

Chapter 7

Cross-Cutting Issues

Overview of Cross-Cutting Issues

Some issues relating to climate policy cut across multiple or all sectors. The Climate Action Panel (CAP) addressed such issues explicitly in a separate policy work group as “cross-cutting” issues rather than assigning them to any individual sector. Cross-cutting recommendations typically encourage, enable, or otherwise support emissions mitigation activities and/or other climate actions. The types of policies considered for this sector are not readily quantifiable in terms of greenhouse gas (GHG) reductions and cost-effectiveness calculations. Nonetheless, if successfully implemented, they would likely contribute to GHG emission reductions and enhance the economic benefits described for each of the 33 quantified policy recommendations that were quantified. Those recommendations are described in Chapters 3–6.

The Cross-Cutting Issues Policy Work Group (CC PWG) developed recommendations for each of nine policies (see Table 7-1) that were then reviewed, revised, and ultimately adopted by the CAP. Eight of the recommendations are focused on GHG emissions reduction; the ninth addresses adaptation to the changes expected from the effects of gases that will remain in the atmosphere for decades.

The statewide goals and targets recommendation (CC-4) is the over-arching CAP recommendation. The CC PWG waited until the last stages of the project to develop the recommendation, in order to be able to consider the GHG reduction policies that emerged from the other policy work groups. Once the emissions reductions potentials and cost-effectiveness of the policies were quantified by the other groups, the CC PWG and in turn the CAP were able to gain a perspective on the scope of the overall reductions that are realistically attainable by 2020.

The CAP chose to recommend goals for emission reductions to be achieved by 2020 and 2050 goals, mindful of scientists’ conclusions that global GHG emissions have to be reduced substantially by 2050, compared to 2000 levels, in order to stabilize global temperatures, and that emission reductions in the next two to three decades will have a large impact on opportunities to achieve that kind of stabilization. Accordingly, the CAP recommends that the Governor of Colorado set goals for reducing GHG emissions in Colorado in the vicinity of a 20% reduction in GHG emissions by 2020 and an 80% reduction by 2050, both compared to 2005 levels. The CAP believes the goals should guide actions in the state, but should not be a firm cap.

Eight of the recommendations were adopted unanimously by the CAP members present and voting. The ninth, CC-4, was adopted by a super-majority, with one objection. Five CAP members expressed qualifications about their support for CC-4, but did not object to it. The explanations of the objection and qualified votes of approval are included in the detailed policy recommendation in Appendix I.

Table 7-1. CAP policy recommendations and results for cross-cutting issues

	Policy Recommendation	Analysis	Climate Action Panel Action
CC-1	Periodically update GHG inventories and forecasts.	<i>Not Quantified</i>	Unanimous Consent
CC-2	State development of annual GHG reporting protocols for all sources, including mandatory reporting for significant sources.	<i>Not Quantified</i>	Unanimous Consent
CC-3	State development of capacity to participate in the national <i>Climate Registry</i> to measure, track, and record emissions reductions.	<i>Not Quantified</i>	Unanimous Consent
CC-4	The governor should set statewide GHG reduction goals and targets to achieve in the vicinity of a 20% reduction by 2020 and 80% by 2050, both compared to 2005 levels.	<i>Not Quantified</i>	Super Majority (1 objection) (5 qualified approvals)
CC-5	Set state and local government reduction targets for their own GHG emissions; the state target should be at least an amount consistent with CC-4 levels.	<i>Not Quantified</i>	Unanimous Consent
CC-6	Promote adoption of comprehensive local government climate action plans.	<i>Not Quantified</i>	Unanimous Consent
CC-7	State and local government public education and outreach efforts to support GHG reduction programs, policies, and goals.	<i>Not Quantified</i>	Unanimous Consent
CC-8	A public-private partnership to seek funding for GHG reduction measures and development of a new energy economy in Colorado.	<i>Not Quantified</i>	Unanimous Consent
CC-9	State government assessment of vulnerabilities to climate change and development of adaptation plans.	<i>Not Quantified</i>	Unanimous Consent

Key Challenges and Opportunities

Recognizing factors such as Colorado’s growth rate, its diverse economy characterized by an entrepreneurial spirit, extraordinary renewable energy resources, universities and agencies rich with talented experts, and overall emissions reduction feasibility, the CAP identified GHG reduction goals that are aggressive, yet achievable. If the 2020 goal were achieved, Colorado’s emissions in 2020 would be reduced 37% to 93 million metric tons of GHGs, compared to 147 under current law. The Colorado target would fall well within the range of statewide emission goals already set by other western states, including Arizona (45% below projected emissions in 2020), Oregon (44%), New Mexico (33%), California (28%), and Washington (28%).

