

Chapter 4

Energy Supply

Overview of GHG Emissions

Greenhouse gas (GHG) emissions from the Energy Supply (ES) sector in Colorado primarily include emissions from electricity generation, with a lesser contribution from the production and distribution of natural gas. Total emissions from the sector comprise a substantial share of the State's overall GHG emissions (approximately 42% of gross emissions in 2000). Overall, by 2020 ES emissions are expected to increase from 2005 levels by approximately 25% on a production basis, from roughly 40 million metric tons (MMt) of carbon dioxide equivalent (CO₂e) in 2005, to about 50 MMtCO₂e in 2020. On a consumption basis, total GHG emissions to meet the state's electricity demand rise from about 43 MMtCO₂e in 2005 to about 53 MMtCO₂e in 2020. The higher emissions total under the consumption-based approach reflects that Colorado is a net importer of electricity (see also Figure 4-1).¹ Figure 4-2 shows the electricity generation resource mix upon which the emissions inventory and reference case projections are based.

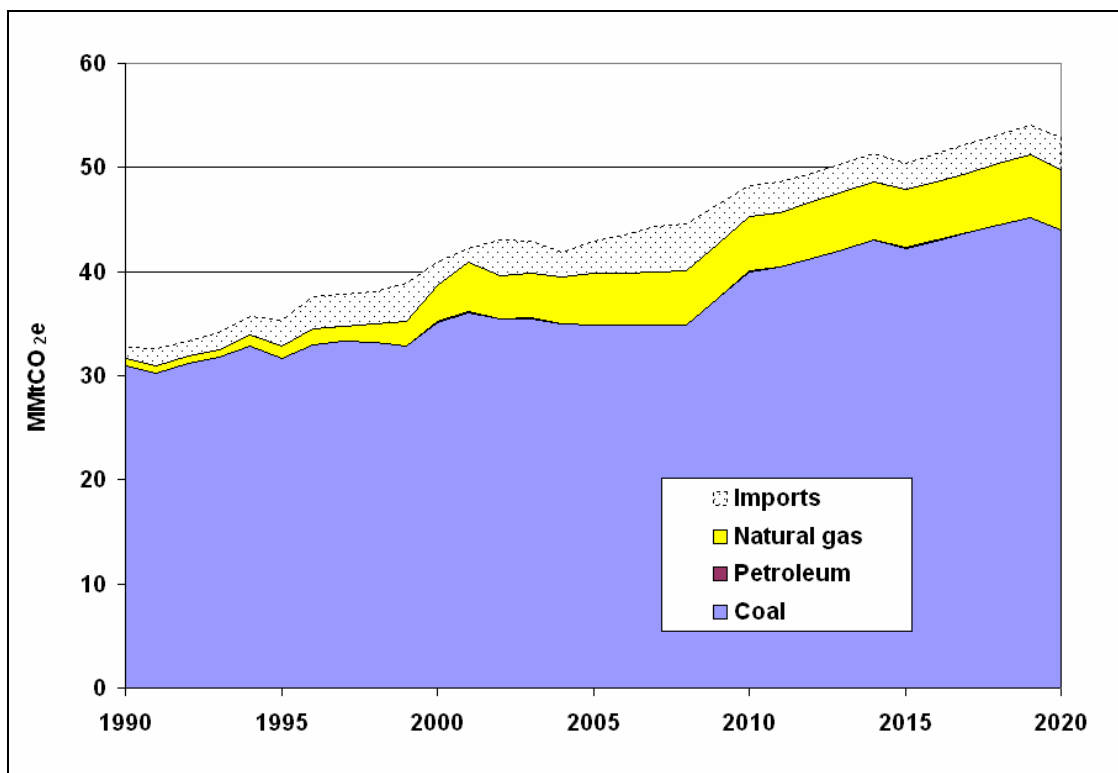
Key Challenges and Opportunities

There are significant opportunities to reduce GHG emissions growth attributable to energy production and supply in Colorado, including diminishing the carbon intensity of electrical generation through greater use of renewable energy options and recapture of waste energy through combined heat and power and other technologies. Opportunities exist for natural gas producers and processors to reduce methane (CH₄) venting, leaks, or combustion and at the same time to enable more product to come to the market, producing a genuine win-win situation. Significant opportunities to reduce GHG emissions through policies addressing electricity consumption also exist and can often provide cost savings. The Climate Action Panel (CAP) has identified several demand-side management, energy efficiency, and conservation measures in the Residential, Commercial, and Industrial Sector, which are detailed in Chapter 3.

