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Memo

To: South Carolina Climate, Energy and Commerce Advisory Committee

From: The Center for Climate Strategies

CC: Executive Office of South Carolina Governor Mark Sanford
Chairman, the Honorable Representative Ben Hagood, South Carolina House of Representatives
South Carolina Department of Health and Environmental Control; South Carolina Department of Natural Resources

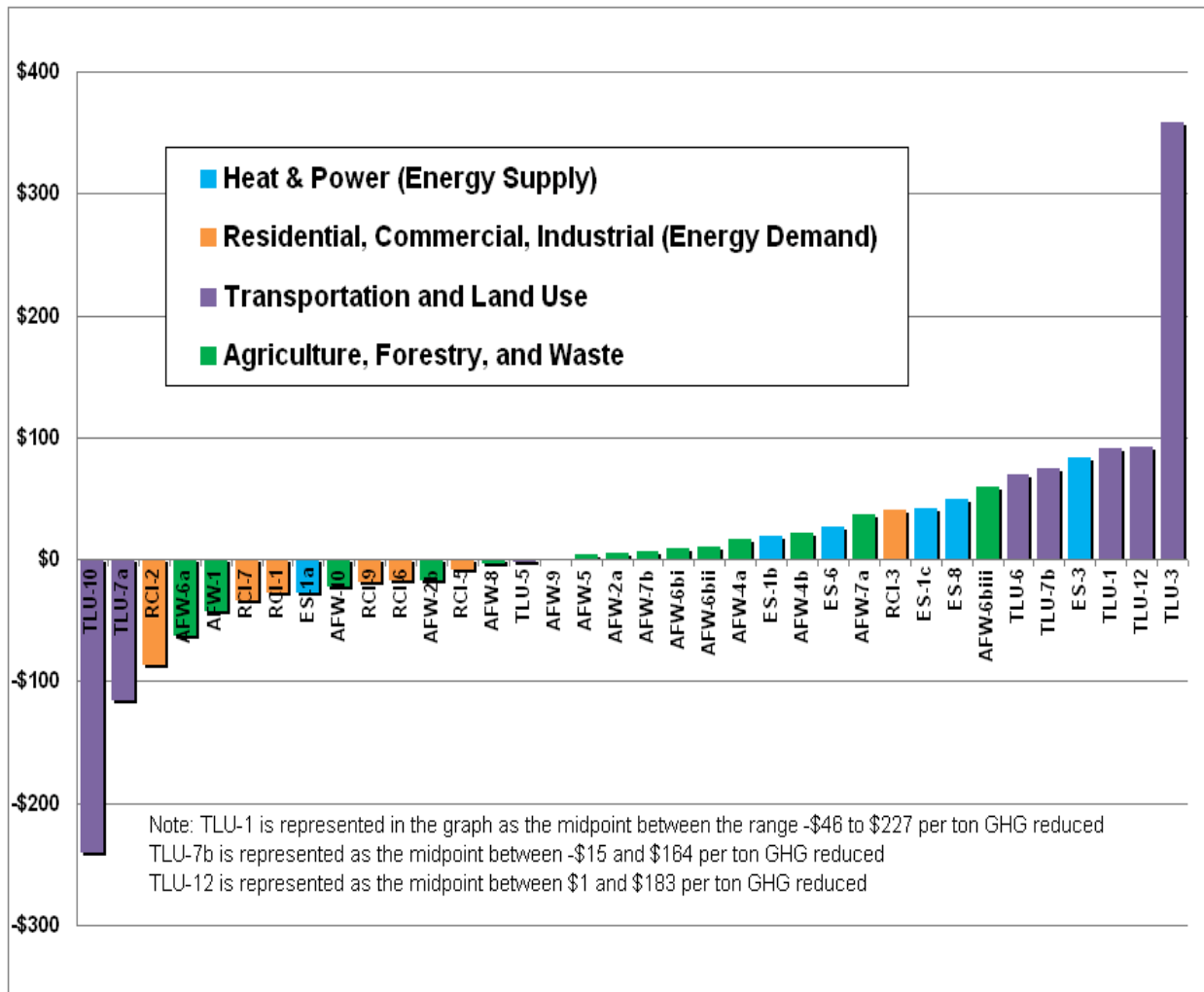
Subject: Preparation for the Seventh Meeting of the South Carolina Climate, Energy and Commerce Advisory Committee

Date: May 9, 2008

At our seventh and final meeting of the South Carolina Climate, Energy and Commerce Advisory Committee (CECAC) on Friday, May 9, 2008, we will complete review and final approval of draft pending policy options. During the CECAC meeting members of Technical Work Groups (TWGs) will be invited to participate in the background discussion of draft policy options, but only CECAC members will make decisions regarding modifications and final approval of policy options. We also will review and approve final updates to the statewide inventory and forecast of emissions.