If adopted, the 33 recommendations for emission reductions that were analyzed quantitatively could achieve 75 percent of the 2020 goal chosen by the CAP. While the CAP’s 22 other GHG mitigation recommendations were not readily quantifiable, many of them would likely achieve additional reductions. In addition, other reasonable measures to reduce emissions beyond those recommended by the panel are available now, and emerging technologies hold the potential to substantially reduce emissions even more.

Further reductions might also be realized from a regional approach of states acting cooperatively on reduction strategies. Currently, Colorado is an official observer in the Western Regional Climate Initiative, which was formed to meet regional challenges raised by climate change. Its members, six US states and two Canadian provinces, have set a region-wide GHG reduction goal of 15% below 2005 levels by 2020.

Establishing a GHG inventory and forecasting function within state government is key to the accomplishment of the targets. GHG reporting and registry programs will be more effective if applied on a broad regional or national basis, rather than state by state.

Any regional or national effort involves reconciling the interests and perspectives of the member states, each of which are at much different stages of the learning curve with respect to these and other climate actions. The State of Colorado has joined the effort to develop a national GHG registry through *The Climate Registry*.¹ Being a charter state in this effort should help ensure that Colorado's needs and priorities are addressed in the course of *The Climate Registry*'s development.

The CAP further recommends that Colorado state government and local governments should lead-by-example by reducing their own GHG emissions by at least an amount consistent with the statewide emission reduction goals. The CAP sees a strong role for state government, local government associations (such as Colorado Counties, Colorado Municipal League, and regional Councils of Governments), and RMCO and other non-governmental organizations in promoting GHG reduction initiatives.

Ultimately, public education and outreach will be the foundation for the long-term success of many efforts to reduce GHGs. The CAP recommends that one or more organizations in Colorado, such as state agencies and/or non-governmental organizations, implement a statewide program to encourage and structure voluntary individual actions to reduce GHG emissions.

Another CAP recommendation could achieve GHG reductions while also strengthening Colorado's new energy economy. Envisioned is a state-sponsored clearinghouse to link investment capital and philanthropic funding with business interests entrepreneurs, and researchers pursuing GHG reduction technologies and solutions. As a result, Colorado's ability to identify and secure early business opportunities associated with climate change may be enhanced, increasing its global competitive advantage while creating jobs.

Even if Colorado plays a lead role in both reducing its GHG emissions and helping to bring about reductions elsewhere, it will still face the challenge of living with changes in its climate and a multitude of predicted impacts. The changes Colorado will face in the long term will be more manageable if it begins now to reduce emissions, but now is also the time to begin preparing to deal with the changes that are already underway and likely to become more dramatic. Recognizing that these adaptation efforts are urgent and essential, the CAP recommends that state government conduct a comprehensive assessment of Colorado's vulnerabilities to the effects of climate change and take the lead in developing statewide action plans to prepare for and deal with the most potentially serious categories of adverse climate-change impacts likely in Colorado.

¹ The Climate Registry (<http://www.theclimater registry.org/>) is a collaboration between states, provinces and tribes aimed at developing and managing a common GHG emissions reporting system with high integrity that is capable of supporting various GHG emission reporting and reduction policies for its member states and tribes and reporting entities. It will provide an accurate, complete, consistent, transparent and verified set of GHG emissions data from reporting entities, supported by a robust accounting and verification infrastructure. As of October 2007, over 40 US states, several Tribal Authorities, two Canadian Provinces, and one Mexico state have joined *The Climate Registry*.

Overview of Policy Recommendations

Following are summaries of each of the nine cross-cutting issue policy recommendations. Detailed descriptions of the individual Cross-Cutting Issues policy recommendations as presented to and approved by the CAP can be found in Appendix I.

Cross-Cutting Issues Policy Recommendation Descriptions

CC-1 GHG Inventories and Forecasts

Greenhouse gas emissions inventories and forecasts are essential for understanding the magnitude of all emission sources and sinks (both anthropogenic and natural), the relative contribution of various types of emission sources and sinks to total emissions, and the factors that affect trends over time. Inventories and forecasts help to inform state leaders and the public on statewide trends, opportunities for mitigating emissions or enhancing sinks, and verifying GHG reductions associated with implementation of action plan initiatives. Responsibility for preparing inventories and forecasts GHG emission sources and sinks often resides with the environmental agency, which typically has the expertise needed to systematically compile information on GHG sources and sinks using established methods and data sources. Inventory and forecast efforts should be on-going over time reflecting improvements to the accuracy and completeness of data collected.