Colorado has plentiful renewable energy resource potential in the form of solar and wind energy, unexploited hydropower resources, and possibly untapped geothermal potential. Bringing this resource potential to where electricity is needed presents a challenge to be addressed through coordinated planning of transmission infrastructure for renewables, one of the policies recommended by the CAP in the ES area. Colorado is already a national leader in the strength of its existing Renewable Portfolio Standard (RPS), which mandates that a certain percentage of delivered energy in the state must come from renewable resources. The CAP recommends that Colorado do even better in this crucial and promising area.

¹ Accounting for electricity emissions on a production basis considers the GHG emissions produced by electricity generation facilities in Colorado. This perspective is useful because the state may have different policies it can use to influence electricity suppliers within the state than those outside of the state. Emissions estimates provided elsewhere in this report (including the inventory and forecast) reflect the GHG emissions associated with the electricity sources used to meet Colorado's demands, corresponding to a consumption-based approach. The consumption-based approach can better reflect the emissions (and emissions reductions) associated with activities occurring in the state, particularly with respect to electricity use (and efficiency improvements).

Figure 4-1. Historical and projected GHG emissions from the electric sector, Colorado, 1990 to 2020



Overview of Policy Recommendations and Estimated Impacts

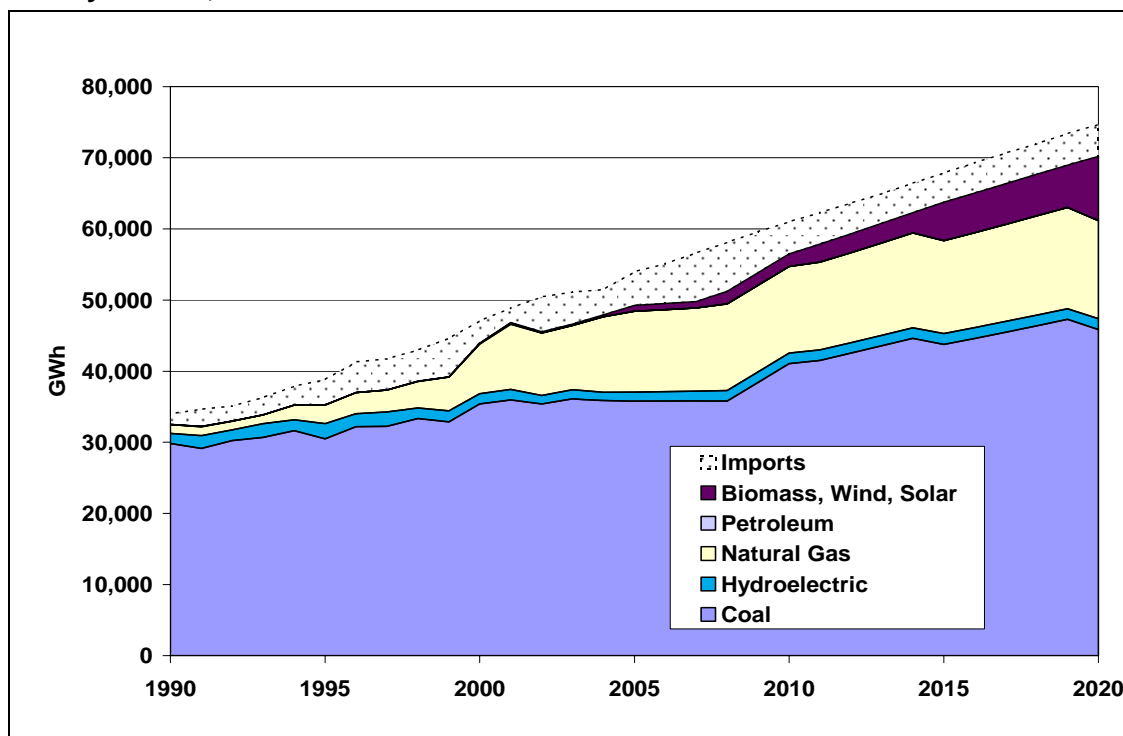
The CAP recommends a set of 15 policies for the Energy Supply sector that offer the potential for significant GHG emission reductions in the state. Six of these have been quantified to estimate the potential for avoided GHG emissions. These six policy recommendations could lead to emissions reductions of

- 9 MMtCO₂e per year by 2020, and
- 59 MMtCO₂e cumulative savings from 2007 through 2020.

