NEW MEXICO CLIMATE CHANGE ADVISORY GROUP

FINAL REPORT
December 2006

Executive Summary

Recognizing the profound implications that global warming and climate variation could have on the economy, environment and quality of life in the Southwest, New Mexico Governor Bill Richardson signed Executive Order 05-33 on June 5th, 2005, establishing the New Mexico Climate Change Advisory Group (CCAG).[1] The Governor directed the CCAG to prepare a report that includes a projection of the State's future GHG emissions and policy recommendations for reducing New Mexico's total greenhouse gas emissions to 2000 levels by the year 2012, 10% below 2000 levels by 2020 and 75% by 2050.

The New Mexico Environment Department (NMED) organized the process on behalf of the Governor. NMED assembled 37 stakeholders, representing a broad range of interests and expertise, and the CCAG met six times from July 2005 to October 2006. During this same period, five sector-based technical work groups (TWGs) of the CCAG developed initial recommendations in the areas of: Energy Supply (ES); Residential, Commercial, Industrial and Waste Management (RCI); Transportation and Land Use (TLU); Agriculture and Forestry (AF); and Cross-Cutting Issues (CC). With oversight from NMED, the CCAG followed a consensus-building process designed and implemented by the non-profit Center for Climate Strategies (CCS). Applying a design similar to those used in other successful state climate initiatives, CCS provided both facilitation services and technical analysis to the CCAG in formulating its recommendations.

CCAG Policy Recommendations and Impacts

The CCAG offers 69 policy recommendations to the Governor to help meet the GHG emissions goals in Executive Order 05-33. Figure EX-1 below presents:

- Projected growth in New Mexico's GHG emissions[2] (blue line).
- Emission targets in the Executive Order (red line).
- Projected emissions if the CCAG's recommendations are fully implemented (green line).

As the figure illustrates, the CCAG's recommendations would more than meet the Governor's targets, and are projected to reduce GHG emissions by approximately half, from 70 MMTCO2e in the reference case forecast to 34 MMTCO2e by 2020. Table EX-1 (appearing below Figure EX-1) provides the numeric estimates underlying Figure EX-1.

[1] Appendix A contains the Executive Order.
[2] The "reference case" projection of emissions was developed during the CCAG process, along with the inventory of historical emissions since 1990, as set forth in detail in Chapter 2.