The CAP recommends, by unanimous vote of those members present and voting, that the state institute a formal GHG inventory and forecast function within the Colorado Department of Public Health and Environment (CDPHE) as soon as possible. The CDPHE should develop a periodic, consistent, and complete inventory of emission sources and sinks and an accompanying forecast of future GHG emission that:

- Is in at least 5- and 10-year increments extending at least 20 years into the future.
- Reflects projected growth as well as the implementation of scheduled mitigation options.
- Provides a basis for documenting and illuminating trends in state GHG emissions.
- Is developed with a consistent protocol for preparing the inventory and forecast and for treatment of uncertainties in forecasts.
- Includes all natural and man-made emissions sources and sinks (both anthropogenic and natural) generated within the boundaries of the state (i.e., a production-based inventory approach) as well as emissions associated with energy imported and consumed in the state (i.e., a consumption-based inventory approach).

CC-2 State Greenhouse Gas Reporting

Greenhouse gas reporting reflects the measurement and reporting of GHG emissions to support tracking and management of emissions. GHG reporting can help sources identify emission reduction opportunities and reduce risks associated with possible future GHG mandates by moving “up the learning curve.” Tracking and reporting of GHG emissions can also help in the construction of periodic state GHG inventories. GHG reporting is typically a precursor for sources to participate in GHG reduction programs, opportunities for recognition, and a GHG emission reduction registry, as well as to secure “baseline protection” (i.e., credit for early reductions). Further, collaboration with other states in the development of a GHG reporting program could influence the development of GHG reporting practices throughout the region and nation and build consistency and reciprocity with other state or regional GHG reporting programs.

Accordingly, the CAP recommends, by unanimous vote of those members present and voting, that Colorado develop and implement GHG reporting opportunities for all sources as soon as possible. Mandatory reporting should be required for significant sources as determined by the CDPHE. Subject to consistently rigorous quantification, opportunity to voluntarily report GHG emissions should be open to all sources (e.g., combustion, processes, vehicles, etc.). The GHG reporting framework should include:

- Phase-in by sectors as rigorous, standardized quantification protocols, base data, and tools become available, and as responsible parties become clear.
- Annual reporting on a calendar-year basis for all six traditional GHGs and, to the extent possible, for black carbon.

Consistency with federal, regional, and other states’ GHG reporting programs and quantification protocols in order to maximize consistency and reciprocity with federal, regional, and other states’ GHG reporting programs.

- GHG verification through self-certification and CDPHE spot-checks.
- Appropriate public transparency of reported emissions.

CC-3 State Greenhouse Gas Registry

A GHG registry enables measurement and recording of GHG emissions reductions in a central repository with a “transaction ledger” capacity to support tracking, management, and “ownership” of emission reductions. Registries can help encourage sources to undertake GHG reduction efforts, enable potential recognition for such actions, baseline protection, and/or the crediting of actions by implementing programs and parties in relation to possible emissions reduction goals. Registries can also provide a mechanism for regional, multi-state, and cross-border cooperation. Subject to appropriately rigorous quantification, registration of GHG reductions should not be constrained to particular sectors, sources, or approaches so as to encourage GHG mitigation activities from all quarters.

The State of Colorado has joined the effort to develop a national GHG registry through *The Climate Registry*. Being a charter state in this effort should help ensure that Colorado's needs and priorities are addressed in the course of *The Climate Registry*'s development.

To the extent that Colorado's needs may not be fully met by *The Climate Registry*, the CAP recommends, by unanimous vote of those members present and voting, that Colorado consider developing supplemental or ancillary registry capacity or opportunity as soon as possible.

CC-4 Statewide GHG Reduction Goals and Targets

The overarching purpose of the CAP stakeholder effort is to develop recommendations for actions that can be taken in Colorado to reduce the state's contribution and vulnerability to a changed climate. The GHG reduction goals or targets recommended by the CAP are meant to be consistent with the parallel goal of an efficient, robust Colorado economy. Within this framework, a statewide goal or target can provide vision and direction, as well as a basis for implementation of CAP policy recommendations and regular periodic assessments of progress toward reaching the statewide goal.