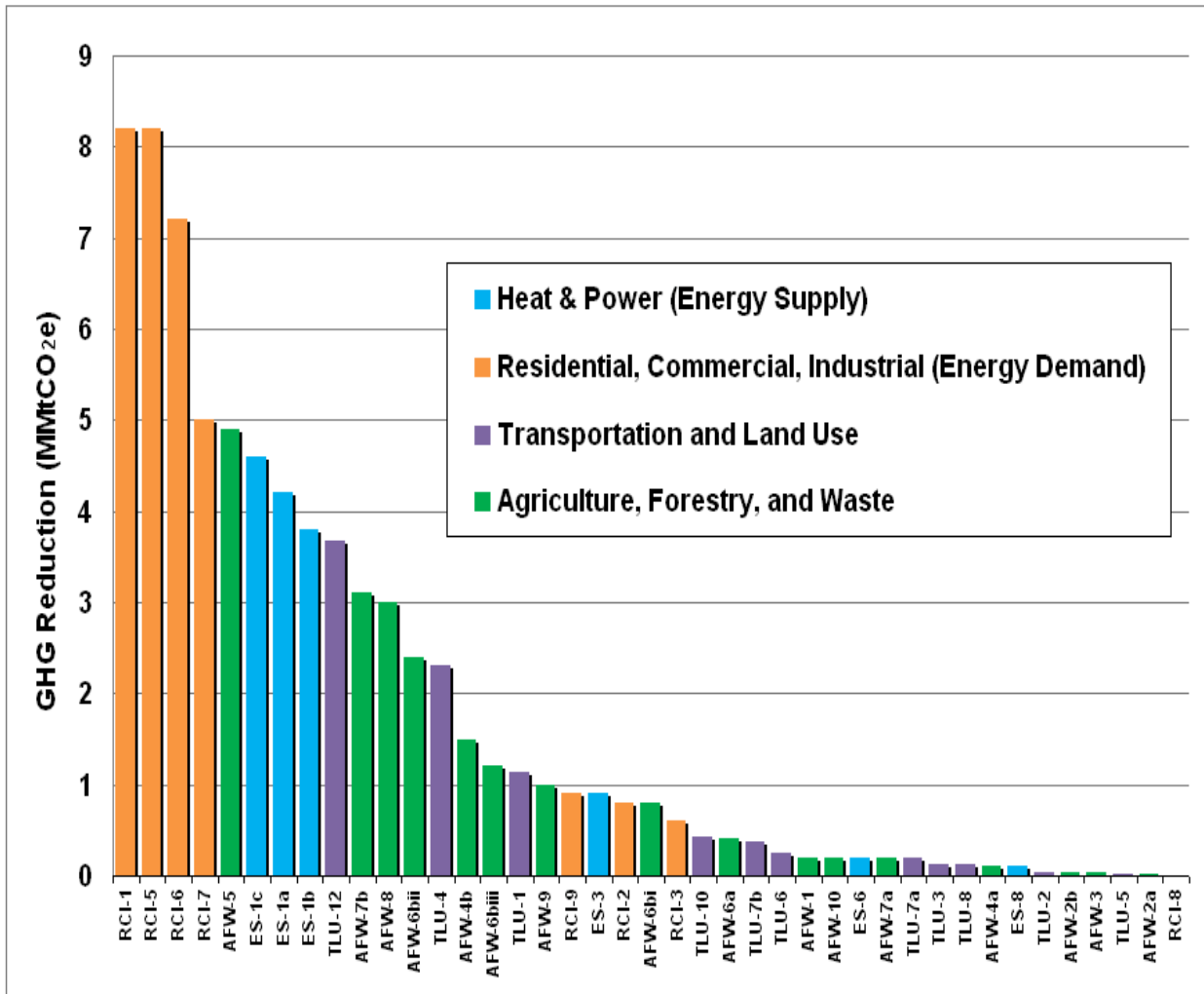
As preparation for our final meeting, please review the attached lists of TWG suggested draft policy options and other background documents posted to the project website at: www.scclimatechange.us. Note that the revised draft inventory and forecast report, incorporating revisions approved by the CECAC, is posted to the project website at: http://www.scclimatechange.us/Inventory_Forecast_Report.cfm.

