



<http://www.scclimatechange.us>

## 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 Senate  
South Carolina Department of Health and Environmental Control; South Carolina  
Department of Natural Resources

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

**Date:** April 4, 2008

---

At our sixth meeting of the South Carolina Climate, Energy and Commerce Advisory Committee (CECAC) on Friday, April 4, 2008, we will continue review and 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 approval and or modifications for further development of draft policy options by the TWGs. We also will review and approve progress and recommended updates to the statewide inventory and forecast of emissions. Based on this discussion and any adjustments made by the CECAC, the TWGs will continue to quantify and further develop policy options and updates to the inventory and forecast. Additional consideration and approval of draft policy options not approved at the sixth meeting on April 4, 2008 will continue at the final CECAC meeting to be held on Friday, May 9, 2008.

As preparation for our sixth 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](http://www.scclimatechange.us).

In terms of overall progress, the CECAC has completed key milestones since its launch, including:

- Identification of a full range of potential South Carolina options for mitigation of GHG emissions, including over 250 possible state actions.
  - TWG identification, by informal balloting, of 52 initial priorities for analysis of draft policy options.
-

- Completion of the initial statewide inventory and forecast of GHG emissions and start of the review process.
- Approval of a full range of draft initial priorities for analysis of policy options.
- CECAC approval of TWG suggested “straw proposals” for the design of initial draft policy options.
- Completion of the first round of economic analysis of most draft policy options by CCS, and identification of early consensus recommendations at our fifth meeting.
- Review and revision of policy option design, analysis, and draft options as needed during TWG calls and meetings.

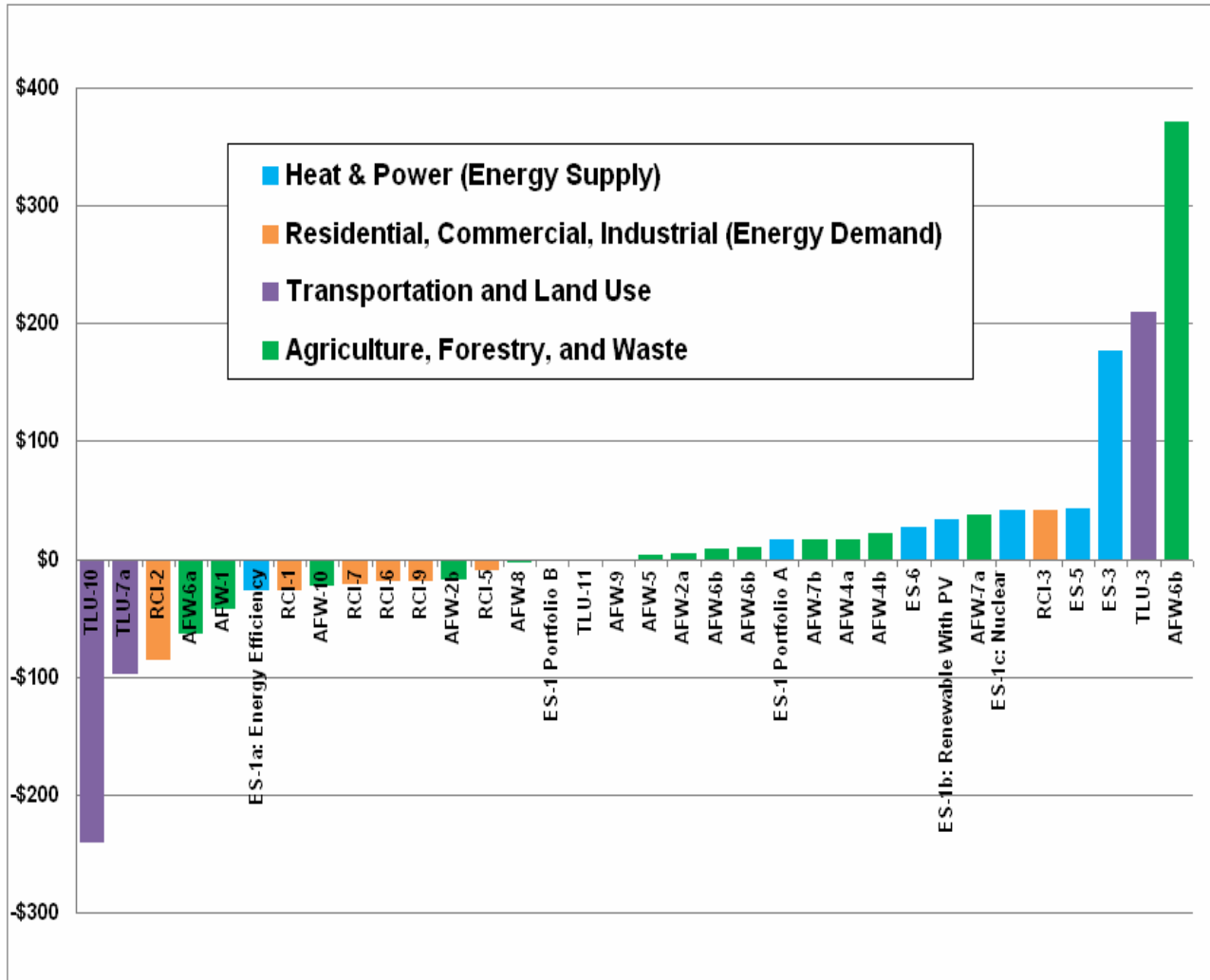
The next stages of the CECAC process will include completion of the following milestones:

- Additional updates to the design and quantification of draft policy options and the inventory and forecast, as needed.
- Final approval of remaining CECAC policy option recommendations at our sixth and seventh meetings.
- Final approval of the statewide inventory and forecast of GHG emissions by the final meeting.

**Summary of CECAC Progress and Next Steps:**

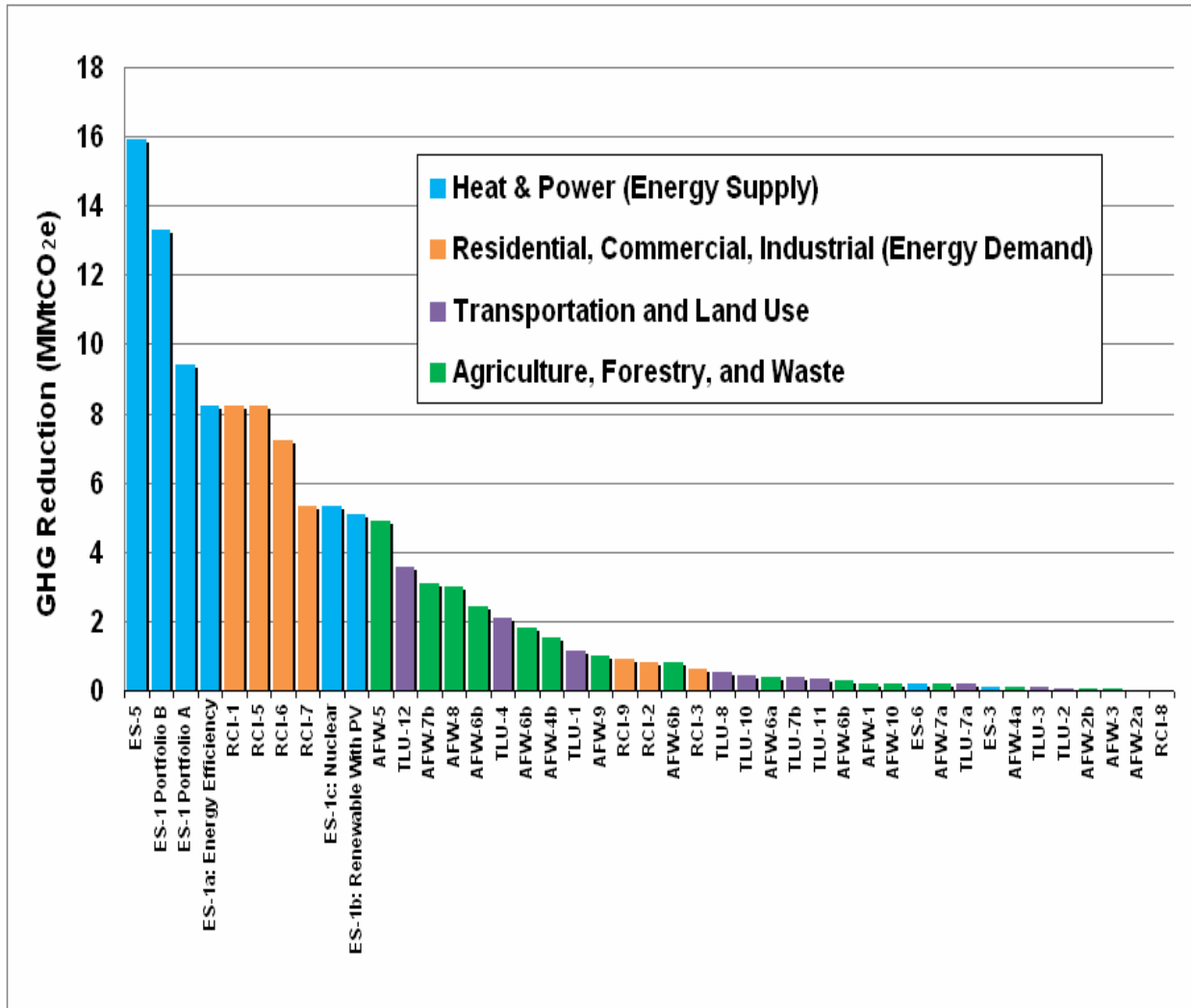
<b>Status of Draft Policy Options</b>	
Original Number of Potential Options Presented to the CECAC from the CCS Catalog of State Actions	208
Updated Number of Potential Options on the CCS Catalog of States Actions, Including CECAC Additions	254
Current Number of Draft Potential Priority Policy Options for Analysis	47
• Residential, Commercial, and Industrial	9
• Energy Supply	8
• Transportation and Land Use	13
• Agriculture, Forestry and Waste	10
• Cross Cutting Issues	7
<b>Next Steps</b>	
Present Updated Draft Policy Options and Approve Additional Consensus Recommendations	CECAC Meeting #6
Approve Final CECAC Policy Option Recommendations	CECAC Meeting #7