Figure EX-1

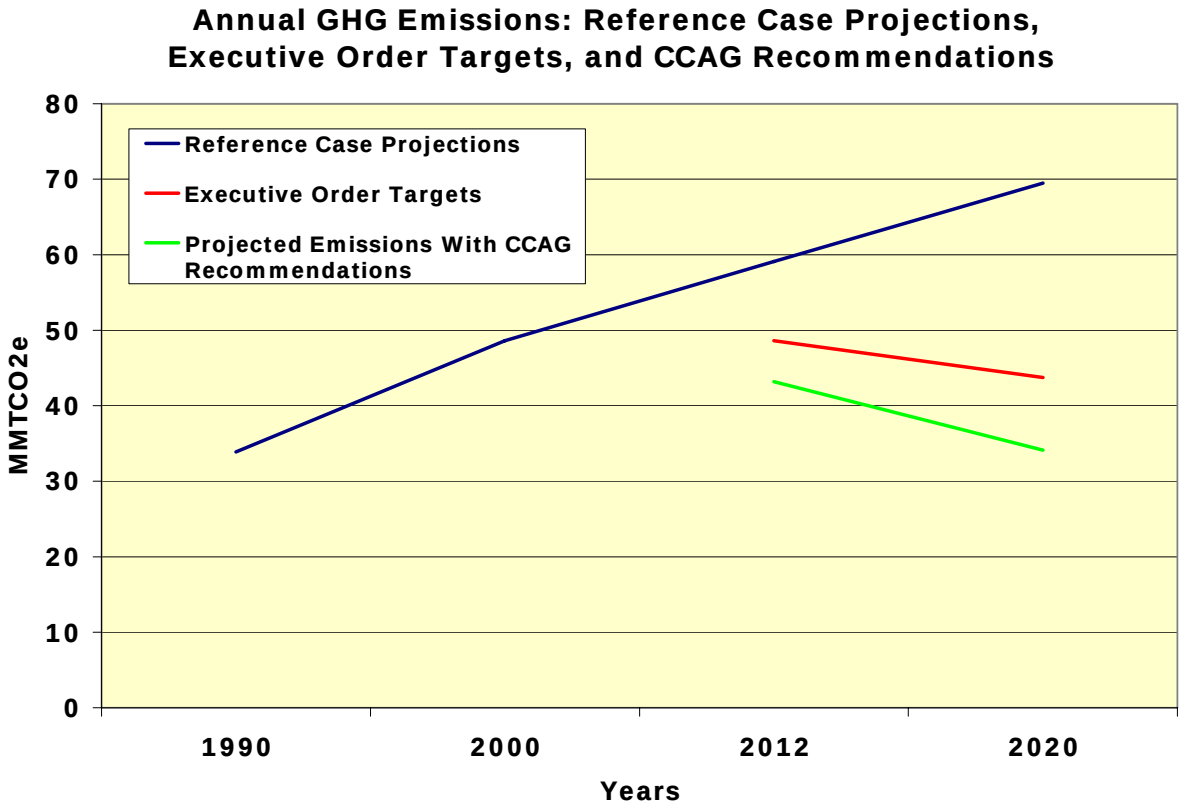


Table EX-1. Annual Emissions: Reference Case Projections, Executive Order Targets, and Impact of CCAG Recommendations

ANNUAL EMISSIONS	1990	2000	2012	2020
REFERENCE CASE PROJECTIONS	33.9	48.6	59.1	69.5
EXECUTIVE ORDER TARGETS [a]			48.6	43.7
GHG REDUCTIONS FROM CCAG RECOMMENDATIONS			*-15.9*	*-35.4*
ANNUAL EMISSIONS WITH CCAG RECOMMENDATIONS			43.2	34.1

[a] Targets aim to reduce New Mexico GHG emissions to 2000 levels by 2012, and 10% below 2000 levels by 2020.

Table EX-2 summarizes the emissions and economic impacts of CCAG recommendations across sectors of the economy.

Table EX-2. Summary by Sector of Estimated Impacts of CCAG Recommendations

	Sector	GHG Reductions ($MMtCO_2e$)			Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)
		2012	2020	Total 2007-2020		
	CROSS-CUTTING ISSUES	*Non-quantified enabling policies*				
	RESIDENTIAL, COMMERCIAL AND INDUSTRIAL	3.7	9.4	66.0	-630	-18
	ENERGY SUPPLY	6.7	14.3	109.9	258	7
	TRANSPORTATION AND LAND USE	3.1	6.8	50.5	-1,669	-36
	AGRICULTURE AND FORESTRY	2.5	4.9	41.1	-198	-5
	TOTAL (includes all adjustments for overlaps and recent policy actions)	15.9	35.4	267.5	-$2,239	

The CCAG's recommendations are summarized below in Table EX-3, followed by short descriptions of each recommendation. Detailed descriptions and analysis of these recommendations are presented in Chapters 3 through 7 of this report, and in the Appendices. Cumulative GHG reductions from 2007-2020 are estimated at 267 MMTCO2e. The recommendations are projected to create net economic savings of over $2 billion for the State's economy over the period 2007-2020.[3]

As discussed in Chapter 1, the Governor's goals are consistent with the levels and framework of goals set by other states, including those in the West, that are implementing GHG reduction strategies. The CCAG's recommendations also complement other efforts underway in New Mexico, especially the Governor's many initiatives to make it the "Clean Energy State." This report also points to numerous co-benefits that would result from implementation of CCAG-recommended policies.

[3] This estimate is calculated on a net present value basis using a discount rate of 5%. It does not account for recommendations for which cost estimates were not available.

Table EX-3

Summary of CCAG Policy Recommendations by Sector

Explanatory Note on "Level of Support"column: UC=Unanimous Consent. Majority=Simple majority. Obj's=number of objections. Total number of options=69 due to counting both ES-1b and ES-1c.

