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Memo

To: Minnesota Climate Change Advisory Group

From: The Center for Climate Strategies

CC: Minnesota Department of Commerce
Minnesota Pollution Control Agency
Minnesota Technical Work Group Members

Subject: Preparation for the Fifth Meeting of the Minnesota Climate Change Advisory Group Meeting

Date: November 8, 2007

At our fifth meeting of the Minnesota Climate Change Advisory Group (MCCAG) on Thursday, November 8, 2007, we will begin review and approval of draft pending policy options. 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 MCCAG, the Technical Work Groups (TWGs) will continue to quantify and further develop policy options and updates to the inventory and forecast. Additional consideration and approval of these options will continue at the next MCCAG meeting on December 5, 2007 and at the final MCCAG meeting on January, 2008.

As preparation for our fifth meeting, please review the draft policy options below and other background documents posted to the project website at: www.mnclimatechange.us.

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

- Identification of a full range of potential Minnesota options for mitigation of GHG emissions, over 300 possible state actions, including several specific new options approved by the MCCAG based on suggestions by the TWGs.
- MCCAG approval of 55 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.
- MCCAG approval of TWG suggested "straw proposals" for the design of initial draft policy options.

- Completion of the first round of economic analysis of draft policy options by CCS, and identification of early consensus recommendations at our fifth meeting.
- Modification of draft pending MCCAG policy options, as needed.

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

- Review and revision of policy option design, analysis, and draft options as needed during TWG calls and meetings.
- Final approval of remaining MCCAG 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 MCCAG Progress and Next Steps:

Status of Draft Policy Options	
Original Number of Potential Options Presented to the MCCAG from the CCS Catalog of State Actions	251
Updated Number of Potential Options on the CCS Catalog of States Actions, Including MCCAG Additions	300+
Current Number of Draft Potential Priority Policy Options for Analysis	55
• Residential, Commercial, and Industrial	10
• Energy Supply	12
• Transportation and Land Use	13
• Agriculture, Forestry and Waste	8
• Cross Cutting Issues	10
• Cap and Trade	2+
Next Steps	
Present First Round of Analysis of Draft Policy Options and Identify Early Consensus Recommendations	MCCAG Meeting #5
Present Updated Draft Policy Options and Identify Additional Consensus Recommendations	MCCAG Meeting #6
Approve Final MCCAG Policy Option Recommendations	MCCAG Meeting #7

Table 1.
Residential, Commercial, and Industrial
Summary List of Draft Pending Policy Options

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2008–2025 (Million $)	Cost-Effective -ness ($/$tCO_2e$)	Level of Support
		2015	2025	Total (2008–2025)			
RCI-1	Maximize Savings from the Utility Conservation Improvement Program (CIP)						
	No RPS	3.9	9.1	85.1	$3,471	$40.8	Pending
	With RPS	3.8	8.8	83.0	$3,597	$43.3	Pending
RCI-2	Improved Uniform Statewide Building Codes						
	No RPS	0.004	0.004	0.1	–$0.73	–$11.8	Pending
	With RPS	0.003	0.004	0.1	–$0.73	–$11.8	Pending
RCI-3	Green Building Guidelines and Standards Based on Architecture 2030	0.3	0.4	5.0	–$$1.3	–$0.3	Pending
RCI-4	Incentives & Resources to Promote Combined Heat and Power (CHP)						
	No RPS	1.9	10.4	68.2	$3,640	$53.4	Pending
	With RPS	1.9	9.8	65.6	$3,667	$55.9	Pending
RCI-5	Program to reduce emissions of non-fuel, high-global-warming-potential GHGs	*Quantification underway*					Pending
RCI-6	Non-utility Strategies and Incentives to Encourage Energy Efficiency and Reduce GHG Emissions	2.5	12.9	82.9	–$1,721	–$20.8	Pending
RCI-7	Conservation Improvement-type Program for Propane and fuel oil efficiency	*Quantification underway*					Pending
RCI-8	Energy Performance Disclosure	*Not quantified*					Pending
RCI-9	Promote Technology-Specific Applications to Reduce GHG Emissions	*Not quantified*					Pending
RCI-10	Support Strong Federal Appliance Standards and Require High State Standards in the Absence of Federal Standards	*Not quantified*					Pending
	Sector Total After Adjusting for Overlaps						
	Reductions From Recent Actions						
	Sector Total Plus Recent Actions						

