The Faulty Economics of Colorado's Climate Change Action Plan:

A Peer Review

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IP-1-2008 • February 2008

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Executive Summary

"Climate change is our generation's greatest environmental challenge. It threatens our economy, our Western way of life and our future. It will change every facet of our existence, and unless we address it and adapt to it, the results will be catastrophic for generations to come." Governor Bill Ritter, November 2007.

With alarming rhetoric, Governor Bill Ritter unveiled his Climate Change Action Plan, an ambitious 32-page call to action outlining his goals and strategies for reducing "harmful greenhouse gas emissions," much of which would be enacted via executive order.

Governor Ritter's plan comes from the collaborative work of the Rocky Mountain Climate Organization and the Center for Climate Strategies (CCS), a Pennsylvania-based nonprofit mostly funded by left-leaning environmental grant makers like the Rockefeller Brothers Fund. They formed the Colorado Climate Project and established the Climate Action Panel (CAP) "to develop recommendations for actions that can be taken in Colorado by the state government, local governments, water providers, the private sector, and individuals to reduce the state's contribution and vulnerability to a changed climate." (Appendix A, P.1, www.coloradoclimate.org) Colorado financial contributors include Pat Stryker and Denver Water.

According to the "Description of the Colorado Climate Project and the Climate Action Panel Process" the recommendations were to be compatible with a robust Colorado economy while achieving statewide reductions in the amount of greenhouse gases emitted. In addition the recommendations were to be part of any international, national or regional efforts that would reduce Colorado's contribution and vulnerability to climate change. (Appendix A, P.1)

Governor Ritter and others buy into the "indisputable science" side of the global warming discussion, which says the world is on a collision course with climate calamity. Even if that were true, can they demonstrate that these initiatives will do anything to improve the situation and not compromise Colorado's economy? Research reveals the answer is no.

The purpose of this Peer Review is to examine the economics that were the foundation of the CAP report that ultimately resulted in Governor Ritter's Climate Change Action Plan.

Research reveals:

- The same flawed methodology found in other states that collaborated with CCS.
- No dollar value is placed on reducing GHG therefore making it impossible to quantify the cost savings.
- Net savings from recommendations do not include net costs.
- Failure to recognize market forces. If the recommendations truly did result in savings, then consumers already would be taking advantage of them.
- Reports of commuter benefits programs making Colorado $1.14 billion wealthier are grossly overstated.
- Surcharges for high energy usage will not create the estimated $1.1 billion plus in savings for the Colorado economy.
- The CAP report, on which Governor Ritter relied for his Climate Change Action Plan, offers no worthwhile guidance for policy makers.

Unfortunately for Colorado policy makers, these problems plague the CAP study, rendering it unsuitable for making any informed policy decisions. Unless the governor has quantified the dollar value of reduced GHG emissions resulting from these policies and incorporated that value into the cost savings estimates, we believe the economic estimates suffer from many of the same analytical flaws that we identified in the CAP report. A real cost benefit analysis, using realistic assumptions about costs and benefits, should be conducted before Colorado policymakers act on any recommendations to reduce statewide GHG emissions.

Introduction

The Rocky Mountain Climate Organization partnered with the Center for Climate Strategies (CCS) to create the Climate Action Panel (CAP) to develop recommendations to reduce emissions of greenhouse gases (GHG) in Colorado and to estimate the costs and benefits of their recommendations.

The Beacon Hill Institute has previously reviewed the cost-benefit methodology employed by CCS in two other states, and found three serious problems:

1. CCS failed to quantify benefits in a way that they can be meaningfully compared to costs;
2. When estimating economic impacts, CCS often misinterpreted costs to be benefits; and
3. The estimates of costs left out important factors, causing CCS to understate the true costs of its recommendations.

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In this brief document, we first summarize the main findings of the CAP report. We then briefly review problems 1 and 2, before providing a more detailed analysis of the third problem, where we examine the individual cost and benefit assumptions made in the five most important programs proposed in the CAP report.

In an appendix we also evaluate Governor Bill Ritter's Colorado Climate Action Plan and relate it to this study.

The CAP Plan

The CAP report contains 70 recommended policy actions to reduce GHG emissions. These policy options are classified as falling into six areas:

1) Residential, Commercial, and Industrial;
2) Energy Supply;
3) Transportation and Land Use;
4) Agriculture and Forestry Sector and Waste;
5) Cross-Cutting Issues (policies that impact more than one of the above sectors);
6) Water Adaptation.

