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Residential, Commercial, and Industrial (RCI) Sector GHG Reduction Policy Options

Prepared for Technical Working Group (TWG) Call #5, December 14, 2005, 9:00 to 10:30 AM

Potential Emission Reductions *	Potential Cost or Cost Savings *
High (H): At least 1 Million Metric Tons (MMT) carbon dioxide equivalent (CO_2e) per year by 2020 (~1% of current NM emissions)	**High (H)**: $50 per Metric Ton CO_2e ($MTCO_2e$) or above
Medium (M): From 0.1 to 1 MMT CO_2e per year by 2020	**Medium (M):** $5-50/$MTCO_2e$
Low (L): Less than 0.1 MMT CO_2e per year by 2020	**Low (L):** Less than $5/$MTCO_2e$
Uncertain (U): Not able to estimate at this time	**Cost Savings**: Options that save money, i.e., that have "negative costs."
	Uncertain (U): Not able to estimate at this time

***** "Potential" here connotes rough initial estimate based in part on experience in other states. Also, several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.

Definition of Priorities for Analysis:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low**: Low priority options will be analyzed last, time and resources permitting.

**** Options marked with a double asterisk (**) indicate options that are at least partially "base case" policies, i.e., that have been or will be implemented at some level in New Mexico. Please see http://www.nmclimatechange.us/ewebeditpro/items/O117F6957.pdf for an initial, non-comprehensive sampling of such policies as they relate to the policy option categories listed below.**

NOTE: Text highlighted in yellow indicates TWG decisions and comments made during RCI TWG Call #4, November 17, 2005. Options noted as Moved or Combined are shown, for continuity, in their positions as they were in the Policy Matrix prepared for TWG Call #3, as well as in their new positions. Moved or combined items will be shown only in their new positions in the next version of this Matrix.

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reductions	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
1.	**Energy Efficiency Programs, Funds, and Goals**					
1.1	Utility Demand Side Management (DSM) Programs, Energy Efficiency Funds (e.g. Public Benefit Funds) administered by State agency, utility, or 3rd party (e.g. Energy Trust), and/or Energy Efficiency Requirements (e.g. Utility Savings Goals or Energy Portfolio Standards) for electricity**	High	High	Cost Savings/ Low Cost	• Co-benefits include transmission/distribution system costs reduction. • Significant potential overlap with many other options.	Might need a separate category for non-utility energy providers (e.g. propane, municipal/co-op utilities) Specific End-uses/technologies that could be included: window AC units, evaporative versus direct (or "DX") cooling, lighting, water heating, plug loads, networked PC management, power supplies, motors, pumps, boilers, etc. Consumer Products Programs: may include incentives, retailer training, marketing and promotion, education, and others.
1.2	Utility Demand Side Management Programs, Energy Efficiency Funds, and/or Energy Efficiency Requirements, for natural gas, propane, fuel oil**	High	High	Cost Savings/ Low Cost	• Co-benefits include local air quality impacts. • Significant potential overlap with many other options.	See above
1.3	Market transformation and technology development programs	TBD	High	Cost Savings/ Low Cost		Re-evaluate after considering more specific detail … what markets/what tactics – overlap with LEED and ENERGYSTAR?
2.	**Appliance Standards**					
2.1	State Appliance Standards (more stringent and inclusive than Federal standards), based on standards developed/proposed in other states, and Support for further Federal-level standards	High	Low/High	Cost Savings/ Low Cost	• Feasibility enhanced by adopting regional standards	Changed from state-level to "state adoption of standards adopted in other similar states"

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3.	**Buildings**					
3.1	Improved Building Codes**	High	Medium/ High	Cost Savings/ Low Cost	• Potential to also yield water savings, comfort/air quality improvements.	Seen as strong option for reducing energy use. Currently NM has adopted 2003 International Energy Conservation Code
3.2	Building Energy Performance Requirements for State-funded and Other Government Buildings plus Promotion and Incentives for Similar Energy Performance Enhancements in Non-Government Buildings Includes: Building Commissioning and Recommissioning, including Energy Tracking and Benchmarking May include: Increased use of Blended Cement (substituting fly ash or other pozzolans for clinker reduces CO_2 emissions)	High	Medium/ High		•	State building requirements – (1) all State funded new buildings and building renovation projects of 5,000 square feet and above are mandated to be 50% below the U.S. average for that building type and (2) 15,000 square feet and above additionally mandated to build to a minimum rating of "Silver" using the U.S. Green Building Council's LEED-NC™, LEED-EB™, LEED-CS™, or LEED-CI™ rating system - or verifiable equivalent and (3) for private buildings include Promotion and Incentives for Improved Design and Construction (e.g. LEED—"Leadership in Energy-Efficient Design", daylighting, green buildings)
3.3	Reduction of Emissions from Diesel Engines Used in New Construction Developments, and Reduction of Construction Energy Use	TBD	Low	Low Cost?		Not discussed in call

