

Catalog of State Actions Residential, Commercial, and Industrial (RCI) Policy Working Group

A catalog of state-level, GHG-reducing actions and policy options prepared by the Center for Climate Strategies (CCS) and the Rocky Mountain Climate Organization based on actions undertaken or considered by Colorado and other states, including regional, state, local and private actions.

Key To Future Rankings of Options in the Tables that Follow:

Potential GHG Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
High (H): At least 1.0 million metric tons (MMt) carbon dioxide equivalent (CO ₂ e) per year by 2020 (~1% of current Colorado emissions)	High (H): \$50 per metric ton CO ₂ e (tCO ₂ e) or above
Medium (M): From 0.1 to 1.0 MMtCO ₂ e per year by 2020	Medium (M): \$5-50/tCO ₂ e
Low (L): Less than 0.1 MMtCO ₂ e per year by 2020, or 1 MMtCO ₂ e by 2050	Low (L): Less than \$5/tCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
<p><u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.</p> <p><u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.</p>	

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.

Notation of Options:

Options marked with an asterisk (*) indicate options that are at least partially “base case” policies, i.e., that have been considered or undertaken at some level in Colorado. Distinctions are made between statewide (S) and local (L) policies where appropriate.

Options marked with two asterisks () indicate options that have been proposed for consideration.**

Options that are marked with AZ, MT, and/or NM are substantially similar to options that were included in Arizona or New Mexico’s final plan(s) or are under consideration in Montana.

In preparation for Call #3, the following table proposes a consolidation of the options in the expanded catalog below, which includes additions made in PWG meeting #2. This is presented for PWG consideration as a starting point for our conversation, and should be considered preliminary and subject to modification during our meeting.

Proposed Consolidation		Constituent policy options
RCI 1A	Expanded DSM	1.1, 1.1a, 1.3
RCI 1B	Funding for energy efficiency	1.2, 1.5, 1.6
RCI 1C	Market transformation	1.4
RCI 2A	State level appliance standards	2.1, 2.3
RCI 2B	Support for stronger federal appliance standards	2.2
RCI 3A	Building codes & enforcement	3.1, 3.4, 3.10 (maybe 3.7)
RCI 3B	Planning and design	3.14
RCI 3C	Resources and funding for building efficiency	3.2, 3.3, 3.6, 3.11, 3.13
RCI 3D	Retrofit of existing structures	3.5, 3.9, 3.12
RCI 3E	Building practices	3.7, 3.8, 7.5
RCI 4A	Outreach to consumers	4.1
RCI 4B	Outreach to kids	4.2
RCI 5A	Pricing	5.3, 5.4, 5.5, 5.6
RCI 5B	Purchasing	5.1, 5.2
RCI 6A	Passive solar	6.1, 6.5, 6.7, 6.8, 6.9
RCI 6B	Active solar	6.3
RCI 6C	Energy delivery	6.2, 6.10
RCI 6D	Accelerated equipment turnover	6.4, 6.6
RCI 7A	Non-energy process improvements	7.1, 7.2, 7.3
RCI 7B	Substitution of non-GHGs	7.4
RCI 8A	Fuel switching	8.1
RCI 8B	Industry-specific programs	8.2, 9.6

RCI 8C	Voluntary, public/private partnerships	8.3, 8.5, 8.6, 8.7
RCI 8D	Small source aggregation	8.4
RCI 9A	EE, RE requirements for government agencies	9.1, 9.4, 9.10
RCI 9B	Focus on market segments	9.2
RCI 9C	Funding options for businesses	9.3, 9.11
RCI 9D	Focus on small & medium-sized businesses	9.5
RCI 9E	Industrial audite	9.7

Table 1 - Residential, Commercial, Industrial (RCI)

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Savings	Ancillary Impacts, Feasibility Considerations	Notes ¹
RCI-1	ENERGY EFFICIENCY PROGRAMS, FUNDS, AND GOALS					
1.1	Utility Demand Side Management (DSM) Programs for electricity, natural gas, propane, fuel oil *		H	L		AZ, MT, NM <ul style="list-style-type: none"> Utilities could be directed to implement “all cost-effective” DSM
1.1a	Apply efficiency programs to munis and coops					<ul style="list-style-type: none"> Pending legislation would do this
1.2	Energy Efficiency Funds (e.g. Public Benefit Funds) administered by State agency, utility, or 3rd party (e.g. Energy Trust) *		H	L		AZ, MT, NM
1.3	Energy Efficiency Requirements (e.g. Utility Savings Goals or Energy Portfolio Standards) *		H	L		AZ ² , MT, NM

¹ In addition to other comments, the state abbreviations AZ, MT and NM in this field indicate that the option is included in the Arizona, Montana, and/or New Mexico state climate action plans, respectively.