	Policy Option	GHG Reductions ($MMtCO_2e$) 2012	2020	Total 2007-2020	Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
	CROSS-CUTTING ISSUES						
CC-1	State Greenhouse Gas Reporting	*Non-quantified enabling policy*					UC
CC-2	State Greenhouse Gas Registry	*Non-quantified enabling policy*					UC
CC-3	State Climate Public Education and Outreach	*Non-quantified enabling policy*					UC
	RESIDENTIAL, COMMERCIAL AND INDUSTRIAL						
RCI-1	Demand Side Management (DSM) Programs, Energy Efficiency Funds,and/or Energy Efficiency Requirements for Electricity	0.2	1.0	5.5	-$98	-$18	UC
RCI-2	Demand Side Management (DSM) Programs, Energy Efficiency Funds, and/or Energy Efficiency Requirements for Natural Gas and Other Fuels	0.03	0.2	1.0	-$55	-$55	UC
RCI-3	Regional Market Transformation Alliance	0.1	0.5	2.9	-$79	-$27	UC
RCI-4	State Appliance Standards	0.1	0.3	2.1	-$97	-$46	UC
RCI-5	Green Power Purchasing	0.3	0.1	2.3	$15	$7	UC
RCI-6	Rate Design (Including Time of Use Rates, Increasing Block Rates, and Seasonal Use Rates)	0.3	0.3	3.6	-$141	-$40	UC
RCI-7A	Improved Building Codes	0.9	2.4	16.6	-$200	-$12	UC
RCI-7B	Solar Hot Water-ready and Solar-PV-ready Codes for New Buildings	*Not quantified*					UC
RCI-7C	Solar Hot Water Systems as an Element of Building Codes for New Buildings	*Not quantified*					UC
RCI-8A	Building Energy Performance Requirements for State-funded and Other Government Buildings ("Reach Codes")	0.01	0.04	0.2	0.2	$1	UC
RCI-8B	Building Energy Performance Promotion and Incentives for Energy Performance Enhancements (Attaining "Reach Codes") in Non-Government Buildings (Including Existing Buildings)	0.3	1.3	7.4	-$16	-$2	UC
RCI-9	Government Agency Requirements and Goals (including procurement) -- Focus on operations	0.04	0.2	0.9	-$18	-$20	UC

	Policy Option	GHG Reductions ($MMtCO_2e$) 2012	2020	Total 2007-2020	Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
RCI-10	Education and Outreach for Building Professionals	*Not quantified*					UC
RCI-11	Consumer Education Programs	*Not quantified* *Jointly considered with CC TWG*					UC
RCI-12	Increased Emphasis on Energy and Environmental Consideration in Higher Education						UC
RCI-13	Incentives and Promotion for Renewable Energy and Clean Combined Heat and Power	*Jointly considered with Energy Supply TWG*					UC
RCI-14	Regulatory/Legislative Grid, Pricing, and other Policies to Support Distributed Generation						UC
RCI-16	Participation in Regional (or National) Industry Emissions Cap and Trade Programs	*Jointly considered with Energy Supply TWG*					UC
RCI-17	Voluntary Emissions Targets	0.3	0.7	4.6	*Not quantified*		UC
RCI-18	Use of Alternative Gases (Non-Energy Emissions, Indus. Process Gases)	*Not quantified*					UC
RCI-19	Solid Waste Recycling, Source Reduction, and Composting						UC
	Scenario A: Financial/Technical Support	0.2	0.5	3.6	*Not quantified*		UC
	Scenario B: Financial/Technical Support and Mandatory Recycling	0.5	1.1	8.4	*Not quantified*		UC
	ENERGY SUPPLY						
ES-1	Mandate(s) for Renewable Energy (RPS, etc.)						
	Scenario B: 10% in 2011, 1% increase/year to 2021	1.1	2.6	17.8	$102	$6	UC
	Scenario C: 10% in 2011, 2% increase/year to 2021	*See ES-4 below*					Majority (9 Obj's)
ES-2	Financial Incentives for Distributed Renewables	0.02	0.4	1.6	$164	$105	UC
ES-3	Renewable Energy Transmission and Storage	*Not quantified*					UC
ES-4	RPS with Financial Incentives for Centralized Renewables	1.2	4.2	26.0	$215	$8	UC
ES-5	R&D including Energy Storage	*Not quantified*					UC
ES-6	Advanced Coal/Fossil Technologies (e.g., IGCC with carbon capture)	0.8	4.3	22.7	$650	$29	UC
ES-7	Nuclear Power	*Not quantified*					UC
ES-8	Incentives and Barrier Reductions for Combined Heat & Power (CHP)	0.3	0.9	6.1	$26	$4	UC