**Table 2.
Energy Supply
Summary List of Draft Pending Policy Options**

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2008–2025 (Million $)	Cost-Effective-ness ($/tCO_2e$)	Level of Support
		2015	2025	Total (2008–2025)			
ES-1	Generation Performance Standard						
	Scenario #1 - GPS has no effect on planned additions or power imports (NO RPS)	0.0	0.0	0.0	$0	$0.0	Pending
	Scenario #1 - GPS has no effect on planned additions or power imports (WITH RPS)	0.0	0.0	0.0	$0	$0.0	Pending
	Scenario #2 – GPS affects planned additions only (NO RPS)	4.7	4.8	61.7	$1,681	$27.2	Pending
	Scenario #2 – GPS affects planned additions only (WITH RPS)	4.7	4.8	61.7	$1,681	$27.2	Pending
	Scenario #3 – GPS affects planned additions and power imports (NO RPS)	4.7	5.9	67.6	$1,797	$26.6	Pending
	Scenario #3 – GPS affects planned additions and power imports (WITH RPS)	4.7	4.8	61.7	$1,681	$27.2	Pending
ES-3	Efficiency Improvements, Repowering and other Upgrades to Existing Plants						
	NO RPS	3.00	5.63	58.27	$405.10	$6.95	Pending
	WITH RPS	2.69	4.11	47.90	$337	$7.04	Pending
ES-4	Transmission System Upgrading, including reducing transmission line and distribution system loss						
	NO RPS	0.53	0.58	8.74	$93.09	$57.10	Pending
	WITH RPS	0.53	0.57	8.65	$$83	$56.50	Pending
ES-5	Renewable and/or Environmental Portfolio Standard	6.15	13.6 7	110.96	2,349	$21.17	Pending
ES-6	Nuclear Power Support and Incentives				$		
	NO RPS	0.00	6.92	41.43	$2,617	$63.17	Pending
	WITH RPS	0.00	6.78	40.78	$2,617	$64.18	Pending
ES-7	Advanced Fossil Fuel Technology Incentives, Support or Requirements						
	NO RPS	1.00	1.00	12.96	$686	$52.93	Pending
	WITH RPS	1.00	1.00	12.96	$686	$52.93	Pending

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2008–2025 (Million $)	Cost-Effective-ness ($\$/tCO_2e$)	Level of Support
		2015	2025	Total (2008–2025)			
ES-8	Carbon Capture and Storage and/or Reuse Policies						
	Scenario #1 - central cost and performance assumptions for carbon capture/storage technology (NO RPS)	3.62	3.62	47.12	$2,894	$61.41	Pending
	Scenario #1 – central cost and performance assumptions for carbon capture/storage technology (WITH RPS)	3.62	3.62	47.12	$2,894	$61.41	Pending
	Scenario #2 – high cost and performance assumptions for carbon capture/storage technology (NO RPS)	3.85	3.85	50.06	$3,895	$77.81	Pending
	Scenario #2 – high cost and performance assumptions for carbon capture/storage technology (WITH RPS)	3.85	3.85	50.06	$3,895	$77.81	Pending
	Scenario #3 – low cost and performance assumptions for carbon capture/storage technology (NO RPS)	3.35	3.35	43.55	$1,547	$35.51	Pending
	Scenario #3 – low cost and performance assumptions for carbon capture/storage technology (WITH RPS)	3.35	3.35	43.55	$1,547	$35.51	Pending
ES-9	Large-scale, Supply-oriented Combined Heat and Power (CHP) and Geothermal Incentives and/or Barrier Removal	*Being analyzed by RCI TWG*					
ES-10	Voluntary GHG targets	*Not quantified*					Pending
ES-11	Carbon (GHG) tax	*Moved to the new Cap-and-Trade (C&T) TWG as per agreement at 27 September MCCAG meeting*					
ES-12	Distributed Renewable Energy Incentives and/or Barrier Removal						Pending
ES-13	Technology-based approaches, including research and development, fuel cells, energy storage, distributed renewable energy technologies, etc.	*Not quantified*					Pending
ES-14	Cap-and-trade	*Moved to the new C&T TWG as per agreement at 27 September MCCAG meeting*					
	Sector Total After Adjusting for Overlaps						
	Reductions From Recent Actions						
	Sector Total Plus Recent Actions						

Table 3.
Transportation and Land Use
Summary List of Draft Pending Policy Options