**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)**

<b>Consumption Basis - Gross Emissions</b>								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	67.0	72.1	87.7	93.3	102.1	106.8	112.4	125.3
Reductions from Existing Actions				0.0	0.2	0.6	1.3	3.5
Projected GHG Emissions After Existing Actions				93.3	101.9	106.2	111.1	121.7
Total GHG Reductions from CECAC Policies						15.9	38.4	76.0
Projected Emissions After Quantified CECAC Reductions						90.9	75.3	49.2

<b>Production Basis - Gross Emissions</b>								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	63.7	69.0	83.3	88.3	97.6	101.3	107.5	118.9
Reductions from Existing Actions				0.0	0.2	0.6	1.3	3.5
Projected GHG Emissions After Existing Actions				88.3	97.4	100.6	106.2	115.4
Total GHG Reductions from CECAC Policies						15.9	38.4	76.0
Projected Emissions After Quantified CECAC Reductions						85.4	69.5	42.9

<b>Consumption Basis - Net Emissions</b>								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	38.4	43.5	59.0	64.7	73.5	78.2	83.8	96.6
Reductions from Existing Actions				0.0	0.2	0.6	1.3	3.5
Projected GHG Emissions After Existing Actions				64.7	73.3	77.5	82.5	93.1
Total GHG Reductions from CECAC Policies						15.9	38.4	76.0
Projected Emissions After Quantified CECAC Reductions						62.3	46.7	20.6

<b>Production Basis - Net Emissions</b>								
	1990	1995	2000	2005	2010	2012	2015	2020
Projected GHG Emissions	35.0	40.3	54.7	59.7	68.9	72.6	78.9	90.3
Reductions from Existing Actions				0.0	0.2	0.6	1.3	3.5
Projected GHG Emissions After Existing Actions				59.7	68.7	72.0	77.6	86.8
Total GHG Reductions from CECAC Policies						15.9	38.4	76.0
Projected Emissions After Quantified CECAC Reductions						56.8	40.8	14.3

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

Option No.	Policy Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2009–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e) <sup>1</sup>	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	Pending
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*	3.7*	\$159*	\$42*	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 (subject to modification)
RCI -6	Incentives and Policies for Improving Building Efficiency, Including Building Energy Codes	1.6	7.2	40.4	–\$666	–\$17	Pending
RCI -7	Improved Design and Construction in New and Existing State and Local Government Buildings, “Government Lead by Example”	0.6	5.3	26.9	–\$525	–\$20	Pending
RCI -8	Participation in Voluntary Industry-Government Partnerships (Including Incentives)	0.0	0.0	0.1	<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
	<b>Sector Total After Adjusting for Overlaps (excluding RCI-8)***</b>	4.8	28.7	149.5	–\$2,610	–\$17	
	<b>Reductions From Recent Actions</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	
	<b>Sector Total Plus Recent Actions</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	

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

GHG = greenhouse gas; MMtCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; \$/tCO<sub>2</sub>e = 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.

\* RCI-3 includes benefits and costs of residential and commercial solar hot water only; industrial hot water and commercial and industrial solar cooling benefits and costs will be estimated.