Five of the recommended policies have been quantified to estimate the total costs and cost per ton of GHG avoided. For these five policies, the net cost is estimated at \$526 million through the year 2020 on a net present value (NPV) basis.² The weighted average cost of the policy recommendations for which quantitative estimates of both costs and savings were prepared is \$10 per MMtCO₂e.

² The net cost savings are based on fuel expenditures, operations, maintenance, and administrative costs, and amortized, incremental equipment costs. All NPV analyses here use a 4% real discount rate.

Figure 4-2. Historical and projected electricity generation to meet Colorado electricity demand by source, 1990 to 2020



Among the CAP members present and voting, ten recommendations were accepted by unanimous consent, four by super majority (5 or fewer objections) and one by simple majority. These recommendations and results are summarized in Table 4.1. For each of three recommendations (ES-2, ES-5, and ES-6), at least one CAP member expressed qualifications about support for the recommendation, but did not object to it. The explanations of the objections and the qualified votes of approval are included in the detailed policy recommendations in Appendix F.

Recommended policies ES-1, ES-2, ES-3, ES-6, and ES-11 are initiatives that would lead to increased reliance on renewable energy resources in the state, although ES-3 could be implemented on a state, regional, or national level.

Policy ES-4 would direct the state’s energy suppliers to coordinate their efforts to improve transmission infrastructure to support renewable resources. Policy ES-5 addresses applying a price to CO₂ emissions through either a cap-and-trade mechanism or a carbon tax, although neither mechanism is endorsed. Policy ES-7 includes measures to increase the use of highly efficient combined heat and power (CHP), also known as cogeneration, as well as distributed renewable energy resources. Policies ES-8 and ES-10 are both designed to promote carbon capture and permanent sequestration, while Policy ES-9 is designed to provide more general support for emissions reduction technology research and development.

Table 4-1. Summary list of energy supply policy recommendations

	Policy Recommendation	GHG Reductions (MMtCO ₂ e)			Costs (Savings) 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Climate Action Panel Action
		2012	2020	Total 2007–2020			
ES-1	Tax credits and incentives to finance renewable energy generation facilities.	Benefits are quantified in policy ES-2.					Unanimous Consent
ES-2	Increase renewable portfolio standards to 30% for investor-owned electric utilities and 15% for municipal and co-op utilities, with no more than 85% of renewable energy from centralized wind power.	1.9	4.9	34	\$524	\$16/ton	Super Majority (3 objections) (1 qualified approval)
ES-3	Consider adoption of Xcel's clean energy portfolio standard on a state, regional, or national basis.	Non-specific policy was not quantified					Majority (9 objections)
ES-4	Require all electric utilities to plan cooperatively for electricity transmission infrastructure investments that support renewable resources.	Non-quantitative policy proposal analyzed					Unanimous Consent
ES-5	Consider applying a price to CO ₂ emissions (such as cap and trade or tax) on a state, regional, or national basis.	Non-specific policy not quantified					Super Majority (1 objection) (1 qualified approval)
ES-6	Assess a public benefit charge on all electric utility bills to fund renewable energy programs.	Policy not quantified					Super Majority (3 objections) (1 qualified approval)
ES-7	Adopt structural changes to facilitate large businesses and universities to invest in combined heat and power (CHP) and distributed generation (DG) systems.	0.4	1.1	7.3	\$110	\$15/ton	Unanimous Consent
ES-8	Work with neighboring states to form a regional CO ₂ transportation and sequestration collaborative.	Non-quantitative proposal not quantified					Unanimous Consent
ES-9	Low interest loans to Colorado companies and universities for research and development of carbon emissions reduction technology, funded at \$100M/yr through surcharge on all electricity bills.	R&D benefits not quantified					Unanimous Consent
ES-10	Evaluate and, if appropriate, seek funding for advanced fossil fuel generation with carbon capture demonstration project.	Non-specific policy not quantified					Unanimous Consent
ES-11	Statewide mapping & development of small hydro-power, geothermal, and biomass renewable power sources.	0.0	0.8	3.1	\$123	\$40/ton	Unanimous Consent
ES-12	Review costs and emission reduction potential of nuclear power.	Non-specific policy not quantified					Unanimous Consent
ES-13	Adopt policies to promote a 2% increase in efficiency of existing power generators by 2020.	Costs not quantified – savings ca. 1 MMtCO ₂ /year by 2020					Unanimous Consent
ES-14	Reduce GHG emissions from oil and gas operations 35% by 2020.	0.8	2.6	16	\$12	\$0.8/ton	Unanimous Consent
ES-15	Establish a CO ₂ emissions performance standard of no more than 1,100 lbsCO ₂ /MWh for new non-peaking power plants and those older than 60 years.	0.5	2.3	13	-\$14	-\$1/ton	Super Majority (5 objections)
	Sector totals of 6 analyzed policies (including ES-13) after adjusting for overlaps among policies	3	9	59	N/A	N/A	
	Sector totals of 5 policies with cost estimates (not including ES-13) after adjusting for overlaps				\$526	\$10/ton	