	Policy Option	GHG Reductions ($MMtCO_2e$) 2012	2020	Total 2007-2020	Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
ES-9	Demand-Side Management, Energy Efficiency, and Integrated Resource Planning (IRP)	*Jointly considered with RCI TWG (RCI-1)*					
ES-10	Transmission Capacity and Corridors	*Not quantified*					UC
ES-11	CO2 Capture and Storage or Reuse (CCSR) in Oil and Gas Operations	1.6	3.0	25.1	*Not quantified*		UC
ES-12	Methane Reduction in Oil and Gas Operations: BMPs and PROs	2.7	3.4	35.3	*Not quantified*		UC
ES-13	CO2 Reduction from Fuel Combustion in Oil and Gas Operations	0.6	1.4	10.6	*Not quantified*		UC
ES-14	GHG Cap and Trade	*Not quantified*					UC
ES-15	Generation Performance Standard	1.2	3.8	24.3	$522	$21	Majority (9 Obj's)
ES-16	Clean Energy Development for Electric Cooperatives	*Non-quantified enabling policy*					UC
	TRANSPORTATION AND LAND USE						
TLU-1	State Clean Car Program	0.4	1.9	10.4	-$1,207	-$117	UC
TLU-2	Low Rolling Resistance Tires	0.5	0.6	5.5	-$506	-$92	UC
TLU-3	Low-GHG Operation of State Fleet Vehicles	*Not quantified*					UC
TLU-4	Pay-As-You-Drive Insurance	0.2	1.0	5.0	Zero net cost		UC
TLU-5	Incentive/Disincentive Options Bundle	*Not quantified*					UC
TLU-6	Alternative Fuels Use	0.4	1.7	9.1	-$119	-$13	UC
VMT Reduction Bundle TLU-7 to TLU-11							
TLU-7	Infill, Brownfield Re-development	1.2	1.3	13.4	*Zero net costs or positive cost savings*		UC
TLU-8	Transit-Oriented Development						UC
TLU-9	Smart Growth Planning, Modeling, Tools						UC
TLU-10	Multimodal Transportation Bundle						UC
TLU-11	Promote LEED for Neighborhood Development						UC
TLU-12	Targeted Open Space and Croplands Protection	*Considered in Agriculture and Forestry TWG (F-1 and A-8)*					
TLU-13	Diesel Retrofits	*Incorporated as part of TLU-5*					
TLU-14	Truck Stop Electrification/Anti-Idling	0.4	0.7	6.3	$23	$4	UC