**Draft SC GHG Supply Curve (Completed & Pending Options)
 Ranked by 2020 Cost / Cost Savings per Ton GHG Reduced**



Note: Negative values represent net cost savings.

**Draft 2020 Annual Greenhouse Gas Reduction Potential of
 Policy Options (Completed & Pending Options)**



**Draft Results
 (Completed & Pending Options)**

Consumption Basis - Gross Emissions								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	67.2	72.3	87.8	93.5	102.2	106.9	112.6	125.4
Reductions from Existing Actions				0.0	0.3	1.0	2.4	5.7
Projected GHG Emissions After Existing Actions				93.5	102.0	106.0	110.1	119.7
Total GHG Reductions from CECAC Policies						14.4	30.9	58.4
Projected Emissions After Quantified CECAC Reductions						91.6	80.2	61.3

Production Basis - Gross Emissions								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	70.6	75.4	92.2	98.5	106.7	112.5	117.4	131.7
Reductions from Existing Actions				0.0	0.3	1.0	2.4	5.7
Projected GHG Emissions After Existing Actions				98.5	106.5	111.5	115.0	126.0
Total GHG Reductions from CECAC Policies						14.4	30.9	58.4
Projected Emissions After Quantified CECAC Reductions						97.1	86.1	67.6

Consumption Basis - Net Emissions								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	34.0	40.6	56.8	62.3	71.0	75.7	81.3	94.1
Reductions from Existing Actions				0.0	0.3	1.0	2.4	5.7
Projected GHG Emissions After Existing Actions				62.3	70.7	74.7	78.9	88.4
Total GHG Reductions from CECAC Policies						14.4	30.9	58.4
Projected Emissions After Quantified CECAC Reductions						60.4	49.0	30.1

Production Basis - Net Emissions								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	37.4	43.8	61.2	67.2	75.5	81.2	86.2	100.5
Reductions from Existing Actions				0.0	0.3	1.0	2.4	5.7
Projected GHG Emissions After Existing Actions				67.2	75.2	80.3	83.8	94.8
Total GHG Reductions from CECAC Policies						14.4	30.9	58.4
Projected Emissions After Quantified CECAC Reductions						65.9	54.8	36.4

Table 1.
Residential, Commercial, and Industrial Technical Work Group
Summary List of Recommended Priority Policy Options for Analysis

No.	Policy	GHG Reductions (MMtCO ₂ e)			Net Present Value 2009–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2012	2020	Total 2009–2020			
RCI-1	Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Electricity (Including Expansion of Same) (Residential, Commercial, and Industrial)	1.5	8.2	43.0	–\$1,127	–\$26	Pending
RCI-2	Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas, Propane, and Fuel Oil	0.2	0.8	4.5	–\$379	–\$85	Complete
RCI-3	Incentives and Regulatory Reform To Promote Implementation of Renewable Energy Systems, Including Solar Hot Water (Residential, Commercial, and Industrial)	0.2	0.6	4.0	\$164	\$41	Pending
RCI-4	Energy Management Training/Training of Building Operators	<i>Not quantified</i>					Complete
RCI-5	Incentives, Resources, and Regulatory Reform To Promote Energy Recycling, Including Combined Heat and Power	1.0	8.2	39.5	–\$332	–\$8	Complete
RCI-6	Incentives and Policies for Improving Building Efficiency, Including Building Energy Codes	1.6	7.2	40.4	–\$665	–\$16	Complete
RCI-7	Improved Design and Construction in New and Existing State and Local Government Buildings, “Government Lead by Example”	0.5	5.0	24.6	–\$800	–\$33	Complete
RCI-8	Participation in Voluntary Industry–Government Partnerships (Including Incentives)	0.0	0.0	0.05	<i>Not quantified*</i>		Pending
RCI-9	Incentives and Policies for Improving Appliance Efficiency, Including Appliance Standards	0.3	0.9	5.6	–\$94	–\$17	Complete
	Sector Total After Adjusting for Overlaps (excluding RCI-8)†	4.3	27.7	141.6	–\$2,941	–\$21	
	Reductions From Recent Actions	0.5	2.2	12.6	<i>Not quantified</i>		
	Sector Total Plus Recent Actions	4.9	29.9	154.2	–\$2,941	–\$21	

Negative values in the Net Present Value and the Cost-Effectiveness columns represent net cost savings.