GHG = greenhouse gas; MMtCO₂e = million metric tons of carbon dioxide equivalents; MWh = megawatt-hours.

Negative cost numbers indicate cost savings. The cost (savings) shown are calculated in terms of net present value in constant 2005 dollars, using a 5% annual real discount rate for the period 2008 through 2020. Capital investments are represented in terms of levelized or amortized costs through 2020.

Policy ES-12 supports a review of the costs and emissions reduction potential of new nuclear power in the state, although it does not contain a specific recommendation in this regard. Policy ES-13 supports an increase in the efficiency of existing generators in the state, while Policy ES-15 places a strict limit on the emission rates of any new generators either built in or supplying electricity to Colorado. Policy ES-14 addresses reduction of CH₄ leakage in gas operations in the state.

There is overlap in the expected emissions reduction and cost among some of the policies within the ES sector, as well as between policies in the ES, RCI, and AFW sectors. The aggressive RPS recommended under ES-2 overlaps with other policies that promote development of renewable energy technologies that would qualify for credit under the same RPS. These policies include small hydro and other small renewables (ES-11), the distributed generation (DG) component of ES-6, and the landfill CH₄ energy program (AFW-10, discussed in chapter 6). Because of this overlap, these other renewable energy policies would not actually add to the total amount of renewable energy generated in the state if implemented along with the stronger RPS initiative.

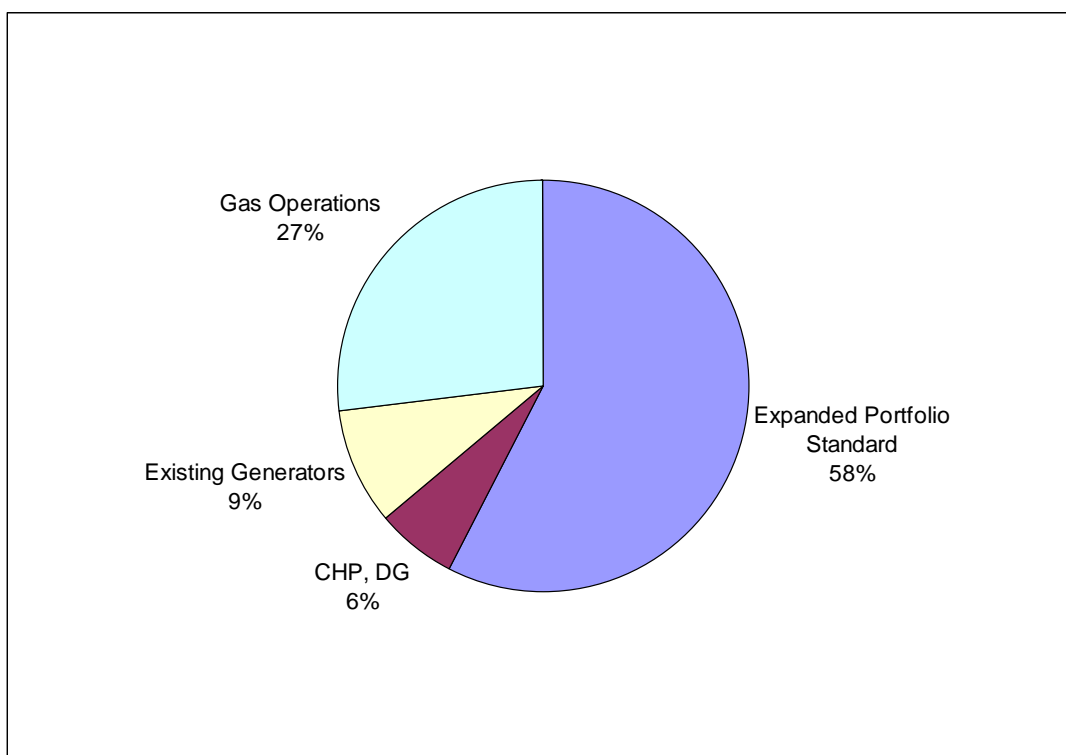
Similarly, the recommended policies for the RCI sectors (see chapter 3) decrease overall electricity demand and thereby reduce the impact of the RPS, which is designed to serve a certain percentage of electricity sales from renewable sources. Because new base load generation would not be needed in the state through 2020 if the RPS is implemented, emissions standards for new base load generation (ES-15) would have no incremental effect on total emissions.