\*\* Costs of RCI-8 have not been quantified, due to lack of publicly available data. Refer to discussion of Key Uncertainties in the policy option description for RCI-8 for more information.

\*\*\* These totals account for the interaction between RCI policies. 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; adjustments for these overlaps are made elsewhere.

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

Option No.	Policy Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2008–2020 (Million \$) <sup>1</sup>	Cost-Effectiveness (\$/tCO <sub>2</sub> e) <sup>1</sup>	Level of Support
		2012	2020	Total 2008–2020			
ES-1	A thorough study of energy options for portfolio standards, including renewables, energy efficiency, nuclear power, waste to energy, landfill gas, offshore wind, and hydro	<i>(Portfolio components shown below; the Technical Work Group has proposed two alternative versions of this proposal, also shown.)</i>					Pending
ES-1a: Energy Efficiency	Same as RCI-1; 1%/yr by 2015, 1.5%/yr by 2020	1.5	8.2	43.0	–\$1,127	–\$26	
ES-1b: Renewables	"Strong renewables" option as defined below	1.2	5.1	32.2	\$1,079	\$34	
ES-1c: Nuclear	1000 MW nuclear plant in 2017	0.0	5.3	22.0	\$914	\$42	
ES-1 Portfolio A	3% EE, 3% low-cost renewable, 6% nuclear	1.4	9.4	48.1	\$771	\$16	Pending
ES-1 Portfolio B	EE from RCI-1, All renewable, no nuclear	2.7	13.3	75.3	–\$48	–\$0.6	Pending
ES-2	Technology research and development, including state funding	Not quantified					Complete
ES-3	Renewable energy (full range) financing, tax incentives, loans <i>Note: Only PV, small hydro, and distributed wind analyzed thus far</i>	0.03	0.11	0.66	\$116	\$177	Pending
ES-4	Regulatory model to equalize utility earnings on energy efficiency with earnings on traditional power supply to allow investment in energy efficiency and renewable technologies to be considered in part with investment in new conventional capacity	Not quantified					Pending
ES-5	New nuclear power, including reprocessing	0.00	15.9	54.7	\$2,354	\$43	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	Not quantified					Complete
ES-8	Distributed renewable energy incentives and/or barrier removal (Including Interconnection Rules)	TBD	TBD	TBD	TBD	TBD	Pending
	<b>Sector Total After Adjusting for Overlaps</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	
	<b>Reductions From Recent Actions</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	
	<b>Sector Total Plus Recent Actions</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	

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

GHG = greenhouse gas; MMtCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; \$/tCO<sub>2</sub>e = 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.

<sup>1</sup>All 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 <sub>2</sub> e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Level of Support
			2012	2020	Total 2008–2020			
TLU-1	Adopt California Clean Car Standards		0.21	1.14	7.04	<i>Not quantified</i>		Pending
TLU-2	Transportation System Management		0.01	0.04	0.21	< \$0	< \$0	Pending
TLU-3	Tax Credits for Efficient Vehicles		0	0.10	0.42	\$88	\$210	Pending
TLU-4	Improve Development Patterns		0.35	2.10	12.47	< \$0	< \$0	Pending
TLU-5	Transit & Bike-Pedestrian		<i>Quantified as Part of TLU-4</i>					Pending
TLU-6	Alternative Fuel Infrastructure		<i>Quantified as Part of TLU-12</i>					Pending
TLU-7*	Diesel Engine Emission Reductions and Fuel Efficiency Improvements	Efficiency Improvements	0.03	0.19	0.96	–\$92	–\$96	Pending
		Biodiesel	0.05	0.38	1.95	<i>Not quantified</i>		
TLU-8	Stricter Enforcement of Speed Limits		0.11	0.14	1.33	<i>Not quantified</i>		Pending
TLU-9	Make Full Use of CMAQ funds		<i>Not quantified</i>					Pending
TLU-10	Commuter Choice		0.11	0.43	2.51	–\$516	–\$240	Pending
TLU-11	Explore Available Resources for Funding Road Maintenance and Mass Transportation		0.06	0.34	1.82	0	0	Pending
TLU-12**	Low-GHG Fuel Standard		0.35	3.57	17.07	<i>Not quantified</i>		Pending
TLU-14	Rail		<i>Not quantified</i>					Pending
	<b>Sector Total Before Adjusting for Overlaps</b>		<b>1.28</b>	<b>8.43</b>	<b>45.78</b>	<b>TBD</b>	<b>TBD</b>	
	<b>Sector Total After Adjusting for Overlaps</b>		<b>0.86</b>	<b>5.95</b>	<b>27.20</b>	<b>TBD</b>	<b>TBD</b>	
	<b>Reductions From Recent Actions</b>		<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	
	<b>Sector Total Plus Recent Actions</b>		<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	

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

GHG = greenhouse gas; MMtCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; \$/tCO<sub>2</sub>e = 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.

