



**Residential, Commercial & Industrial Policy Work Group**

**Summary List of Draft Priorities for Analysis**

Option #	Policy Option	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Level of CAP Support
		2012	2020	Total 2007–2020			
	<b>RESIDENTIAL, COMMERCIAL &amp; INDUSTRIAL</b>						
RCI-1	Expanded Demand Side Management						TBD
RCI-2	Energy Efficiency in Buildings Owned by State and Local Governments						TBD
RCI-3	Enforcement of Building Codes						TBD
RCI-4	Planning and Design						TBD
RCI-5	Inverted Block Rates to Fund Energy Efficiency						TBD
RCI-6	Retrofitting Existing Buildings for Energy Efficiency						TBD
RCI-7	Pricing and Purchasing						TBD

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		2012	2020	Total 2007–2020			
RCI-8	Renewable Energy Systems on New and Existing Buildings						TBD
RCI-9	Energy Delivery						TBD
RCI-10	Targeting Small and Medium Enterprises						TBD
	<b>SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS</b>						
	<b>REDUCTIONS FROM RECENT ACTIONS (table to be added below)</b>						
	<b>SECTOR TOTAL PLUS RECENT ACTIONS</b>						

## RCI-1. Expanded Demand Side Management

### Policy Description

This option focuses on improving energy efficiency through increased investment in demand-side management programs. Energy efficiency is the lowest cost resource for reductions in electricity and natural gas use by the residential, commercial and industrial sectors. There is a long track record of cost effective energy efficiency initiatives, typically called demand side management (DSM), at the local, state and regional levels in areas around the country. There is vast potential for improving the energy efficiency of homes, appliances, businesses and industry in Colorado.

### Policy Design

**Goals:** 1%/year reduction in energy use in all sectors relative to BAU

**Timing:** Starting in 2008, through 2020

**Parties involved:** Entire state's, gas and electric producers, suppliers and customers.

## RCI-2. Energy Efficiency in Buildings Owned by State and Local Governments

### Policy Description

Energy Efficiency can be an expensive undertaking up front due to the cost of new technologies, as well as improving the efficiency of existing systems. The steps required to determine the cost to improve efficiency include an audit, design, implementation and measurement and verification. All these steps have costs, which prohibit or slow the conversion to GHG reducing efforts, even though the measures would ultimately result in savings. Having low- or zero-interest funding readily available would make it much easier for public agencies to invest in improving the performance of buildings owned by state and local governments.

### Policy Design

**Goals:** 20% reduction in energy use by buildings owned by state and local governments through use of a revolving fund providing zero-interest loans

**Timing:** Reductions in individual facilities to be implemented in stages over a five-year period. Program would start in 2008 with a goal of reaching 50% of state buildings by 2015.

**Coverage:** All buildings owned by state and local governments are eligible to participate.

## RCI-3. Enforcement of Building Codes

### Policy Description

Building energy codes can be an effective way to eliminate the least efficient energy approaches in new or renovated buildings. The International Energy Conservation Codes (IECC) have become a widely accepted standard. These codes are updated every three years through an exhaustive consensus process involving a large number of code officials and building experts. Many Colorado jurisdictions adopt the IECC. More will do so, if legislation recently passed by both houses of the Colorado Assembly (HB1146) is signed by the Governor as expected. Adoption of the IECC will do no good, however, if it is not enforced, and enforcement is questionable in many building jurisdictions. Building code jurisdictions need to be encouraged to enforce the IECC with training, technical support and education.

Colorado is a home rule state – incentives to local governments are more acceptable than mandates. Incentives will take the form of training and technical support for the inspectors, plan reviewer and code officials as well as education for builders and contractors. This approach can have the added benefit of educating local governments and the contractors and builders about the programs that encourage “beyond code” construction.

### Policy Design

**Goals:** Spend \$1M/yr in training and resources to improve energy code enforcement

**Timing:** Begin funding in 2008

**Coverage:** Covers the 20,000 new homes per year in CO, plus retrofits.

## RCI-4. Planning and Design

### Policy Description

Mandating building design to a very high efficiency standard will ensure that the next generation of buildings in Colorado produces much lower GHG emissions per unit of utility.

### Policy Design

#### Goals:

- For new construction and major renovations of government-owned buildings, including schools, certification to LEED™ Silver for 100% of these buildings.
- For residential: 70% of new homes to EnergyStar standard “high performing” (see HPH100.org for definition)
- Commercial: new buildings held to Architecture 2030 standards

#### Timing:

- For Government buildings, applies to structures and major renovations for which design begins after December 31, 2007.
- For residential, 70% by 2015
- For commercial, 70% meet standards by 2015

**Coverage:** See above

## RCI-5. Inverted Block Rates to Fund Energy Efficiency

### Policy Description

This option uses tiered, increasing surcharges to simultaneously provide a source of funding for energy efficiency and a financial incentive to adhere to high energy efficiency (low energy intensity) standards. Unlike a traditional public benefits charge, the surcharge grows with increasing use above target levels. High efficiency consumers will pay no surcharge.

### Policy Design

**Goals:** Standard rates up to Architecture 2030 targets, 2 cents per kWh surcharge for kwh above 2030 target up to two times the 2030 target, and 5 cents/kWh surcharge for all kwh in excess of two times the Architecture 2030 target. Proceeds to be used to fund energy efficiency programs in the Residential & Commercial sectors.