See Appendix D, Methods of Quantification, for additional description of overlaps among sectors and of analyses of the cumulative GHG reductions from the combined effects of the CAP policy recommendations that were quantified.

Of the policies analyzed quantitatively, we find that the aggregate avoided emissions during the period 2007 through 2020 would be 59 MMtCO₂e, or 8.5% of the baseline GHG emissions from energy supply over this period, if all of the ES policies were implemented together. We estimate that the total cost of these policies would be \$526 million dollars (net present value) over this same period, leading to an average cost of about \$10 per ton of CO₂e avoided through these policies.

Figure 4-3 shows the breakdown of impacts of the recommended Energy Supply policies, taken together, in terms of avoided GHG emissions (2007–2020). The strengthened portfolio standards have the biggest impact, by replacing existing fossil-fired generation with carbon-free renewable resources. Second largest is improved natural gas operations, which has a large impact partly because the Global Warming Potential (GWP) of CH₄ is much higher than that of CO₂. Improvements in the efficiency of existing generators and expanded use of CHP and distributed generation also play significant roles. Interestingly, efficiency standards for new generators have no impact during this period when all of the policies are considered simultaneously. The reason for this is that with the aggressive portfolio standard, there is no requirement for any new base load fossil resources during this period.

Figure 4-3. Percent of avoided greenhouse gas emissions by policy



Energy Supply Sector Policy Descriptions

The Energy Supply sector includes emissions mitigation opportunities related to electricity generation and gas production. Electrical energy recommendations include increased reliance on renewable energy resources, improvements in the efficiency and emissions intensity of existing and new generators, measures that would support carbon capture and sequestration for existing generators, and consideration of both a price on CO₂ emissions and construction of nuclear facilities. Also considered are increased use of Combined Heat and Power (CHP) and distributed renewable resources at customer sites. The recommendation for mitigation of emissions associated with gas production is to reduce the leakage associated with the extraction, transportation, and processing of natural gas.

ES-1 Renewable Energy Incentives

Resource maps of renewable energy in Colorado developed by the Department of Energy's National Renewable Energy Laboratories (NREL), based in Golden, Colorado, show that Colorado is well-endowed with renewable resources. Wind is prevalent in the northeast and southeast corners of the state. Biomass is available in the northeast. Photovoltaics can be deployed throughout the state. Concentrating solar power can be tapped in the San Luis Valley. Deep geothermal resources exist in the southern portion of the state. Solar and wind alone may have the potential to produce 100 times the electricity currently used in Colorado, even after

reasonable filters are applied. However, renewables are generally more costly than today's conventional energy supplies. Financial incentives can greatly accelerate the deployment of renewables and allow time for learning curves, economies of scale, and R&D to lower their costs.