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4.	**Education and Outreach**					
4.1	Consumer Education programs	High	Uncertain	Cost Savings/ Low Cost	• Potential contribution difficult to estimate	Could be delivered through utilities/NGOs/others
4.2	Introduce in Primary/Secondary School Curriculum	Not High	Uncertain	Cost Savings/ Low Cost	[As above]	This option is largely already happening and/or will follow from implementation of other options
4.3	Increased Emphasis on Energy and Environmental Consideration in Higher Education	High	Uncertain	Cost Savings/ Low Cost	[As above]	Training of future energy professionals, architects and allied trades is required in order to implement building energy and other high priority options "and Training for Professionals" removed from description since covered by options below
4.4	Education and Outreach for Building Professionals	High	Medium/ High	Cost Savings/ Low Cost	• Potential to also yield water savings, comfort/air quality improvements. • Potential overlap with previous options. • Extension of existing widely-used tools such as "MASTERSPEC"/ "SPECWARE" • Location of emissions benefits (in-state or out-of-state) may vary	Subsumes options previously in section 3 – 3.3 Contractor and Builder Education (e.g.: Proper sizing of HVAC, duct sealing)**, 3.4 Training and Enforcement of Building Codes**, 3.6 Energy Management Training/ Training of Building Operators** and 3.9 Tools and Options for Use by Design and Engineering Professionals to Select and Promote Low Embodied- emissions Materials

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5.	**Pricing and Purchasing**					
5.1	Green Power Purchasing**	TBD	Uncertain	Medium/ High Cost	• Interaction with RPS option.	Discussion not completed during call
5.2	Bulk Purchasing Programs for Energy Efficiency or other Equipment (Public or Private sector)	TBD	Low/ Medium	Cost Savings/ Low Cost	• May interact with utility programs.	Discussion not completed during call
5.3	Net-metering policies** - focus on impact on GHG reductions	MOVED to 7.2	Low/ Medium	Cost Savings/ Low Cost		Overlap with other options, some aspects are in place, so far has had low impact on system capacity throughout the Western states Could be moved to new category, see below
5.4	Rate Design (Including Time of Use Rates, Increasing Block Rates, and Seasonal Use Rates)	High	Low	Cost Savings/ Low Cost	• Significant utility system co-benefits	Focus here is on rate design to enhance conservation, load management
6. (OLD)	**Regulatory Policies for Rate Design and Distributed Generation**					
6.1	Regulatory Policies for Rate Design and Distributed Generation TWG moved elements supporting Distributed Generation to NEW 7.2 below; retained demand-management elements in Option 5.4 above	MOVED to 7.2 (and 5.4)				

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6. (old 7.)	**Technology Specific Policies**					
6.1 (old 7.1)	(Tax or Other) Incentives and Promotion for Renewable Energy (Solar roofs, water heaters, etc.) Clean Combined Heat and Power (CHP) (could also include distributed generation without heat use, combined heat, cooling, and power generation, and generation from existing waste heat sources). **	High	High	Cost Savings– High Cost	• Programs could help to lower capital and installation costs • Cost dependent on price of natural gas • Interconnection an issue • Utility system benefits • [Note that generation from waste heat may require different policies than CHP]	
7.2 (OLD)	Clean Combined Heat and Power (CHP)	COMBINED WITH 7.1	High	Cost Savings – Medium Cost		
6.2 (NEW)	Regulatory/Legislative Grid, Pricing, and other Policies to Support Distributed Generation (Including net metering and interconnection rules)	High	N/A		•	This is viewed as a "supporting" or enabling policy to support Option 7.1 above
7.3 (OLD)	Promotion and Tax or Other Incentives (e.g. ENERGYSTAR, credits for solar hot water)**	COMBINED WITH 7.1	Medium/ High	Cost Savings/ Low Cost	• Interaction with appliance standards, utility programs.	
7.4 (OLD)	Appliance Recycling/Pick-Up Programs	MOVED	Low	Cost Savings/ Low Cost	• Long-term impact uncertain	To be covered as appropriate in Options 1.1 and 1.2
7.5 (OLD)	Energy-efficient Design and Landscaping (including white roofs, rooftop gardens, shade tree programs)	MOVED	Medium/ High	Cost Savings/ Low Cost	• Results likely to vary substantially with design	To be covered as appropriate in building design options (Section 3)

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6. (old 7.)	**Technology Specific Policies (Continued)**					
7.6 (OLD)	Focus on Specific End-uses/technologies: window AC units, evaporative versus direct (or "DX") cooling, lighting, water heating, plug loads, networked PC management, power supplies, motors, pumps, boilers, etc. Consumer Products Programs: may include incentives, retailer training, marketing and promotion, education, etc.**	MOVED	(Individually Low to High)	Cost Savings/ Low	• Interaction with appliance standards, utility programs.	To be covered as appropriate in Options 1.1 and 1.2