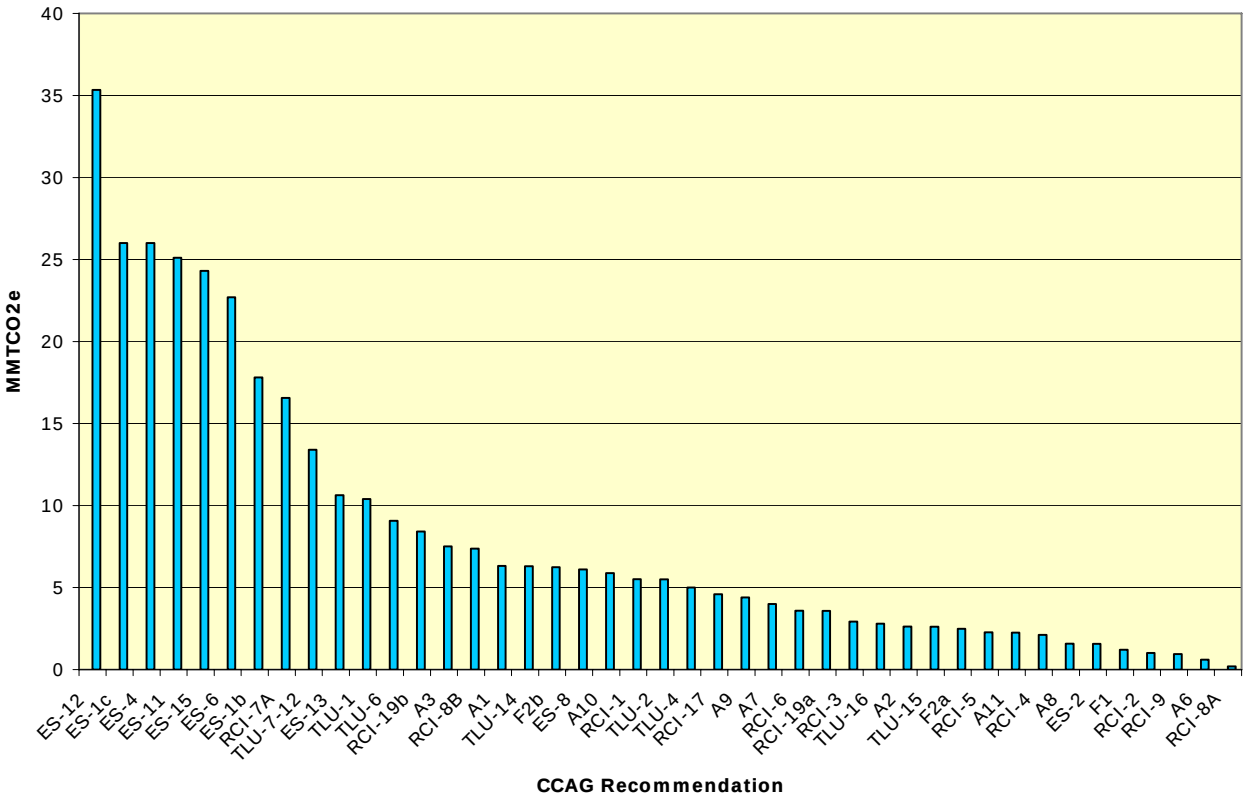
	Policy Option	GHG Reductions ($MMtCO_2e$) 2012	2020	Total 2007-2020	Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Level of Support
TLU-15	Intermodal Freight Initiatives	0.1	0.5	2.6	*Not quantified*		UC
TLU-16	Lower Speed Limits	0.2	0.3	2.8	*Not quantified*		UC
	AGRICULTURE AND FORESTRY						
F-1	Forestland Protection from Developed Uses	0.1	0.1	1.2	$46	$22	UC
F-2a	Forest Health & Restoration - Residential Lands	0.2	0.2	2.5	-$115	-$46	UC
F-2b	Forest Health & Restoration – Other Lands	0.5	0.5	6.3	-$92	-$15	UC
A-1	Manure Energy Utilization	0.3	0.8	6.3	$29	$3	UC
A-2	Biomass Feedstocks for Electricity or Steam Production	0.2	0.3	2.6	-$198	-$76	UC
A-3	Ethanol Production	0.5	1.0	7.5	$20	$3	UC
A-6	Conservation Tillage/No-Till	0.1	0.1	0.6	$14	$15	UC
A-7	Convert Agricultural Land to Grassland or Forest	0.4	0.4	4.0	$27	$7	UC
A-8	Reduce Permanent Conversion of Agricultural Land and Rangeland to Developed Uses	0.1	0.2	1.6	$97	$62	UC
A-9	Programs to Support Organic Farming	0.2	0.4	4.4	$2	$0.5	UC
A-10	Programs to Support Local Farming/Buy Local	0.3	1.1	5.9	$1	$0.2	UC
A-11	Biodiesel Production	0.1	0.3	2.3	*Not quantified*		UC
	TOTAL AFTER ADJUSTING FOR OVERLAPS AND RECENT POLICY ACTIONS	16	35	267	-$2,239		n/a

Perspectives on Policy Recommendations

There is a large variation in the GHG reductions associated with various options. Figure EX-2 presents the estimated tons of reductions for each policy recommendation for which estimates were available, expressed as a cumulative figure for the period 2007-2020.