Mechanisms include an investment tax credit, an energy production tax credit, tax incentives, and incentives to help support financing of projects. Production tax credits are generally preferred by renewable energy providers that can produce electricity at under about 10 cents per kWh (wind and geothermal), whereas investment tax credits are generally preferred for more expensive technologies (e.g., concentrating solar power). Key to the success of these incentives is that they be guaranteed for a period of at least 5 years to allow time to raise financing and build projects.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado implement financing and/or tax incentives such as these for the first 2,000 megawatts (MW) of renewable resources developed to help meet the renewable energy goals outlined in Policy Recommendation ES-2

ES-2 Renewable Portfolio Standards

A Renewable Portfolio Standard (RPS) is a requirement that utilities must supply a certain percentage of electricity from an eligible renewable energy source(s). For example, an RPS of 5% would mean that for every 100 kWh that a utility supplies, 5 kWh must be generated from renewable resources. About 20 states currently have an RPS, including Colorado. Colorado's current RPS requires investor-owned utilities (IOUs) to provide 20% renewable energy by 2020 and other load serving entities, such as rural electric cooperatives and municipal utilities, to provide 10%, also by 2020. In some states, utilities can also meet their RPS by purchasing certificates from eligible energy projects, typically referred to as Renewable Energy Credits (RECs).

The CAP recommends, by supermajority of those members present and voting (with three objections), and with one qualified vote of approval, that Colorado increase its renewable requirement to 30% for IOUs and 15% for other load serving entities by 2020. The CAP further recommends that the requirement may be satisfied in part through the purchase of RECs following the guidelines of the existing Colorado RPS, except that in-state RECs would be weighted equally to out-of-state RECs.

ES-3 Clean Energy Portfolio Standards

A Clean Energy Portfolio Standard is a variant on the RPS that is more broadly defined to include energy efficiency, clean coal, new nuclear resources, and carbon offsets, as well as renewable energy. This particular policy is based on a proposal by Xcel Energy for a nationwide portfolio standard.

The CAP recommends by simple majority of those members present and voting (with nine objections), that Colorado consider adoption of Xcel’s proposed “clean energy portfolio standard” on a state, regional, or national basis.

ES-4 Transmission Infrastructure for Renewables

Colorado SB 100 provides that utilities regulated by the Public Utilities Commission are required to file maps of generation resource areas that need transmission, and transmission plans to serve those areas, for approval by the PUC by October 31 of each odd-numbered year. This changes the goal of transmission planning and investments by requiring planning and investment for transmission to serve resource areas, rather than for single generators as had been the case in the past. This will break the “chicken and egg” dilemma for new renewable energy projects in the state, where transmission to serve potential wind-power resources could not be built without generators to serve, but no wind project developer could develop a project in an area without transmission already in place.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado amend SP 100 to require joint planning and cooperation by all Colorado utilities and to design “expandable” transmission to serve renewable energy resource zones.

ES-5 Cost for CO₂ Emissions (Cap-and-Trade or Tax)

Establishing a cost for CO₂ emissions is an alternative, and complementary, GHG-control method relative to direct regulations such as energy efficiency standards. The concept is to internalize the cost of emissions in the cost of producing energy, allowing the marketplace find the most efficient reductions. Pricing CO₂ emissions has two primary effects. First, it increases the cost of carbon-based energy to encourage conservation and energy efficiency. Second, it provides an economic advantage to non-carbon-based or lower emissions energy technologies.

There are two basic approaches: cap-and-trade (C&T) and carbon taxes. The cap and trade approach has largely been based on the success of the C&T system for acid rain in the United States. A cap is placed on total GHG emissions, with each unit of emissions represented by a permit that can be traded to find the lowest cost compliance. Typically the caps begin somewhat high (close to current emissions levels) and ratchet down on a pre-determined schedule.

Under the carbon tax approach, the government collects a tax per unit of GHG emissions. The tax collection can be done either upstream (e.g., wellhead, power plant) or downstream (e.g., gas pump, electricity bill). A carbon tax can be designed to be net revenue neutral. That is, the carbon tax revenue collected would be offset dollar-for-dollar by a reduction of some other tax. The revenue offset can be designed to mitigate impact on lower income or vulnerable ratepayers without negating the incentive for conservation.

Hybrid schemes are possible, such as a tax and trade system where an entity facing a large tax liability could offset their taxes through investments in reducing the GHG footprint of another with no or low liability.

The CAP recommends, by super majority of those present and voting (with one objection), and with one qualified vote of approval, that Colorado consider applying a price to carbon emissions (such as cap and trade or a tax) on a state, regional or national basis.