Scientists have concluded (1) that global GHG emissions may have to be reduced by 50 to 85% by 2050, compared to 2000 levels, to stabilize global temperature increases at no more than about 4°F, a level that some scientists have suggested represents a threshold of dangerous interference with the global climate; and (2) that emission reductions in the next two to three decades will have a large impact on opportunities to achieve that kind of climate stabilization.²

Consistent with these scientific conclusions, the CAP recommends, by super-majority of those members present and voting (with one objection), and with five qualified votes of approval, that the Governor of Colorado should set goals for the reduction of GHG emissions in Colorado. The CAP believes the goals should be in the vicinity of a 20% reduction in GHG emissions by 2020 and an 80% reduction by 2050, both compared to 2005 levels. The CAP believes the goals should guide actions in the state, but should not be a firm cap. The CAP believes these kinds of goals are realistic because (1) the panel's recommendations that have been analyzed quantitatively would achieve most of the emission reductions that would be needed to meet such a 2020 goal; (2) other panel recommendations that were not analyzed quantitatively would lead to additional reductions; and (3) other reasonable measures to reduce emissions beyond those recommended by the panel are available now, and more will become available in the future.

CC-5 State and Local Government GHG Emissions (Lead-by-Example)

State and local government is responsible for providing a multitude of services for the public that are delivered through diverse operations and result in wide-ranging GHG emission activities. State and local governments can take the lead in demonstrating that reductions in GHG

² See "Summary for Policy Makers" in R. Bosch, R. Dave, and L. Meyer (eds), *Climate change 2007: Mitigation: Contribution of Working group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, Cambridge, United Kingdom, and New York, NY, 2007), especially pages 22-23.

emissions can be achieved by analyzing their own current operations, identifying significant GHG sources, and implementing changes in technology, procedures, behavior, operations, and the services provided. State and local governments can also encourage and/or incent GHG reductions by others in a variety of ways.

The CAP recommends, by unanimous vote of those members present and voting, that state and local governments establish GHG reduction targets for their own GHG emissions. Colorado state agencies should reduce emissions by at least an amount consistent with the statewide emission reduction goals established under CC-4. The state's efforts to lead-by-example in reducing its own GHG emissions should start immediately. The state should report annually to reflect its progress in reducing GHG emissions, preferably based on the performance of individual agencies and departments. A multi-agency group should oversee the on-going climate efforts of the government's agencies or departments, review their performance, and provide direction, guidance, resources, shared approaches, and recognition to agencies or departments and their employees that are working to reduce the government's GHG emissions. The CAP recommends that local agencies use this model for monitoring and reporting progress on reducing their own GHG emissions.

CC-6 Comprehensive Local Government Climate Action Plans

A number of local governments in Colorado have already taken the initiative to address climate change in their communities. Aspen, Boulder, Denver, Fort Collins, Telluride, and Frisco are just a few examples of local communities that are establishing GHG reduction goals and developing plans to reduce GHG emissions. Additionally, several communities are partners of the RMCO, and many have signed the Mayors Climate Protection Agreement. The CAP strongly encourages all local communities in Colorado to develop such plans. Additionally, the CAP sees a strong role for state government, local government associations (such as Colorado Counties, Colorado Municipal League, and regional Councils of Governments), RMCO, and other non-governmental organizations in promoting GHG reduction initiatives by local governments and in serving as a clearinghouse for local government initiatives. State government, local government associations, RMCO and others could help spread the successful actions and efforts of some local jurisdictions broadly to others through several means, such as workshops and conferences, a website clearinghouse, education and outreach to public and municipal officials, recognizing local government GHG emission reduction achievements, etc.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado promote adoption of community climate action plans by all local governments to set and achieve local GHG reductions and to help achieve state GHG reduction goals. To the extent possible, these plans should:

- Be used to stimulate equivalent GHG reduction initiatives by the private sector and non-governmental entities in each community. These
- Include adaptation-oriented strategies.
- Include an assessment of opportunities for reducing GHG emissions by element at the community scale.

- Specific goals or targets and a timeline for the emissions reductions.
- Consideration of urban planning processes, land use management activities, transportation management planning, management of municipal power and water utilities, and waste management.

CC-7 Public Education and Outreach

Public education and outreach can provide significant GHG emission reduction through direct individual action, as well as broad public support for other GHG emissions reduction programs, policies, or goals. Broad awareness of climate change issues and effects (including co-benefits, such as clean air and public health) is necessary to engage citizens in actions to reduce GHG emissions. Ultimately, public education and outreach will be the foundation for the long-term success of all the mitigation actions proposed by the CAP as well as those which may evolve in the future.

The CAP recommends, by unanimous vote of those members present and voting, that the state and local communities establish pro-active public education and outreach capabilities, using them to target education and outreach activities to at least six specific audiences: policymakers (legislators, regulators, executive branch, agencies); (2) younger generations; (3) community leaders and community-based organizations (e.g., institutions, municipalities, service clubs, social and affinity groups, non-governmental organizations, etc.); (4) general public; (5) industrial and economic sectors; and (6) particular sectors (users of public lands, forest industry, farmers, ranchers, etc.). Attached to Appendix I is a set of recommended strategies specific to each of these audiences.