\* Includes former TLU-13 (Freight Vehicle Technology Improvements).

\*\* Note: TLU-12 overlaps with AFW-4. This overlap was accounted for in the cumulative analysis of the TLU options.

**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 <sub>2</sub> e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Level of Support
		2012	2020	Total 2008–2020			
AFW-1 <sup>^</sup>	On-Farm Energy Efficiency	0.05	0.2	1.0	–\$43	–\$41	Complete
AFW-2a	On-Farm Waste Energy Recovery—Swine/Dairy	0.01	0.02	0.1	\$0.6	\$5	Complete
AFW-2b*	On-Farm Waste Energy Recovery—Poultry Litter	0.01	0.03	0.2	–\$3	–\$16	Complete
AFW-3	Expanded Use of Local Agricultural Products	0.01	0.03	0.2	<i>Not quantified</i>		Pending
AFW-4a <sup>†</sup>	In-State Liquid Biofuels Production—Biodiesel	0.1	0.1	1.5	\$26	\$17	Complete
AFW-4b*	In-State Liquid Biofuels Production—Ethanol	0.9	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	0.2	0.4	3	–\$191	–\$62	Pending
AFW-6bi	Terrestrial Carbon Sequestration—Forestry: Forest Management	0.3	0.8	6	\$53	\$9	Pending
AFW-6bii	Terrestrial Carbon Sequestration—Forestry: Afforestation/Reforestation	0.8	2.4	16	\$158	\$10	Pending
AFW-6biii <sup>#</sup>	Terrestrial Carbon Sequestration—Forestry: Urban Forestry	1.4	2.1	19	\$4,422	\$371	Pending
AFW-7a	Conservation and Restoration of Agriculture Lands for Enhanced Carbon Sequestration	0.1	0.2	1.5	\$54	\$37	Pending
AFW-7b	Conservation and Restoration of Forest Lands for Enhanced Carbon Sequestration	0.4	3.1	16	\$272	\$17	Pending
AFW-8	Advanced Recycling and Composting	1.2	3.0	20	–\$44	–\$2	Complete
AFW-9**	Waste-to-Energy Reclamation	0.4	1.0	7	\$0.2	\$0.03	Complete
AFW-10 <sup>^</sup>	Water and Wastewater Energy Efficiency Improvements	0.2	0.2	1.6	–\$33	–\$21	Complete
	<b>Sector Total After Adjusting for Overlaps<sup>†</sup></b>	<b>8.8</b>	<b>20.1</b>	<b>147</b>	<b>\$5,108</b>	<b>\$35</b>	
	<b>Reductions From Recent Actions</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	
	<b>Sector Total Plus Recent Actions<sup>†</sup></b>	<b>8.8</b>	<b>20.1</b>	<b>147</b>	<b>\$5,108</b>	<b>\$35</b>	

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

GHG = greenhouse gas; MMtCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; \$/tCO<sub>2</sub>e = dollars per metric ton of carbon dioxide equivalent; TBD = to be determined.

\* Note: AFW-4 overlaps with TLU-12, and AFW-5 overlaps with ES-1.

^AFW-1 and AFW-10 may overlap with RCI-6. However, for reasons stated in the policy option descriptions for AFW-1 and AFW-10, no overlap will be counted.

\* AFW-4 overlaps with TLU-12. This overlap was 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 policy option description for AFW-4.

\*\*AFW-2, AFW-5, and AFW-9 overlap with ES-1. 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 due to insufficient information regarding the costs of such programs.

†There are no overlaps between AFW options. See footnotes above for which adjustments were made to the sector totals for other sectors to remove double counting of emission reductions and costs / cost savings associated with overlaps with AFW options. Totals may not equal sum of rows due to 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.

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

Option No.	Policy Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> 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
	<b>Sector Total After Adjusting for Overlaps</b>	<b><i>Not quantified</i></b>					
	<b>Reductions From Recent Actions</b>	<b><i>Not quantified</i></b>					
	<b>Sector Total Plus Recent Actions</b>	<b><i>Not quantified</i></b>					

GHG = greenhouse gas; MMtCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; \$/tCO<sub>2</sub>e = dollars per metric ton of carbon dioxide equivalent.