



POLICY BRIEF

Peer Review **Cost-Benefit Analysis of Washington Climate Advisory Team's Recommendations**

by
The Beacon Hill Institute at Suffolk University

July 2008



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Executive Summary

Earlier this year, the Washington State Climate Advisory Team (CAT) published its report on the strategies and costs associated with their identified strategies for reducing Washington's greenhouse gas (GHG) emissions. Their analysis, which was not peer reviewed, suffers from a number of shortfalls which make it impossible for policymakers to use the information in the report in a meaningful way. A review of the CAT's report by Suffolk University's Beacon Hill Institute finds three significant flaws.

Findings

- The Climate Advisory Team report does not offer an apples-to-apples comparison of costs and benefits
- The report mistakes costs and benefits
- The report overcounts some benefits and ignores large economic costs

First, the report does not provide a basis for comparing costs and benefits of the strategy. For instance, the main benefit of the program is the reduction of greenhouse gas emissions, but nowhere is the benefit from these reductions quantified to allow a comparison to the costs. Policymakers are left with an apples-to-oranges comparison of dollars-to-GHG emissions. Without an estimate of the impact of those GHG emissions, such comparison is meaningless.

Additionally, the CAT did not analyze the economy-wide impacts of the taxes and regulations that are part of their strategy. By limiting the cost analysis only to the immediate impact rather than a full analysis of the opportunity costs, the estimated cost is lower than the CAT projects.

Second, the CAT misinterprets costs as benefits. One of the stated goals of the CAT is to create jobs. Jobs, however, are not a benefit but a cost. Paying one person to dig holes and another to fill them back would create two jobs. These jobs are a cost, not a benefit. The benefits are the value of what they have produced, not what it cost to create that value.

Third the CAT understates the true costs of its recommendations. While the analysis estimates projected costs of their proposed recommendations, they include benefits from those recommendations “and recent actions.” By adding in the benefits of recent actions to those from proposed recommendations, their creative accounting turns a \$2.1 billion cost into a \$950 million benefit. Since policymakers are trying to determine the cost of new actions, adding benefits from previous actions is disingenuous.

The analysis also claims that many of the energy saving mandates would actually save more than the programs cost. The analysis does not, however, explain why such significant costs are currently being ignored by families and businesses. This would tend to indicate that the savings either do not exist or are much lower than anticipated. They do admit that the savings are a “major uncertainty” but pick a particular level of savings anyway and build that number in.

In short, the CAT report does not provide guidance to policymakers regarding the desirability of policies aimed at reducing greenhouse gas emissions. Its cost savings estimates cannot be believed and it fails to quantify the monetary benefits of reduced carbon emissions.

Introduction

In 2008, the Washington Climate Advisory Team (CAT) partnered with the Center for Climate Strategies (CCS) to create a report, *Leading the Way: A Comprehensive Approach to Reducing Greenhouse Gases in Washington State*.¹ The report estimates the economic costs and benefits of the CAT’s greenhouse gas (GHG) mitigation recommendations.

The Beacon Hill Institute has previously reviewed the cost-benefit methodology employed by CCS in five 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 confused costs with benefits; and
3. The estimates of costs left out important factors, causing CCS to understate the true costs of its recommendations.

The primary purpose of the CAT in 2008 is to “transform the comprehensive recommendations developed last year into a relatively small number of focused, refined, and effective set of actions that Governor Gregoire and the Washington Legislature can implement.”² Unfortunately for Washington policy-makers, the same three problems the Beacon Hill Institute found in prior CCS work plague the CAT study, rendering it unsuitable for making any informed policy decisions.

In this brief document, we first summarize the main findings of the CAT report. We then briefly review problems one and two, before providing a more detailed analysis of the third problem. We also examine the individual cost and benefit assumptions made in the three programs CCS estimated to generate the greatest net cost savings.

¹ http://www.ecy.wa.gov/climatechange/CATdocs/020708_InterimCATreport_final.pdf

² http://www.ecy.wa.gov/climatechange/2008CATdocs/041808_CAT_Memo.pdf

The Climate Advisory Team Plan

The CAT report contains 45 recommended policy actions to reduce greenhouse gas emissions. These policy options are classified in five areas:

- 1) Agriculture and Waste
- 2) Energy Supply
- 3) Forestry
- 4) Residential, Commercial, and Industrial
- 5) Transportation

CCS facilitated and provided technical assistance in studying the five sectors. They estimate that, if fully implemented, CAT's recommendations would reduce Washington's GHG emissions to a level 17 percent below its 1990 level.