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent; TBD = to be determined.

The numbering used to denote the above policy options is for reference purposes only; it does not reflect prioritization among these important policy options.

*The costs of RCI-8 have not been quantified, due to lack of publicly available data. Refer to discussion of Key Uncertainties under RCI-8 for more information.

† The benefits and costs of RCI policies overlap as follows: between residential and commercial new construction in RCI-1 and RCI-6; between residential and commercial new construction in RCI-2 and RCI-6; between RCI-7 and energy efficiency efforts in government and schools within RCI-1 and RCI-2; and between RCI-9 and parts of RCI-1, RCI-2, and RCI-7. Overlaps also occur between RCI-1 and the energy efficiency component of ES-1, and between the electricity load reductions from RCI policies in general and ES-1; adjustments for these overlaps are made in the ES totals. Benefits and costs of renewable energy in RCI-7 overlap with ES renewable energy policies and are not included.

Table 2.
Energy Supply Technical Work Group
Summary List of Recommended Priority Policy Options for Analysis

Option No.*	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$) ¹	Cost-Effectiveness (\$/tCO ₂ e) ¹	Level of Support
		2012	2020	Total 2008–2020			
ES-1	Efficiency and Renewable Portfolio Standard and Statement of Support for Nuclear Energy	1.9	12.6	66.5	\$689	\$10	Pending
ES-1a	Energy Efficiency: 5% of baseline energy met with energy efficiency by 2020	0.8	4.2	22.4	–\$586	–\$26	
ES-1b	Renewables: 5% of baseline energy served by new renewable resources by 2020	1.1	3.8	25.3	489	\$19	
ES-1c	Nuclear: 6% of baseline energy served by new nuclear resources by 2020	0.0	4.6	18.9	\$786	\$42	
ES-2	Technology Research and Development, Including State Funding	<i>Not quantified</i>					Complete
ES-3	Renewable Energy Financing, Tax Incentives, Loans	0.4	0.9	7.1	\$591	\$84	Pending
ES-4	Regulatory Model To Equalize Utility Earnings on Energy Efficiency With Earnings on Traditional Power Supply	<i>Not quantified</i>					Pending
ES-5	Nuclear Fuel Reprocessing	<i>Not quantified</i>					Pending
ES-6	Green Power Purchases and Marketing, 1% Participation by 2012	0.2	0.2	1.7	\$46	\$27	Complete
ES-7	Attract Renewable Energy Technology Businesses to South Carolina	<i>Not quantified</i>					Complete
ES-8	Distributed Renewable Energy Incentives and/or Barrier Removal (Including Interconnection Rules)	0.05	0.1	0.8	\$42	\$50	Pending
	Sector Total After Adjusting for Overlaps	1.3	5.4	40.0	\$1,259	\$31	
	Reductions From Recent Actions	0.0	0.0	0.0	0	0	
	Sector Total Plus Recent Actions	1.3	5.4	40.0	\$1,259	\$31	

Negative values in the Net Present Value and the Cost-Effectiveness columns represent net cost savings.

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent; MW = megawatt; PV = photovoltaic; TBD = to be determined.

The numbering used to denote the above policy options is for reference purpose only; it does not reflect prioritization among these policy options.

¹All costs are reported in 2005 U.S. dollars, net present value as of January 1, 2009.

General definition: For the purposes of the policies discussed here, and unless otherwise noted, “renewable energy” is defined as follows: A renewable energy resource includes solar; wind; small hydroelectric geothermal; ocean current or wave energy; biomass resources, including agricultural waste, animal waste, wood waste, spent pulping liquors, combustible residues, combustible liquids, combustible gases, energy crops, and landfill methane; waste heat

derived from a renewable energy resource and used to produce electricity; and hydrogen derived from a renewable energy resource.