ES-6 Public Benefit Charge Funds

A system benefits charge (SBC) is a small monthly fee assessed on utility bills. The money that is collected is used to fund “public benefits,” which typically include low-income weatherization programs, appliance efficiency rebates, renewable energy rebates, energy efficiency programs, and demand-side management programs. More than twenty states currently assess such charges under a variety of names, including system and public benefits charge, wires charge, access charge, universal service charge and distribution charge. Natural gas utilities can also collect such funds, and a bill to require this has been introduced in the Colorado legislature in past sessions. The current proposal is focused on using SBC funds to support renewable energy development.

The CAP recommends, by super majority of those members present and voting (with three objections), and with one qualified vote of approval, that Colorado impose a \$0.2 cents/kWh or 0.4 cents/kWh public benefits charge, with the funds collected to be spent on new renewable energy resources.

ES-7 Incentives for Combined Heat and Power and Distributed Generation

Financial incentives for combined heat and power (CHP) and distributed generation (DG) can include 1) direct subsidies for purchasing/selling systems given to the buyer/seller, 2) tax credits or exemptions for purchasing/selling systems given to the buyer/seller, 3) tax credits or exemptions for operating systems, 4) feed-in tariff, which is a direct payment to CHP/DG owners for each kWh of electricity or Btu of heat generated from a qualifying system, and 5) tax credits for each kWh or Btu generated from a qualifying system.

Barriers to these resources include inadequate information, institutional barriers, high transaction costs for small projects, high financing costs because of lender unfamiliarity and perceived risk, “split incentives” between building owners and tenants, and utility-related policies like interconnection requirements, high standby rates, and exit fees. The lack of Standard Offer or long-term contracts, payments at avoided cost levels, and lack of recognition of the value of reduced carbon emissions also creates obstacles to widespread implementation. In addition, the availability of net metering would substantially increase the value of certain kinds of DG resources, as any excess energy produced could effectively be sold to the grid at the retail price to offset the cost of purchasing power when additional energy is needed.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado adopt structural changes to facilitate the growth of CHP and distributed generation to 1% each of total fossil fuel generation in the state by 2020.

ES-8 CO₂ Capture and Transport Infrastructure

Carbon dioxide capture and sequestration (CC&S) may represent one future option to significantly reduce the CO₂ emissions associated with electricity generation. One barrier to implementation of CC&S on a wide scale is the absence of a pipeline infrastructure to carry CO₂ to suitable sequestration sites. Another barrier is regulatory uncertainty in key areas such as ownership of underground sequestration resources, regulations, and long-term liability against CO₂ leakage. There are also uncertainties and concerns over potential adverse environmental impacts of carbon storage.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado work with neighboring states and the Western Governors' Association (WGA) to analyze options for a regional CO₂ transportation and sequestration collaborative. The CAP further recommends that Colorado create a workshop process resulting in a written report by state agencies to address various regulatory and environmental uncertainties associated with CC&S.

ES-9 Research and Development for Carbon Emissions Reducing Generating Technology

Research and development (R&D) funding can be targeted toward a particular technology or group of technologies as part of a state program with a mission to build an industry around that technology in the state and/or to set the stage for adoption of the technology for use in the state. For example, an agency could be established to help develop and deploy energy storage technologies. R&D funding can be made available to any renewable or other advanced technology through an open bidding procedure (driven by bids received rather than by a focused strategy to develop a particular technology). Funding can also be given for demonstration projects to help commercialize technologies that have already been developed but are not yet in widespread use.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado create a fund to make low-interest loans to Colorado research companies & universities to support the development of carbon emissions reducing technology. The CAP recommends that this be funded through a 0.2 cents per kWh charge on all electricity sold in the state.

ES-10 Promote Advanced Fossil Fuel Generation with Carbon Capture, Including IGCC

Advanced fossil fuel generation technologies, in combination with CC&S, may offer one option to reduce the CO₂ emissions associated with fossil-fuel based electricity generation. While coal-based generation is the largest source of CO₂ emissions in the state, CC&S may provide a cost-effective pathway to reduce carbon emissions from coal power plants while continuing to rely on an abundant, domestic source of energy. Coal generation with CC&S could be based on integrated gasification combined cycle (IGCC) technology, pulverized coal technology, or some other approach yet to be determined.

The CAP recommends, by unanimous vote of those members present and voting, that the governor and the legislature of Colorado evaluate and, if appropriate, seek funding for a

demonstration project using advanced fossil fuel generation with carbon capture and sequestration.