The CAT report implies that the implementation of these measures would result in a net cost savings for Washington. The CAT report individually quantifies costs for 26 of the 45 recommended options. Surprisingly CAT claims that 14 of these options would generate net cost savings. If all options were implemented, CAT estimates that the recommendations would save Washington nearly \$950 million (in net present value terms) between now and 2020.

The estimated \$950 million cost savings is not credible. The report grossly underestimates the true costs of implementing the policy options recommended by the CAT for GHG mitigation. As we show below, the cost-benefit methodology employed by CCS omits significant costs and frequently misconstrues certain costs to be benefits, causing them to underestimate the true costs of their recommendations.

Problem 1: CAT 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.

However, the CAT report fails to estimate the dollar value of the main intended benefit – reduced GHG emission. The authors are clear about this in the “Methods for quantification” memo (appendix K: p.1). Net GHG reduction is measured per million metric tons of carbon dioxide equivalent (MMTCO₂e). Only direct economic costs are quantified. Indirect, external, or society wide costs are not. Nowhere is the dollar value of metric tons of reduced GHG calculated.

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

Are the mitigation options desirable? For a cost-benefit analysis to provide any guidance in answering this question the CAT would need to compare the dollar value of reduced GHG emissions to the cost. Since they only quantify the physical benefits, we are left comparing reduced metric tons of GHG to dollars – essentially comparing apples and oranges.

Estimating a dollar value of reduced GHG emissions would require a number of steps. First, a full accounting of both societal costs and benefits from higher emissions would have to be constructed. Then the impact on these costs of the marginal changes in Washington’s emissions would have to be estimated. Because Washington’s GHG emissions are so small relative to the rest of the world’s emissions it is quite possible that, even if there are large social costs associated with GHG emissions, no policy adopted by Washington would have any discernable impact on global climate change, and thus no benefits that could be assigned a dollar value.

Moreover, the CAT analysis does not address the opportunity costs or potential unintended consequences of its proposals. The opportunity cost of undertaking an activity is the highest valued alternative forgone activity. For example, the opportunity cost of attending college full-time is the wages forgone from not being able to work full time, as well as the leisure time lost from studying nights and weekends.

For example, the CAT report does not attempt to measure the opportunity cost of providing tax incentives to individuals and businesses to invest in energy conservation measures. The opportunity costs of this proposal would include lower tax revenue and forgone tax incentives for other activities, such as worker training or education. The CAT analysis should consider the benefits of these potential alternative uses of tax credits.

An unintended consequence is an outcome, both foreseen and unforeseen, that was not intended by an actor of a specific activity. A pertinent example is the federal incentives for ethanol production. The objective of the policy is to increase the portion of ethanol in motor fuels and reduce U.S. dependence on foreign sources of oil. A possible, yet debated, unintended consequence is the increase in the production of ethanol may have led to sharp increases in the price of corn, and subsequently strained the budgets of poor people. While it may be difficult to quantify these outcomes, the CAT analysis should make an attempt to at least identify these possible outcomes.

Astonishingly, the CAT finds that there would be net economic savings from their proposals even without quantifying the dollar value of their main intended benefit – reduced GHG emissions. They (incorrectly) find that their policies not only have no net cost, but instead actually generate economic savings for the state! However, these economic savings are not translated into impacts on meaningful state economic indicators, such as investment, employment, income and state Gross Domestic Product (GDP). Nevertheless, we analyze these claims below under problem 3.

Problem 2: When Estimating Economic Impacts, CAT Misinterprets Costs as Benefits

The CAT report routinely mistakes costs for benefits. Jobs in particular are erroneously viewed as benefits throughout the report. One explicit goal of the plan is to create a total of 25,000 clean energy sector jobs in the state by 2020 (p. 41). The CAT plan favorably estimates that it will exceed this goal and, if the mitigation options are fully implemented, that they would actually achieve 31,500 jobs by 2020 (p.

41). Similarly, after listing four programs that will have a total cost to the state of \$5.4 billion, the CAT report notes that these costs do not account for “the economic benefits from job creation” (p.39).

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.

An example should make this fact clear. Paying one person to dig holes and another person to fill them back in would create two jobs. These jobs are a cost. In this case, two people bore the cost in terms of hard work and time of digging and filling holes. Since, on net, no holes were created or destroyed no value was created. Society is, on net, poorer by the opportunity (cost) these two workers sacrificed to dig and fill holes.

Applied to the state of Washington, all of the clean energy jobs created by CAT are a cost. To figure out whether there is any net benefit, the CAT would have to compare the cost of the job to its benefit – the dollar value of the amount of clean air the job produces. But CAT never quantifies the dollar value of reduced GHG, so they have no scientific basis to conclude that these jobs provide net benefits. Instead the report resorts to mistakenly claiming that the jobs themselves are the benefit.