² The final report recommended including energy efficiency in an integrated resource planning process.

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1.4	Market transformation and technology development programs *		H	L		MT, NM • Could be a regional market transformation alliance, similar to what has been done in the Northwest and Northeast.
1.5	In-home energy displays					
1.6	<ul style="list-style-type: none"> • Reduced cost or free energy audits • low-cost loans for efficiency improvements 					
RCI-2	APPLIANCE STANDARDS					
2.1	Expansion of State-level Appliance Efficiency Standards **		M	L		AZ, MT, NM
2.2	Support for Federal-level Appliance Efficiency Standards **		M	L		AZ, MT, NM
2.3	Require high-efficiency appliances in new construction and retrofits					
RCI-3	BUILDINGS					
3.1	Improved Building Codes * (L)		H	L		AZ, MT, NM ³

³ Separately, NM recommended that building energy codes be modified to require new residential buildings and new commercial buildings to be configured for, and to include plumbing and wiring for mounting and installation of, solar hot water heaters and solar photovoltaic (PV) panels. Also, it recommended New Mexico should modify building energy codes to require new residential buildings and new commercial buildings with substantial water heat demand to install solar water heaters. (NM RCI-7B and 7C)

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						<ul style="list-style-type: none"> • Could include a “cap” on GHG emissions • Building codes are local and statewide would be a problem. State could provide “model codes” (Energy Star Colorado, Build Green) • Could include grants to communities and training for enforcement officials • The difficulty of improving standards by 30% to 50% is low, and industry won’t oppose code standardization • Impact on low-income population?
3.2	Promotion and Incentives for Improved Design and Construction (e.g. LEED ⁴ , green buildings) *(S,L)		M	L		<p style="text-align: center;">AZ, MT, NM⁵</p> <ul style="list-style-type: none"> • An example is Aspen’s Zero Energy Homes program • Could be structured as “feebates” (see 3.11)
3.3	Training and Education for Builders and Contractors (e.g. HVAC ⁶ sizing, duct sealing) *(S,L)		M	L		<p style="text-align: center;">NM</p> <ul style="list-style-type: none"> • For this through 3.6, expanding existing programs (with a high bar) should be a high priority. • Also for these four, important to distinguish between existing and new construction
3.4	Training of Building Code and other Officials in Energy Code Enforcement (L)		H	L		<p style="text-align: center;">NM</p>

⁴ LEED = Leadership in Energy Efficiency Design, a national building certification program.

⁵ State-funded or other government buildings would be subject to energy performance requirements.

⁶ HVAC = Heating, Ventilation, and Air Conditioning

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3.5	Building Commissioning and Recommissioning, including Energy Tracking and Benchmarking *(S,L)		M	L		
3.6	Energy Management Training/Training of Building Operators *(S,L)		L	L		NM
3.7	Increased Use of Blended Cement (substituting fly ash or other pozzolans for clinker reduces CO ₂ emissions)		M	L		<ul style="list-style-type: none"> • Lots of cement production in CO and substitutes are readily available • One option is state purchase of low-energy & low emissions cement
3.8	Reduction of Emissions from Diesel Engines Used in New Construction Developments		M	U		
3.9	Residential Energy Conservation Ordinance (RECO)					<ul style="list-style-type: none"> • Requires minimum energy efficiency features or performance be in place prior to home sale • Could be offered in combination with shade tree requirements
3.10	EnergyStar rating minimum requirement or LEED-type rating for all new/remodeled homes.					<ul style="list-style-type: none"> •
3.11	Feebate program to encourage energy efficiency in building design					<ul style="list-style-type: none"> • Feebate structure makes it revenue neutral and deemphasizes penalty
3.12	Incentives for retrofit of existing residential buildings					<ul style="list-style-type: none"> • Could include retroactive code or labeling requirements on home sales