The CAP further recommends that one or more organizations in Colorado (e.g., state agency and/or non-governmental organization) implement a statewide program to encourage and structure voluntary individual actions to reduce GHG emissions. Such a program might be called “Colorado Climate Keepers” and echo models in other states and local communities. Public education and outreach efforts should commence as rapidly as possible, and should include a coordinated effort between state government, local governments, RMCO, water districts, metropolitan districts, fire protection districts, regional Councils of Governments, and others.

CC-8 Establish a Pro-active Public-Private Partnership to Seek Investment Capital and Philanthropic Funding for Reducing GHG Emissions and Supporting Development of the New Energy Economy in Colorado

The intent of this policy recommendation is to encourage and facilitate the involvement of funding and investment sources, business interests, and entrepreneurs in pursuing business opportunities associated with GHG reductions and global warming solutions as quickly and as significantly as possible. The creation of this clearinghouse-like entity may make it possible to match technology developers and other climate solution entrepreneurs with necessary financing more effectively and expeditiously. In addition, this clearinghouse-like entity should also assist in matching funding sources with research and development efforts as well as to support successful scale-up and commercialization of new products and services. As a result, Colorado’s

ability to identify and secure early business opportunities associated with climate change may be enhanced, increasing its global competitive advantage and job creation within the state.

Potential funding sources include philanthropic organizations, high net worth individuals, or others interested in supporting innovative, environmentally effective market solutions. Although technology entrepreneurs are often cited as offering potential global warming solutions, equally progressive solutions may lie in the fields of law, accounting, marketing, production, and even government relations and lobbying. Further, some funding under this policy recommendation could address – but not exclusively target – implementation of other CAP policy recommendations.

The CAP recommends, by unanimous vote of those members present and voting, that the state (together with local governments as desired) establish a clearinghouse to seek investment capital and philanthropic funding for reducing GHG emissions and supporting development of the new energy economy in Colorado. This clearinghouse should be established with a small office and staff to execute its purposes and functions.

CC-9 Vulnerability and Adaptation

Even if Colorado plays a lead role in both reducing its GHG emissions and helping to bring about reductions elsewhere, it will still face changes in its climate and a multitude of impacts. Greenhouse gases have long atmospheric life-times, and Colorado will face additional warming and related changes from GHGs that have already been emitted, let alone from those that will be emitted in the future. The changes Colorado will face in the long term will be more manageable if it begins now to reduce emissions, but now is also the time to begin preparing to deal with the changes that are already underway and likely to become more dramatic. Undertaking these adaptation efforts is urgent and essential to developing an effective and comprehensive action plan that will ensure that Colorado remains such a special place to live.

The CAP recommends, by unanimous vote of those members present and voting, that state government conduct a comprehensive assessment of Colorado's vulnerabilities to the effects of climate change. However, without awaiting the results of the vulnerability assessment, state government should take the lead immediately, with appropriate involvement by local governments, other governmental entities, affected businesses, colleges and universities, nongovernmental organizations, and others, in launching efforts to develop statewide action plans to prepare for and deal with the most potentially serious categories of adverse climate-change impacts likely in Colorado. In some cases, local action plans undertaken by local governments would also be appropriate.

Among the categories of climate-change impacts likely in Colorado for which statewide, and perhaps also local, action plans are needed include: (1) effects on water quantity and water quality, which in turn are likely to affect every aspect of life in Colorado (*see the separate recommendations in Chapter 8 of this report on those issues*); (2) increases in heat-related deaths and illnesses; (3) increases in air pollution and its effects on mortality and health; (4) potential increases in diseases; (5) increases in the length of wildfire seasons and of the frequency and severity of wildfires; (6) increases in severe weather; (7) effects on agriculture stemming from

changes in water supplies and availability and the effects of increased temperatures on livestock and crops; (8) a reduction of skiing and other snow-dependent outdoor recreation and tourism, along with the jobs, business income, and tax revenues derived from them; (9) increased warm-season congestion on transportation corridors to and in Colorado's mountains; (10) changes in ecosystems, such the substantial loss of lodgepole pines and other trees now occurring across the mountains as a result of bark beetle infestations caused by, among other things, a reduction in extreme cold temperatures that have historically served as a natural check on beetle populations; and (11) effects on opportunities for recreational fishing (as higher temperatures push streams beyond their ability to support cold-water fish populations) and hunting (particularly for waterfowl).