Figure EX-2

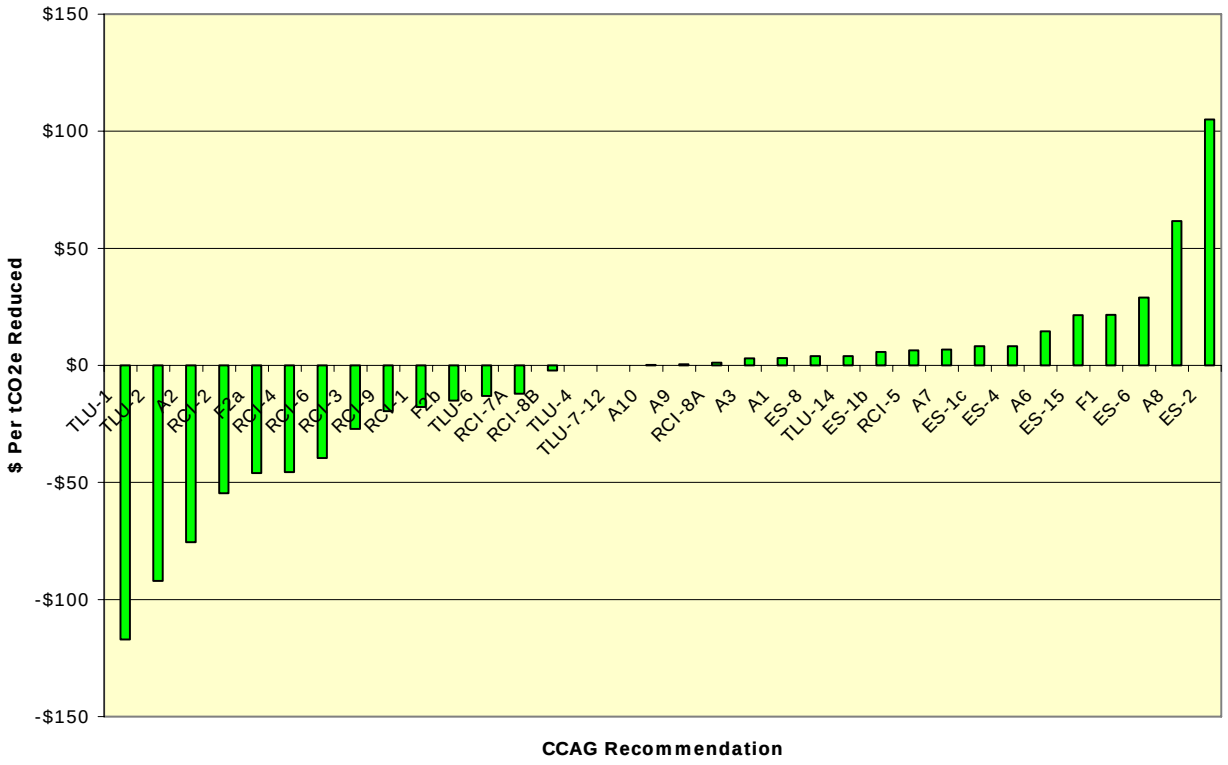
CCAG Policy Recommendations Ranked by Cumulative GHG Reductions, 2007-2020



There is also variation in the cost (or cost savings) per ton of reduction associated with various options. Figure EX-3 presents the estimated dollars per ton cost (or cost savings, depicted as a negative number) for each policy recommendation for which cost estimates were available. This measure is calculated by dividing the net present value of the cost of the option by the cumulative GHG reductions, all for the period 2007-2020.

Figure EX-3

CCAG Policy Recommendations Ranked by Dollars per Ton



Cover photo: New Mexico Wind Energy Center, Quay and DeBaca Counties. Photo courtesy of PNM.