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3.12	Funding to improve return on investment in C&I building retrofits					
3.13	Improved community planning					<ul style="list-style-type: none"> • Could include incremental financing benefits for “build green communities” (e.g. Feebates)
RCI-4	EDUCATION AND OUTREACH					
4.1	Consumer education programs *(S,L)		H	L		<p>MT, NM</p> <ul style="list-style-type: none"> • Consumers are not sophisticated about energy use. Success of all other initiatives determined by this.
4.2	Introduce in School Curriculum *(L)		H	L		<p>AZ, NM</p> <ul style="list-style-type: none"> • Outreach should focus on young populations. • This is a high priority for creating generations of educated consumers
4.3	Truth in Advertising Campaign					
RCI-5	PRICING AND PURCHASING					
5.1	Green Power Purchasing *(L)		L	M		NM
5.2	Bulk Purchasing Programs for Energy Efficiency or other Equipment (Public or Private sector) *(S,L)		M	L		
5.3	Net-metering policies *(S,L)		M	M		AZ
5.4	Time of Use Rates *(L)		M	L		AZ, MT, NM
5.5	Tiered (increasing block) rates for					

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	electricity and natural gas use					
5.6	Implement price-responsive demand response					<ul style="list-style-type: none"> • Goal is to defer new conventional generation resources as clean energy technologies develop.
RCI-6	TECHNOLOGY-SPECIFIC POLICIES					
6.1	Incentives for Renewable Energy Applications (Solar roofs, water heaters, etc.) *(L)		M	M		MT, NM
6.2	Clean Combined Heat and Power **		H	L		AZ, MT, NM
6.3	Promotion and Tax or Other Incentives (e.g. EnergyStar, credits for solar hot water) *(L)		M	L		
6.4	Appliance Recycling/Pick-Up Programs *(L)		M	L		
6.5	White Roofs, Rooftop Gardens, and Landscaping (including Shade Tree Programs) *(L)		L	L		<ul style="list-style-type: none"> • These are examples of passive solar cooling
6.6	Focus on specific end-uses/technologies: window AC units, lighting, water heating, plug loads, networked PC management, power supplies, motors, pumps, boilers, etc. Consumer products programs, may include incentives, retailer		M	L		

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	training, marketing and promotion, education, etc. *(L)					
6.7	Passive solar cooling design					• These could be achieved either through building codes or technology specific options.
6.8	Passive solar heating design					
6.9	Passive solar hot water					
6.10	Efficient transformers on the customer side of the meter					
RCI-7	NON-ENERGY EMISSIONS (HFCS, PFCS, SF₆, CO₂ PROCESS EMISSIONS)					
7.1	Participation in Voluntary Industry-Government Partnerships *(S,L)		L	L		
7.2	Process Changes/ Optimization *(S)		M	U		
7.3	Leak Reduction /Capture, Recovery and Recycling of Process Gases *(S)		U	U		
7.4	Use of Alternative Gases (other HFCs, hydrocarbon coolants/refrigerants, etc.)		U	U		AZ, NM
7.5	Cement Industry: Use of Alternative Fuels		U	U		
RCI-8	GHG EMISSIONS-SPECIFIC GOALS AND POLICIES					
• PWG comment: the price of carbon needs to be set, e.g. via a tax or charge on GHG emissions. Doing so would encourage DSM						

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and avoid construction of new coal plants. • The governor’s office does not have a position on whether a tax or cap & trade policy would be the better policy mechanism • Gov not in favor of a single-state trading program						
8.1	Support for switching to less carbon-intensive fuels (coal and oil to natural gas or biomass)		M	M		AZ
8.2	Industry-Specific Emissions Cap and Trade Programs		L	M		NM
8.3	Voluntary emissions targets *(L)		L	L		NM
8.4	Small-source Aggregation		L	L		
8.5	Negotiated Emissions or Energy Savings Agreements		L	L		
8.6	Local government program for voluntary emissions targets by businesses *(L)		L	L		
8.7	Provide tools and information for residents, businesses, & communities to do their own GHG inventories.					
RCI-9 OTHER						
9.1	Government Agency Requirements and Goals (including procurement) *(S,L)		L	L		AZ, MT, NM
9.2	Focus on specific market		M	L		MT

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	segments: existing homes (weatherization), new construction, apartments, low income, etc. *(S,L)					
9.3	Reinvestment Fund		M	L		
9.4	Municipal Energy Management *(L)		L	L		
9.5	Focus on Small and Medium Enterprises (SMEs) *(S,L)		L	L		
9.6	Industrial ecology/ by-product synergy		L	L		
9.7	Industrial Audits		M	L		MT
9.10	State buildings carbon neutral requirement					
9.11	statewide effort to retrofit existing buildings (residential, commercial, public, and industrial) for energy efficiency.					