Problem 3: CAT Understates the True Costs of Its Recommendations

Although the CAT 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, and it astonishingly finds a net cost of savings of nearly \$950 million.

This finding – that mitigating GHG emissions amount to a free lunch – does not hold up under scrutiny. It is an artifact of the CAT report’s unrealistic assumptions, incomplete listing of costs, and misleading accounting.

The report states “the CAT strategies *and recent actions* taken in Washington, for which both costs and emissions reductions could be assessed, could yield a net cumulative benefit of over \$900 million by 2020” (p. 17, emphasis added). CAT quantifies not only the actions it recommends, but also actions the state has already taken. The difference is not trivial. Table 4 (p. 71) separates the present value of recent actions already taken by the state and those new actions CAT recommends. By their own estimates the new actions CAT recommends have a net cost of more than \$2.1 billion! Meanwhile the CAT report estimates that the actions already taken in Washington have saved more than \$3 billion. This is how the report arrives at nearly \$950 billion in net cost savings from climate mitigation.

This accounting method is, at best misleading, and possibly intentionally deceitful. The policy question confronting the state is: what is the cost of new mitigation options? Whether new mitigation options are worth implementing depends on the benefits and the costs that these, and only these, options create – not the cost of these options plus savings existing programs already create. The CAT proposal should state that it proposes GHG mitigation options they estimate will have a net cost of more than \$2.1 billion. To net this figure with actions already taken is disingenuous.

This is not the end of the problems with the CAT cost estimates. Even a \$2.1 billion net cost grossly underestimates the true costs of their recommendations. The report claims that 14 of their

proposed mitigation options will generate net cost savings. But these estimates are derived from unrealistic assumptions and an incomplete listing of costs.

To highlight these shortcomings, we now examine in more detail three policies that, according to the CAT report, would generate the greatest net cost savings. The three policies, which CAT estimates will save Washington a total of more than \$2.1 billion, are listed in Table 1, next to the net cost savings that CAT claims would result if each of the policies were implemented.³

Table 1. CAT Estimates of New Savings Due to Implementation of Selected Greenhouse Gas Emission Mitigation Measures		
	Program title	Net Cost Savings to WA by 2020 (\$ millions)
RCI - 10	More Stringent Appliance/Equipment/Lighting Efficiency Standards	1,075
RCI - 4	Energy Efficiency Improvements in Existing Buildings	529
RCI - 1	Demand Side Management Programs	498

Source: CAT report

RCI-10 More Stringent Appliance/Equipment/Lighting Efficiency Standards, and Product Recycling and Design

This option would attempt to advance programs to make new lighting, equipment, appliances, and consumer electronic products more energy efficient and more easily recyclable. Specific suggested programs include: developing minimum efficiency standards for televisions, lights, walk-in refrigerators and freezers, residential furnaces, commercial hot-food holding cabinets, and other electronic and electrical equipment; investing in research and development to promote LED and other highly efficient lighting technology; requiring the preferential procurement of Energy Star products when state funds are involved; and tax incentives to increase the sales and use of Energy Star products.

The billion plus dollars of net cost savings the CAT estimates this policy would produce are achieved through the avoided cost of electricity consumption. But if these cost saving estimates are correct, consumers already have every incentive to switch to these types of appliances, even if Washington does not adopt this mandatory policy. No coercive government program is necessary to get people to adopt technologies that are in their own self-interest to use. Companies have every incentive to advertise the possible energy savings to consumers and consumers will adopt these products once they are aware of the savings.

If the private benefits are really as large as CAT estimates, why are people not taking advantage of them already? If subsidies, additional incentives, and requirements are necessary to get people to use these products, then it is because the appliances have a net cost (not savings) associated with them without such subsidies. Either the program matters, in which case it imposes costs; or it is irrelevant, because the consumers would have made these changes anyway, in which case the policy generates no benefits. In either case, there is not the billion plus dollars in cost savings that the CAT report estimates.

³ It is coincidental that these three policies sum to \$2.1 billion and that \$2.1 billion is also the amount the CAT should have reported that their mitigation options would cost by their own estimates.

The CAT cost savings estimate for this program also fails to deal with uncertainty. They explicitly state “According to experts, developing efficiency standards for televisions is proving to be especially challenging, so timing for capturing savings is a *major uncertainty*” (Appendix H p. 62, emphasis added). Nowhere do they make any attempt to quantitatively deal with uncertainty. They simply pick one set of assumptions and forecast more than a billion dollars in savings. Given the uncertainty, a more responsible cost benefit study would have constructed multiple scenarios and attached a probability to each to estimate an expected value.