CCS facilitated and provided technical assistance in studying the first five sectors while RMCO provided this function for the water adaptation sector. However, as the report does not quantify benefits or costs for the water adaptation policy recommendations, the numbers analyzed in this review originate entirely from the sectors where CCS provided assistance.

The CAP report quantifies forecasted emissions reductions for 33 of their recommended policies. They estimate that, if these policies were fully implemented, Colorado's GHG emissions would be 37% lower by 2020 than they would be if the policies were not implemented.

The CAP report gives the impression that state policy makers can have their cake and eat it too: that Colorado can simultaneously reduce GHG emissions and produce net cost savings for the state's economy.

Surprisingly, the CAP report claims that the implementation of these measures would result in net cost savings for the State's economy. The CAP report quantifies costs for 26 of the 70 recommended options; of these, it is claimed that 16 would generate net cost savings. If all options were implemented, the CAP estimates that the state would save over $2.5 billion (in present value terms) between now and 2020.

The CAP report gives the impression that state policy makers can have their cake and eat it too: that Colorado can simultaneously reduce GHG emissions and produce net cost savings for the state's economy. Unfortunately, the seriously flawed nature of the report undermines these conclusions.

Problem 1: CAP fails to quantify benefits in a way that can be meaningfully compared to costs

A scientifically sound cost-benefit analysis should clearly spell out all of its assumptions, estimate the physical impacts that a particular policy change will have over time, and then estimate the present value, in dollars, of both the benefits and the costs of the physical impacts. On this basis, a study should be able to conclude whether a given policy change is expected to provide benefits in excess of its costs.

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However, the CAP report fails to estimate the dollar value of the main intended benefit – reduced GHG emission. The authors are explicit about this:

> Regarding GHG benefits, market prices (monetized benefits) are normally taken as good proxies of societal costs and benefits in standard analysis unless there are market imperfections or subsidies that create distortionary effects. Because accurate information on the dollar value of GHG reductions benefits is typically not available, physical benefits are used instead, measured as MMTCO2e (p. D2).

However, without this information, the CAP report is unable to conduct a cost-benefit analysis at all. The goal, reduced GHG emissions, is measured in purely physical terms instead of dollars, which precludes a comparison of the value of reduced GHG emissions to the costs associated with reducing the emissions.

Problem 2: When estimating economic impacts, CAP often misinterprets costs to be benefits

The CAP report routinely mistakes costs for benefits. Jobs in particular are erroneously viewed as benefits throughout the report. For example, when recommending research and development funding for technology to reduce carbon emissions (ES9), the CAP report includes the creation of jobs as an additional benefit. The report estimates that doubling Colorado's renewable energy standard "will create a net increase of 4,100 person-years of employment through 2020" (p. F40). They similarly claim a benefit of transit investment is the creation of jobs, "in the year following the investment 314 jobs are created for each $10 million invested" (p. G12).

However, jobs themselves are not a benefit; if they were, workers would be paying their employers for the privilege of working, rather than vice versa! It is the value created by performing those jobs that is the benefit, while doing the job is the cost an individual must pay to obtain a benefit.

Problem 3: The estimates of costs leave out important factors, causing CAP to understate the true costs of its recommendations

Although the CAP report does not estimate the monetary value of benefits (reduced GHG emissions), it does attempt to quantify the monetary costs of 26 of their policy recommendations. As indicated above, the report claims that there would actually be net savings, not net costs, if its recommendations were implemented.

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This finding – that mitigating GHG emissions amounts to a free lunch – does not hold up under scrutiny, and is an artifact of the CAP report's unrealistic assumptions and incomplete listing of costs. To highlight these shortcomings, we now examine in more detail the four policies that, according to the CAP report, would generate the greatest net cost savings (3 of them in excess of $1 billion) while also reducing GHG emissions. The four policies are listed in Table 1, next to the net cost savings that CAP claims would result if Colorado implements the policies.

Table 1 - CAP Estimates of New Savings Due to Implementation of Selected Greenhouse Gas Emission Mitigation Measures	
Program Title	Net Cost Savings to NC by 2020 ($ millions)
TLU-6 Adopt California GHG emissions standards for cars and trucks	1,880
TLU-10 Require employers with more than 100 employees to offer commuter benefits	1,145
RCI-1 Expand demand side management programs	853
RCI-5 Inverted electricity block rates to fund utility energy efficiency programs	1,135
Source: CAP Report	

TLU-6 Clean Car Program for Autos and other Light-duty Vehicles

This proposal would require California Clean Car standards for new light-duty vehicles in Colorado. Specifically, it would require GHG emissions from new vehicles to be approximately 30% less than the current average. In addition to reducing GHG emissions, the Clean Car Program would also encourage greater fuel efficiency.