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2008–2025 (Million $)	Cost-Effective-ness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2008–2025			
TLU-1	Improved Land Use Planning and Development Strategies						Pending
TLU-2	Expand Transit, Bicycle, and Pedestrian Infrastructure						Pending
TLU-3	Low GHG Fuel Standard (Potential Overlap With AFW-7)						Pending
TLU-4	Infrastructure Management						Pending
TLU-5	Climate-Friendly Transportation Pricing						Pending
TLU-6	Adopt California Clean Car Standards						Pending
TLU-7	“Fix-it-First” Transportation Investment Policy and Practice						Pending
TLU-8	Update Road Standards—Now part of TLU-4						Pending
TLU-9	Workplace Tools to Encourage Carpooling, Bicycling, and Transit Ridership						Pending
TLU-10	Congestion Pricing (or Tolls) With Targeted Use of Revenue Toward Travel Alternatives—Now Part of TLU-5						Pending
TLU-11	Truck Stop Electrification						Pending
TLU-12	Mobile Source Emissions Reduction						Pending
TLU-13	Reduce Maximum Speed Limits						Pending
	Sector Total After Adjusting for Overlaps						
	Reductions From Recent Actions						
	Sector Total Plus Recent Actions						

**Table 4.
Agriculture, Forestry, and Waste Management
Summary List of Draft Pending Policy Options**

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2008–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
		2015	2025	Total 2008 2020			
AFW-1	Agricultural Crop Management						Pending
AFW-2	Land Use Management Approaches for Protection and Enrichment of Soil Carbon						Pending
AFW-3	In-State Liquid Biofuels Production						Pending
AFW-4	Expanded Use of Biomass Feedstocks for Electricity, Heat, or Steam Production						Pending
AFW-5	Forestry Management Programs to Enhance GHG Benefits						Pending
AFW-6	Forest Protection—Reduced Clearing and Conversion to Non-Forest Cover	5.4	5.7	59.4	TBD	TBD	Pending
AFW-7	Integrated Waste Management						Pending
AFW-8	End of Use Waste Management Practices						Pending
	Sector Total After Adjusting for Overlaps						
	Reductions From Recent Actions						
	Sector Total Plus Recent Actions						

**Table 5.
Cross-Cutting Issues
Summary List of Draft Pending Policy Options**

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2008–2025 (Million $)	Cost-Effective-ness ($\$/tCO_2e$)	Status of Option
		2015	2025	Total 2008-2025			
CC-1	GHG Inventories, Forecasting, Reporting, and Registry	*Not Quantified*					Pending
CC-2	Statewide GHG Reduction Goals and Targets	*Not Quantified*					Pending
CC-3	State and Local Government GHG Emissions (Lead-by-Example)	*Not Quantified*					Pending
CC-4	Public Education and Outreach	*Not Quantified*					Pending
CC-5	Tax and Cap Policies	*Not Quantified*					Transferred to new Cap and Trade TWG
CC-7	Participate in Regional and Multi-State GHG Reduction Efforts	*Not Quantified*					Pending
CC-8	Encourage the Creation of a Business-Oriented Organization to Share Information and Strategies, Recognize successes, and Support Aggressive GHG Reduction Goals	*Not Quantified*					Pending
CC-9	Dedicate Greater Public Investment to Climate Data and Analysis	*Not Quantified*					Pending
CC-10	Facilitate the Development of an Effective Carbon Credit System for MN	*Not Quantified*					Coordinate w/ Cap and Trade TWG
CC-11	Create a Market Advisory Group	*Not Quantified*					Transferred to new Cap and Trade TWG
	Sector Total After Adjusting for Overlaps	*Not Quantified*					
	Reductions From Recent Actions	*Not Quantified*					
	Sector Total Plus Recent Actions	*Not Quantified*					

Table 6. Cap and Trade Summary List of Draft Pending Policy Options

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)				Net Present Value (Million $)	Cost-Effectiveness[1] ($/t$CO_2$e)	Permit Price[2] ($/t$CO_2$e)	Level of Support
		2015	2020	2025	Total (2008–2025)		2020	2020	
C&T-1 (Multi-State C&T)	WCI+MN Base Case (All Sectors)		49.13				–$6.88	8.45	
	WCI+MN Upper-bound (All Sectors)		45.59				$3.36	19.26	
	WCI+MN (Power Sector)		13.11				$0.08	6.87	
	Midwest (All Sectors)		42.88				–$8.80	4.20	
	Midwest+WCI (All Sectors)		45.98				–$7.85	6.28	
C&T-2	MN-Only C&T								
C&T-3	National C&T								
C&T-4	Carbon Tax								

[1] This represents the average cost per tCO_2e mitigated/sequestered for Minnesota.
[2] This represents the marginal cost of the last tCO_2e mitigated/sequestered, and applies to all states involved in a trading arrangement.

Note: Results for Cap and Trade thus far are only preliminary. All simulations undertaken so far are preliminary and are intended to illustrate the workings of the model. Currently, we have very limited data on mitigation/sequestration options for Midwestern States. Preliminary results given here may change significantly when better data is available.