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7. (old 8.)	**Non-Energy Emissions (HFCs, PFCs, SF_6, CO_2 process Emissions)**					
7.1 (old 8.1)	Participation in Voluntary Industry-Government Partnerships**	Low	Uncertain	Cost Savings/ Low Cost		
7.2 (old 8.2)	Process Changes/ Optimization	Low	Uncertain	Uncertain	• Impact, cost likely highly process-specific.	
7.3 (old 8.3)	Leak Reduction /Capture, Recovery and Recycling of Process Gases	Low	Medium	Uncertain		
7.4 (old 8.4)	Use of Alternative Gases (other HFCs, hydrocarbon coolants, etc.)	High	Medium/ High	Low/ Medium Cost		Consider the effects of increasing use of refrigerant vs. evaporative cooling.
8.5 (OLD)	Cement Industry: Use of Alternative Fuels MOVED TO "OTHER"	TBD MOVED	Uncertain	Low/ Medium Cost		Information regarding Rio Grande Cement to be sought by TWG member.

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8. (old 9.)	**GHG Emissions-Specific Goals and Policies**					
8.1 (old 9.1)	Support for Switching to Less Carbon-Intensive Fuels (coal and oil to natural gas or biomass, natural gas to biomass, for RCI sectors—stoves and boilers)	High	Medium/ High	Cost Savings - Medium Cost	• Cost dependent on relative fuel prices • Potential local and state economic co-benefits from using local biomass fuel supplies • Biomass fuel supply/use may interact with land use, forestry, local air quality issues.	TWG members noted that biomass use should be renewable (and noted cross-cutting issues related to properly accounting for carbon pool effects of biomass use)
8.2 (old 9.2)	Participation in Regional (or National) Industry Emissions Cap and Trade Programs	High	Medium/ High	Low/ Medium Cost	• Highly dependent on specification of trading systems	Important to consider equity among industries in design and implementation.
8.3 (old 9.3)	Voluntary emissions targets	High	Uncertain	Uncertain		A TWG member suggested that analysis could consider impacts of existing voluntary programs
8.4 (old 9.4)	Negotiated Emissions or Energy Savings Agreements	Low	Uncertain	Uncertain		

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9. (old 10.)	**Other**					
9.1 (old 10.1)	Government Agency Requirements and Goals (including procurement)**	TBD	Uncertain	Cost Savings/ Low Cost	• Potential overlap with other options	
9.2 (old 10.2)	Focus on Specific Market Segments: Existing Homes (weatherization), New Construction, Apartments, Low Income, etc.**	TBD	Medium/ High	Cost Savings/ Low Cost	• Potential overlap with other options	
9.3 (old 10.3)	Reinvestment Fund	TBD	Uncertain	Cost Savings/ Low Cost	• Potential overlap with other options	
9.4 (old 10.4)	Municipal Energy Management	TBD	Uncertain	Uncertain	• Potential overlap with other options	
9.5 (old 10.5)	Focus on Small and Medium Enterprises (SMEs)**	TBD	Uncertain	Uncertain	• Potential overlap with other options	
9.6 (old 10.6)	Industrial Ecology/ By-product synergy	TBD	Uncertain	Uncertain		
9.7 (old 10.7)	Facilitate Activities of ESCOs in Public Sector Energy Efficiency Projects**	TBD	Uncertain	Uncertain	• Potential overlap with other options	
9.8 (old 8.5)	Cement Industry: Use of Alternative Fuels	TBD	Uncertain	Low/ Medium Cost	•	Information regarding Rio Grande Cement to be sought by TWG member.

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10. (old 11.)	**Solid Waste and Wastewater Management**					
10.1 (old 11.1)	Solid Waste Source Reduction	TBD	Medium/ High	Uncertain		
10.2 (old 11.2)	Solid Waste Recycling	TBD	Medium/ High	Uncertain	• Materials recovery, reduction of energy requirements for raw materials production	
10.3 (old 11.3)	Separation and Composting of Organic Materials in Solid Wastes	TBD	Uncertain	Uncertain	• Co-production of soil amendments	
10.4 (old 11.4)	Capture/Use in Buildings or Industry of Methane from Landfills	TBD	Uncertain	Uncertain	• Fossil fuel displacement a co-benefit • Gas processing may be required for some end-uses	
10.5 (old 11.5)	Capture for Use in Buildings or Industry of Methane from Wastewater Treatment	TBD	Uncertain	Uncertain	• Fossil fuel use reduction a co-benefit • Gas processing required for some end-uses	
10.6 (old 11.6)	Capture for Use in Electricity Generation of Methane from Landfills or Wastewater Treatment	TBD	Uncertain	Uncertain	• Fossil fuel displacement a co-benefit	
10.7 (old 11.7)	Capture and Flaring of Unused Gas from Small Landfills or Wastewater Treatment	TBD	Uncertain	Low Cost		
10.8 (old 11.8)	Combustion of Solid Wastes to Generate Electricity (Waste-to-Energy)	TBD	Uncertain	Uncertain	• Fossil fuel displacement a co-benefit	