For the combined impact of all ES options, the nuclear portion of ES-1 is assumed to be an overlap with ES-5; also incentives for utility-scale renewable energy projects in ES-3 are assumed to overlap with the renewable energy mandate in ES-1. Distributed renewable energy and voluntary green power initiatives are assumed to be incremental, and not to overlap with ES-1. Finally, the energy efficiency component of ES-1 is assumed to overlap with the energy efficiency policy under RCI-1.

Table 3.
Transportation and Land Use Technical Work Group
Summary List of Recommended Priority Policy Options for Analysis

Option No.	Policy Option		GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
			2012	2020	Total 2008–2020			
TLU-1	Adopt California Clean Car Standards		0.21	1.14	7.04	-\$323 to \$1598	-\$46 to \$227	Pending
TLU-2	Transportation System Management		0.01	0.04	0.22	< \$0	< \$0	Pending
TLU-3	Tax Credits for Efficient Vehicles		0.02	0.12	0.68	\$127	\$187	Pending
TLU-4	Improve Development Patterns		0.41	2.31	14.02	< \$0	< \$0	Pending
TLU-5	Transit & Bike-Pedestrian [Incorporates TLU-11]		0.02	0.02	0.22	\$336	\$1,559	Pending
TLU-6	Alternative Fuel Infrastructure		0	0.24	0.72	\$51	\$70	Pending
TLU-7	Diesel Engine Emission Reductions and Fuel Efficiency Improvements	Efficiency Improvements	0.03	0.19	0.96	-\$110	-\$114	Pending
		Biodiesel	0.05	0.38	1.95	-\$291 to \$319	-\$150 to \$164	
TLU-8	Stricter Enforcement of Speed Limits		0.10	0.12	1.18	NQ	NQ	Pending
TLU-9	Make Full Use of CMAQ funds		<i>Not quantified</i>					Pending
TLU-10	Commuter Choice		0.12	0.43	2.63	-\$631	-\$240	Pending
TLU-12*	Low-GHG Fuel Standard		0.38	3.67	17.89	\$20 to \$3,276	\$1 to \$183	Pending
TLU-13	Freight Vehicle Technology Improvements [This Policy Option has been combined with TLU-7]							
TLU-14	Rail		<i>Not quantified</i>					Pending
	Sector Total Before Adjusting for Overlaps		1.37	8.64	47.57	NQ	NQ	
	Sector Total After Adjusting for Overlaps**		0.92	6.03	32.60	\$2,582	\$79	
	Reductions From Recent Actions		0.45	3.51	16.37	NQ	NQ	
	Sector Total Plus Recent Actions		1.37	9.54	48.97	NQ	NQ	

Negative values in the Net Present Value and the Cost-Effectiveness columns represent net cost savings.

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent; TBD = to be determined.

The numbering used to denote the above policy options is for reference purpose only; it does not reflect prioritization among these policy options.

* TLU-12 overlaps with AFW-4. The individual totals for TLU-12 do not reflect this overlap.

** Accounts for overlap between TLU-12 and AFW-4.

Table 4.
Agriculture, Forestry, and Waste Management Technical Work Group
Summary List of Recommended Priority Policy Options for Analysis