**Timing:** Starting in 2010

**Coverage:** Rates are applicable statewide, Residential & Commercial sectors.

## RCI-6. Retrofitting Existing Buildings for Energy Efficiency

### Policy Description

This option is designed to improve the energy efficiency of existing privately owned (e.g., non-municipal) residential, commercial and industrial buildings through a variety of energy-efficiency upgrades and improvements in day-to-day operations. This proposal would provide short-term, low- or no-interest loans from the state (paid back by energy savings) to businesses; and tax credits to homeowners and residential rental property owners to offset the initial costs and thus encourage energy-efficiency upgrades. It could also create low- or no-interest loans to energy service companies who contract with commercial and industrial clients to implement energy-savings measures.

### Policy Design

**Goals:** By 2017, reach 5% of commercial/industrial/institutional buildings per year with low interest loans from revolving fund – recipients to achieve 25% reduction in energy use on a per square foot basis over five years.

**Timing:** Begin in 2008, continuing for 5 years. Renewed every 5 years, based on satisfactory outcome.

**Coverage:** Commercial, industrial and institutional properties

## RCI-7. Pricing and Purchasing

### Policy Description

Adopt smart metering, combined with time-of-use rate schedules and in-home displays, to enable electricity consumers to better manage energy use.

Initial expectation is to reduce electricity consumption 4 to 15%.

### Policy Design

**Goals:** Implement time of use rates with smart meters and in-home displays of energy use, cost, and associated GHG emissions for 100% of electricity customers in Colorado (including customers of investor-owned utilities, cooperatives, and municipal utilities).

**Timing:** Start up in 2009, targeting 10% of industrial, commercial, and residential consumers, ramping up to 100% by 2013.

**Parties involved:** All industrial, commercial, and residential electricity customers in Colorado.

## RCI-8. Renewable Energy Systems on New and Existing Buildings

### Policy Description

This policy option will promote wider use of active and passive renewable energy systems on all buildings through education and financial incentives in the form of tax credits to businesses, homeowners and residential rental property owners who install proven and reliable renewable energy systems on property owned or operated by them.

Systems to be included in the mix of renewable energy technologies include passive solar heating, solar hot water, concentrated solar thermal, PV in areas not already covered by the RPS, and geothermal (ground-source heat pumps). (Other renewable energy systems that will qualify for the tax credit are under discussion.)

Proposed tax incentives will be awarded only to individuals and businesses that have significantly reduced energy consumption prior to or concurrent with system installation.

An educational campaign will be created to assist individuals and businesses in understanding the renewable energy options and requirements of the program. In addition, short-term, low-interest loans from the state and/or tax credits will be available to businesses, and tax credits will be available to homeowners and residential rental property owners, for energy-efficiency upgrades (to enlarge the pool of homeowners, residential property owners, and businesses eligible to take advantage of the renewable energy system tax credit).

### Policy Design

#### Goals:

(1) Expand the use of renewable energy by creating tax incentives to individuals and businesses who install proven and reliable renewable energy systems on property owned or operated by them. The incentive will be a 30% tax credit for passive solar heating, solar hot water, concentrated solar thermal, PV in areas not already covered by the RPS, and geothermal (ground source heat pumps), all of which have to meet the performance standard under (2), below, to qualify. (Other types of renewable energy systems that will qualify for the tax credit are under discussion.)

(2) Create a complementary energy efficiency requirement that buildings related to the renewable energy system to be installed must reduce energy consumption by 20% prior to applying for renewable energy tax credits.

**Timing:** Start up in 2008, continuing for 5 years, with additional 5-year renewals based on success of program. Program should include periodic assessment of program performance with legislative policy adjustments, if required.

**Parties involved:** (1) Homeowners, (2) Commercial Sector, (3) Industrial Facilities, and (4) Rental property owners in all sectors.

**Other:** Systems that qualify for tax incentives should significantly reduce energy use when combined with energy efficiency measures. Businesses will have short-term, low-interest loans from the state and/or tax credits available to them for energy efficiency upgrades; tax credits will be available to homeowners and residential rental property owners for energy efficiency upgrades.

## RCI-9. Energy Delivery

### Policy Description

Combined heat and power (CHP) refers to any system that simultaneously or sequentially generates electric energy and utilizes the thermal energy that is normally wasted. Western Governors Association analysis shows that CHP is an affordable, efficient, clean, and reliable piece of the puzzle for meeting the Western region's energy needs while substantially reducing carbon emissions. CHP is sometimes called "recycled energy" because the same energy is used twice. The recovered thermal energy can be used for space heating, hot water, steam, air conditioning, water cooling, product drying, or for nearly any other thermal energy need. The end result is significantly more efficient than generating electric and thermal energy separately. In fact, many CHP systems are capable an overall efficiency of over 80 percent – double that of conventional systems.

In addition to tremendous efficiency gain, increased adoption of CHP in the West would save literally billions in new capital investment, reduce power costs, reduce security vulnerabilities, improve reliability and power quality, avoid transmission losses, reduce water used by power plants, cut fossil fuel use, cut greenhouse gas emissions, and cut other pollutants. Combined heat and power, using proven and affordable technologies, significantly improves every key outcome from power generation.

### Policy Design

**Goals & Timing:** 1500 MW of CHP statewide by 2015 (based on WGA white paper potential)

**Coverage:** Statewide

## RCI-10. Targeting Small and Medium Enterprises (SMEs)

### Policy Description

#### Introduction

This option builds on the success of Fort Collins' "Climate Wise" program, a voluntary program for reducing energy use in small businesses, by expanding this concept to the entire state of Colorado.

### Policy Design

**Goal:** 1 million tons CO<sub>2</sub>/yr reduction in emissions by replicating the Fort Collins program statewide, with free on-site technical assistance.

**Timing:** Ramp up to 1 million tons annual avoided emissions by 2015.

**Parties involved:** Small and Medium-sized enterprises throughout the state.