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It is not clear that all of such a reduction in GHG emissions could be attributed to the measures proposed by the CAP report; after all, high oil prices, coupled with technological advances, are expected to improve the fuel efficiency of vehicles anyway. Any efficiency gains should be measured relative to the relevant counterfactual – what would have happened in the future – and not to the current levels of fuel use. The CAP report does not construct any such counterfactual.

The CAP report estimates that by implementing this program, the state would become more than $1.8 billion dollars wealthier between now and 2020. These gains are entirely attributable to cost savings associated with greater fuel efficiency.

If there are large net gains to be had, surely drivers will reduce their fuel use in their own self interest, and there is no need for the public policy. On the other hand, if we observe that people are not demanding these products, then there is good reason to believe that the estimates of the cost savings by the CAP report are simply wrong; indeed, the presumption here is that the policy imposes a net cost.

TLU-10 Commuter Benefits Program

The commuter benefits program would require all employers with over 100 employees in a single location to provide benefits to their employees that would reduce car travel. Incentives include providing free transit passes, telecommute programs, carpool matching services and subsidies, guaranteed ride home services, amenities for bicyclists, and other benefits.

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The CAP report claims that this policy option will be beneficial to both employers and employees. It claims that although employers will have to pay cash incentives to employees and bear the cost of administration and some capital expenses, the employers will enjoy net savings because of reduced expenses on parking facilities and office space (when workers telecommute). They estimate the benefit to the employees as simply the value of cash incentives (such as free transit passes). The CAP report then combines these two net cost savings to estimate that implementation of this program will make the state of Colorado more than $1.14 billion dollars wealthier.

There are serious problems with these estimates. First, the report overestimates the value of the incentives to the employees. CAP is not justified in assuming that the value of the incentives to the employees equals the value it costs the employers to provide the incentives. For example, if monthly transit passes are available for $200 per month and employees choose not to buy them, then the employees are demonstrating, through their action, that they do not value the pass at $200 per month. If employers are now forced by this program to purchase a $200 pass for their employees, the transit passes do not suddenly become worth $200 to the employees as CAP estimates. The incentive instead costs the employers more than it is worth to the employees. For the employees who receive a free transit pass but decide to drive anyway, the actual value of a free pass is zero and not what it cost the employer to provide the pass.

There is also a conceptual problem with this program. Since the employees' gain is modeled as equal to the employers' loss, that means the entirety of the more than $1 billion in net cost savings that the CAP report estimates stems from the reduced cost of parking and office space paid by the employers. Employers generally try to maximize profits. If they can generate this cost savings by implementing a commuter benefit program, then it is in their financial interest to do so. In such a case, there is no need for a government policy forcing employers to provide a commuter benefits program when a completely voluntary program would achieve the same results.

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The CAP report underestimates the cost of the commuter benefits program because it fails to adjust for the fact that incentives paid for by the employers will not equal the value obtained by the employees. In the case where potential net benefits are still attainable after adjusting for this fact, employers would voluntarily adopt commuter benefits programs in order to gain those net benefits. There would be no need for policy.

RCI-1 Expanded Energy Efficiency and Demand Side Management

All of the gains from this program outlined in the CAP report result from money saved due to improved energy efficiency in buildings in excess of the cost of making the buildings more energy efficient. This raises the same fundamental problem that arose with the commuter benefits program: if the private benefits are really so large, why are people not taking advantage of them already? Once again, either the program matters, in which case it imposes costs; or it is irrelevant because the changes would have been made anyway, in which case the policy generates no net benefits. In either case, the policy would not produce the $853 million in cost savings that the CAP report estimates.

This raises the same fundamental problem that arose with the commuter benefits program: if the private benefits are really so large, why are people not taking advantage of them already?

RCI-5 Inverted Block Rates to Fund Energy Efficiency

This policy would create tiered increasing surcharges for higher energy usage and devote those funds to the development of energy efficiency programs. The CAP report estimates that the policy will create more than $1.1 billion in net savings for the Colorado economy. The net savings originate from energy efficiency programs (such as those programs described in RCI-1) funded with the revenue and reduced spending on energy resulting from the higher prices. There are two major problems with the analysis of this policy.