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2012	2020	Total 2008–2020			
AFW-1 [^]	On-Farm Energy Efficiency	0.052	0.16	1.0	–\$43	–\$41	Complete
AFW-2a	On-Farm Waste Energy Recovery—Swine/Dairy	0.006	0.019	0.13	\$0.58	\$5	Complete
AFW-2b*	On-Farm Waste Energy Recovery—Poultry Litter	0.010	0.031	0.20	–\$3.2	–\$16	Complete
AFW-3	Expanded Use of Local Agricultural Products	0.012	0.030	0.21	<i>Not quantified</i>		Complete
AFW-4a ^{†‡}	In-State Liquid Biofuels Production—Biodiesel	0.12	0.13	1.5	\$26	\$17	Complete
AFW-4b*	In-State Liquid Biofuels Production—Ethanol	0.86	1.5	13	\$281	\$22	Complete
AFW-5**	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production	2.7	4.9	41	\$156	\$4	Complete
AFW-6a	Terrestrial Carbon Sequestration—Agriculture	0.21	0.39	3.1	–\$191	–\$62	Complete
AFW-6bi	Terrestrial Carbon Sequestration—Forestry: Forest Management	0.33	0.85	5.8	\$53	\$9	Complete
AFW-6bii	Terrestrial Carbon Sequestration—Forestry: Afforestation/Reforestation	0.81	2.4	16	\$158	\$10	Complete
AFW-6biii [#]	Terrestrial Carbon Sequestration—Forestry: Urban Forestry	0.37	1.2	7.5	\$456	\$60	Pending
AFW-7a	Conservation and Restoration of Agriculture Lands for Enhanced Carbon Sequestration	0.080	0.21	1.5	\$54	\$37	Complete
AFW-7b	Conservation and Restoration of Forest Lands for Enhanced Carbon Sequestration	0.42	3.1	16	\$117	\$7	Complete
AFW-8	Advanced Recycling and Composting	1.18	3.0	20	–\$44	–\$2	Complete
AFW-9**	Waste-to-Energy Reclamation	0.41	1.0	7.2	\$0.23	\$0.03	Complete
AFW-10	Water and Wastewater Energy Efficiency Improvements	0.16	0.18	1.6	–\$33	–\$21	Complete
	Sector Total After Adjusting for Overlaps[†]	7.8	19.2	135	\$987	\$7	
	Reductions From Recent Actions	--	--	--	--	--	
	Sector Total Plus Recent Actions[†]	7.8	19.2	135	\$987	\$7	

Negative values in the Net Present Value and the Cost-Effectiveness columns represent net cost savings.

GHG = greenhouse gas; MMtCO_{2e} = million metric tons of carbon dioxide equivalent; \$/tCO_{2e} = dollars per metric ton of carbon dioxide equivalent; TBD = to be determined.

The numbering used to denote the above policy options is for reference purpose only; it does not reflect prioritizing among these policy options.

* AFW-1 and AFW-10 may overlap with RCI-6 (Residential, Commercial, and Industrial). However, for reasons stated in the documentation of AFW-1 and AFW-10, no overlap will be counted.

† AFW-4 overlaps with TLU-12 (Transportation and Land Use). This overlap will be accounted for in the cumulative analysis of the TLU options.

‡ AFW-4 biodiesel targets were unachievable with in-state feedstock supplies. These reductions and costs refer to modified goals based on in-state feedstock. See text under AFW-4.

|| AFW-2, AFW-5, and AFW-9 overlap with ES-1 (Energy Supply). These overlaps will be accounted for in the cumulative analysis of the ES options.

¶ AFW-6biii represents the combined costs and benefits of two elements of urban forestry: tree planting and avoided deforestation. The net cost of avoided deforestation was not quantified because of insufficient information regarding the costs of such programs.

** Totals may not equal sum of rows because of independent rounding. The cost-effectiveness totals represent the total net present value divided by the cumulative (2008–2020) GHG reductions for those options for which quantitative cost analyses were performed (i.e., excludes AFW-3).

Table 5.
Cross-Cutting Issues Technical Work Group
Summary List of Recommended Priority Policy Options for Analysis

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2012	2020	Total 2008–2020			
CC-1	Inventories and Forecasting	<i>Not quantified</i>					Complete
CC-2	GHG Reporting and Registry	<i>Not quantified</i>					Complete
CC-3	Statewide GHG Reduction Goals and Targets	<i>Not quantified</i>					Pending
CC-4	State Government GHG Emissions (Lead by Example)	<i>Not quantified</i>					Pending
CC-5	Comprehensive Local Government Climate Action Plans (Counties, Cities, etc.)	<i>Not quantified</i>					Complete
CC-6	Public Education and Outreach	<i>Not quantified</i>					Complete
CC-8	Adaptation & Vulnerability	<i>Not quantified</i>					Complete
	Sector Total After Adjusting for Overlaps	<i>Not quantified</i>					
	Reductions From Recent Actions	<i>Not quantified</i>					
	Sector Total Plus Recent Actions	<i>Not quantified</i>					

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalent; \$/tCO₂e = dollars per metric ton of carbon dioxide equivalent.

The numbering used to denote the above policy options is for reference purpose only; it does not reflect prioritizing among these policy options.