The failure to adjust for risk is not unique to this proposal. The CAT fails to forecast multiple scenarios and then adjust for their probability when looking at numerous speculative policies. All of the proposals are speculative in nature, but the uncertainty never makes it into the CAT’s estimates. A more realistic approach to uncertainty would likely increase the net cost associated with the recommended mitigation options.

RCI-4 Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Operations

This policy is intended to provide incentives for improving resource efficiency of existing buildings through building operations, maintenance, and occupant behavior. Specific proposals include required efficiency upgrades when buildings are resold, support for energy efficient lending, an incentive program to encourage private businesses to hire more resource conservation managers, and tax incentives. The cost savings estimates from this program suffer from the same main problem that the appliance efficiency standards did. The predicted cost savings directly accrue to the consumers, so if these savings really exist they already have an incentive to take advantage of them.

A specific example may clarify this. This program would “Provide state tax incentives for building owners – public and private – to invest in cost effective energy conservation and measures” (Appendix H p. 31). If the measures are cost effective, no additional tax incentive is needed. Business owners would make greater profits by embracing energy efficiency. That is all the incentive they need. However, if an energy efficiency upgrade costs more to implement than it will save in avoided energy costs, then a tax incentive would be necessary. In this case the program would have a net cost, not a savings. Again, either the program matters and it has a cost, or it does not matter, because the business owners would have made the changes anyway, so there is no net cost or savings from the policy. Either way, there is not the \$529 million in savings that the CAT report estimates.

RCI-1 Demand-Side Management Programs

This policy aims to create incentives to increase the investment in natural gas, propane, and fuel oil demand-side management programs. Specific options include subsidized energy audits for homeowners and businesses, consumer education, energy efficiency reinvestment funds to provide capital, low-cost loans, and incentive programs to encourage adoption of a variety of energy saving practices.

The forecasted gain from this program again results from money saved from improved energy efficiency in excess of the cost of making the buildings more energy efficient. This raises the same fundamental problem that arose with two prior programs: if the private benefits are really so large, why

are people not taking advantage of them already? If the savings are as great as the program estimates, consumers should already be making them. The various incentives are unnecessary. Either the program matters because consumers would not adopt these changes on their own, in which case the program imposes costs; or it is irrelevant because the changes would have been made anyway, in which case the policy generates no benefits. In either case, there is not the \$498 million in cost savings that the CAT report estimates.

Conclusion

The CAT report provides zero guidance to policy-makers regarding the desirability of policies aimed at reducing greenhouse gas 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 report does not address the opportunity costs or potential unintended consequences of its proposals.
- It finds net economic savings from many policies intended to reduce greenhouse gasses, even *without* counting the value of those reduced emissions.
- It fails to estimate the impact of the proposals on state wide economic indicators, such as investment, employment, incomes and state GDP.

In this peer review, we have briefly examined the cost-benefit assumptions for the three proposed policies forecast to generate the largest net cost savings. In each case we have found the analysis to be seriously flawed. Despite the CAT claim that these three programs have a net benefit of more than \$2.1 billion, we can find no sound scientific basis for their claim. CAT's cost savings estimates are not just wildly optimistic; they are the product of a purely fictitious analysis.

CAT's accounting has to be adjusted to eliminate the costs of already taken actions. When considering the cost of only their newly proposed initiatives, CAT's own cost estimates change from a savings of nearly \$950 million to a net cost of more than \$2.1 billion. After eliminating the supposed savings from just the three biggest net cost saving proposals, analyzed above, the net cost of CAT's recommendations swells to more than \$4.2 billion. CAT's cost (savings) estimates of other mitigation options suffer from similar problems, causing even a \$4.2 billion cost to their overall package to understate the true cost.

For policy-makers, there is no worthwhile guidance in the CAT report. Its cost savings estimates cannot be believed, and it fails to quantify the monetary benefits of reduced carbon emissions. Thus policy-makers are left with no basis on which to judge the merits of the CAT report's recommendations for the mitigation of greenhouse gas emissions.

About the Author

The Beacon Hill Institute at Suffolk University in Massachusetts engages in rigorous economic research and conducts educational programs for the purpose of producing and disseminating readable analyses of current public policy issues to voters, taxpayers, opinion leaders and policy makers. The Beacon Hill Institute is a world-renowned learning and research center that develops and performs innovative economic and statistical analyses of current and emerging public policy issues. It aims to strengthen that function by: providing local, state, national and international research entities with state-of-the-art tools and economic analyses, partnering with a PhD granting department of economics, and expanding its reputation for providing objective analysis to examine and influence public policy. For more information visit www.beaconhill.org.



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