First, this policy encounters the same problem described for option RCI-1. If the efficiency programs provide net savings to the consumers implementing them, then there is no need to use tax revenue from this program to fund them. These

programs would have been implemented voluntarily in order to enjoy the suggested net benefits.

Second, the CAP analysis fails to quantify the value of what would have been produced or consumed with the increased energy use that the rate surcharges are designed to discourage. The sacrificed value resulting from the rate surcharges constitutes a major cost that the CAP analysis completely ignores. This policy intentionally raises utility prices above the cost of service as noted in "barriers to consensus" (p. E-26). When energy uses creates benefits in excess of its cost the energy should be used. By intentionally increasing the prices, this policy drives a wedge between the true cost of the energy and the price the buyer has to pay which leads to inefficient use (i.e. net costs).

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To illustrate, if electricity can be produced for $200 and a consumer values what that electricity will provide at $250, there is a net gain of $50 for the Colorado economy, if the person consumes the electricity. If this surcharge raises the price to $260 while the cost remains at $200, the person will choose not to consume it and Colorado will be $50 poorer as a result. The CAP report completely ignores these losses and instead actually counts forgone energy consumption as a benefit! In this example, instead of a $50 loss, they would incorrectly estimate a $200 gain to the economy!

The CAP report essentially counts dollars not spent on a valuable service as a benefit. Pushing the model to its logical conclusion, Colorado could maximize the net benefits from this policy by setting surcharges so high starting with the very first megawatt of electricity consumed to the effect that nobody purchases any electricity. Then Colorado could experience a net economic gain equal to the entire amount the citizens of the state currently spend on electricity! There are obvious costs to consuming no electricity, but the CAP model does not account for any of these costs.

In analyzing this policy the CAP not only overestimated savings, but they actually estimated a cost as a net benefit.

Conclusion

The CAP report provides zero guidance to policy makers regarding the desirability of policies aimed at reducing GHG emissions. It fails to perform the most basic task of any cost-benefit analysis – quantifying both the costs and benefits in monetary terms so that they can be directly compared. The analysis mistakes costs for benefits. Astonishingly, the report posits net economic savings from policies intended to reduce GHG emissions without counting the value of those reduced emissions.

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In this peer review we have briefly examined the cost-benefit assumptions for the four most important proposals in the CAP report. In each case we have found the analysis to be seriously flawed. We can find no sound scientific basis for the claim that these four programs have a net benefit of more than $5 billion (in present value terms). The cost savings estimates provided by the CAP are not just wildly optimistic; they are the product of a purely fictitious analysis. Yet these four programs would generate the entirety (and then some) of the overall net cost savings that would result from the implementation of the 70 proposals that they suggest.

For policymakers, the CAP report offers no worthwhile guidance. The report fails to quantify the monetary benefits of reduced GHG emissions rendering its cost savings estimates implausible if not downright unbelievable. The faulty analysis contained in the CAP report leaves policymakers with no basis on which to judge the merits of the CAP report's recommendations for action on the mitigation of GHG emissions.

Appendix

Governor Bill Ritter's Climate Change Action Plan

Governor Bill Ritter Jr. issued the Governor's Colorado Climate Action Plan (CCAP) in November 2007. The CCAP provides a considerably less detailed analysis than the CAP report and does not provide many economic impact estimates. As such, we are not in a position to review it at the same level of detail that we reviewed the CAP report. Net economic gains are occasionally stated, but they provide no evidence or sources documenting how they were calculated (p. 16 for example).

Despite this limitation, we can make a couple of observations. Some of the governor's recommendations are very similar to what appear in the CAP report and have been analyzed above. Similar to the CAP report, the Governor recommends a clean car program. As stated above, the program should not be adopted because of expectations of net economic benefits.

The governor's report also recommends something similar to the expanded energy efficiency and demand side management program analyzed above. He recommends increased lighting performance ($9 billion economic savings), expanded demand side management programs ($2.1 billion economic savings), and industrial efficiency measures ($970 million economic savings). Although the report provides no indication of how these cost savings estimates were calculated, it appears they come from energy cost savings by consumers. If that is the case, then these programs have the same flaw as analyzed above: either the program matters, in which case it imposes costs; or it is irrelevant because the changes would have been made by consumers anyway, in which case the policy generates no benefits.

Unless the governor has quantified the dollar value of reduced GHG emissions resulting from these policies and incorporated that value into the cost savings estimates, we believe the economic estimates suffer from many of the same analytical flaws that we identified in the CAP report.

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