ES-11 Small New Hydro and Efficiency Improvements at Existing Hydro, Identifying Other Small Renewables and Removing Barriers

Currently, existing hydroelectric plants in Colorado produce about 1,200 GWh of electric energy per year. This energy is produced from plants built in the early 1920s and before as well as relatively newer units. Older plants present opportunities for improvements in efficiency and production including more efficient turbines, upgraded generator windings and replacement of mechanical controls with solid state equipment. The improvement in efficiency and plant production can range from 1%–2% to as high as 25%–30%.

In addition, several studies have suggested there may be 1,000 MW or more of hydroelectric potential in Colorado at existing dams and water impoundments, diversions and conveyance structures.

These facilities are generally owned and operated by entities without expertise in power production. Also, the generation potential of each site is usually small and often overlooked by power providers. In fact, all small renewable resources face barriers similar to these: the site owner rarely has experience in power generation, and power production per site is relatively small, making it more difficult to justify the investment in feasibility studies and other up-front costs.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado expand SB-91 to initiate statewide mapping of the unexploited potential of small hydropower, geothermal, and biomass resources. The CAP further recommends that institutional barriers to the exploitation of these resources be addressed, with the goal of adding 50 MW of such new, small renewable resources to the state's generation mix each year beginning in 2014. Finally, the CAP recommends that a transfer of oversight from the Federal Energy Regulatory Commission (FERC) to state authorities be considered in order to streamline the permitting process for these resources.

ES-12 Nuclear Energy

In 2005, electricity generation accounted for 37% of Colorado's gross GHG emissions on a consumption basis, or about 43 MMtCO₂e. Of that, coal-fired plants emit 35 MMtCO₂e. Since nuclear plants also produce base load power, they are potentially a direct replacement for coal-fired plants.

By unanimous vote of those members present and voting, the CAP recommends that the state initiate a review of the costs and emissions reduction potential of nuclear energy resources.

ES-13 Efficiency Improvements for Existing Generators, including Heat Recovery

Making efficiency improvements at existing generation stations has a number of benefits such as: offsetting the rising cost of fuel, reducing overall emissions and improving plant reliability. This can be done through improvements in both the combustion and steam cycles, as well as with waste heat recovery.

Efficiency improvements at existing generating stations may be hampered by federal regulation, lawsuits and uncertainty. New Source Review (NSR) and New Source Performance Standard (NSPS) regulations need to be clarified and should encourage, not discourage, efficiency improvements such as turbine upgrades, motor, pump, fan and drive improvements, control system upgrades and recovery of waste heat.

Efficiency improvements at existing generating stations may also be hampered by lack of regulatory cost recovery certainty for regulated investor-owned utilities under the jurisdiction of the Colorado Public Utilities Commission (PUC). Public policy could specifically encourage the PUC to allow for the recovery of costs for efficiency improvements at existing generators.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado adopt policies that would lead to a 2% overall improvement in the efficiency of the existing generation fleet.

ES-14 Oil and Gas Operations

There are a number of ways in which GHG emissions in the oil and gas industry, particularly CO₂ and CH₄, can be mitigated. Methane is a potent GHG, so any leaks during production, processing, and transportation/distribution should be addressed. Eliminating these leaks can be economically beneficial because it prevents the waste of valuable product.

The CAP recommends, by unanimous vote of those members present and voting, that Colorado require reductions in CH₄ leakage from gas operations to 35% below 2004 levels by 2020.

ES-15 CO₂ Emissions Standards for Power Plants

A CO₂ emissions performance standard is an emissions standard requiring that all new non-peaking power plants located in Colorado or serving Colorado electricity customers have CO₂ emission no greater than a threshold amount of CO₂ per megawatt-hour (MWh) produced. In addition, to ensure that power providers have the necessary incentives to invest in new low-CO₂ emitting facilities rather than continue to operate aging high-CO₂ emitting plants the standard would also apply to existing facilities once they reach 60 years of age. The allowable emissions per MWh standard is based on the level of emissions of a new efficient natural gas plant.

The CAP recommends by super majority of those members present and voting (with five objections), that Colorado adopt an emissions standard of 1,100 pounds of CO₂ per MWh

produced for all new base load power plants constructed in or serving power to the state, and that this standard also apply to all plants 60 years old or older.