projects and potential reductions
C	Critical Building Technology Advances for Energy							
C-16		PA values embodied energy in building materials, including historic structures						Not quantifiable
D	Critical Energy Education							
D-1		Sustainability education programs						Not quantifiable
		Educate Consumers on the Value of Energy Efficient Homes and Businesses						Not quantifiable
D-2		Training for building operators						Not quantifiable
D-3		Promoting Green Campus Initiative	✘	✘	✘	✘	✘	Not quantifiable, implementation portion of "Leadership for State/Local/School Buildings
D-5		Climate Change Collaborative Clearinghouse						Not quantifiable
	Not in "CCAC Buildings 45 Workplans.doc"							
Other-6		Adaptive building reuse						Not quantifiable

Table 3: CCS' Recommendations for Exclusion from Quantification

Number (temp.)	Grouping	Work Plan	Implem-entation Period	Goals	Data sources / assumptions / methods for GHG	Data sources / assumptions / methods for Costs	Parties Affected/ Implementing Parties	Notes
A	Large (comprehensive?) Building Goals							
A-10		Require high-performance buildings for schools and other State-funded projects						No workplan Covered by "Leadership in State/Local/Schools"
C	Critical Building Technology Advances for Energy							
C-6		Turn it Off PA! Campaign						No work plan?
C-7		Energy Recovery from air exhaust	✘	✘	✔	✘	✔	2 MMTCO2e for US – (0.08 MMTCO2e for PA based on population) Too small
C-13		Pennsylvania State System of Higher Education (PASSHE) Green Energy	✘	✘	✘	✘	✘	0.04 MMTCO2e reductions from current program, need to specify new program Too small
C-14	Moved	Fuels for Schools	NA	NA	NA	NA	NA	Moved to agriculture subcommittee
Other-7		Building Codes and Standards						Overlap with other workplans? Move to education, part of education 3 Enforcement
	Other workplans							
Other-1		Four day work week						Not quantifiable – move to transportation with telecommuting reword to flex week
	Not in "CCAC Buildings 45 Workplans.doc"							
C-9		Promote geo-thermal (geo-exchange) heating and cooling	✘	✘	✘	✘	✘	Repeated workplan

Number (temp.)	Grouping	Work Plan	Implem-entation Period	Goals	Data sources / assumptions / methods for GHG	Data sources / assumptions / methods for Costs	Parties Affected/ Implementing Parties	Notes
	Critical Building Labels							
Labels-1		Home 'MPG' labels						Repeated workplan "Carbon footprint rating system" or "Building performance labels"