



Beacon Hill Institute: Peer Review of The Center for Climate Strategies Cost-Benefit Methodology

October 2007

The Center for Climate Strategies (CCS) serves as a consultant to state based groups working to identify, design, and implement policies that address climate mitigation, clean energy, and economic development opportunities. Its main focus is to identify which policies states should adopt to reduce greenhouse gas emissions. CCS has completed greenhouse gas reduction plans in 10 states and is currently working on plans in 15 other states. The North Carolina Climate Action Plan Advisory Group (CAPAG) is currently working on a plan with CCS to develop recommendations for specific actions in North Carolina to help reduce or prevent climate change. Its recommendations are due to be released October 16th 2007.

Although the report has not yet been released, CSS, according to the CAPAG website, appears to be making recommendations for North Carolina which are similar to others it developed for other states.¹ More importantly, it appears that the same methodology used to estimate the costs and benefits in prior CCS studies will be employed in North Carolina.

Unfortunately for North Carolina and other states using CCS estimates, the cost-benefit methodology is seriously flawed, for three reasons:

- first, CCS fails to quantify benefits in a way that they can be meaningfully compared to costs;
- second, when estimating economic impacts, CCS often misinterprets costs to be benefits; and
- third, the estimates of costs leave out important factors, causing CCS to understate the true costs of its recommendations;

¹ Notes from CAPAG's July 17th meeting indicate policies that are likely to be recommended in the final report. See <http://www.ncclimatechange.us/ewebeditpro/items/O120F13129.pdf>.

The CCS states that their “Arizona state climate action plan provides a good model of a state climate planning process by CCS.”² In the following pages we therefore use its Arizona plan as a basis for our peer review of CCS’s cost-benefit methodology. We conclude with a brief discussion of the implications of our findings for the soon-to-be-released North Carolina Plan.

Brief Summary of the Arizona Plan

The Arizona Climate Action Plan contains 49 specific recommendations to reduce greenhouse gas emissions.³ These policy actions are broadly classified as falling into five areas:

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

If all 49 policy actions are fully implemented, Arizona’s Climate Change Advisory Group estimates that Arizona’s greenhouse gas emissions will be reduced to 5% below 2000 emission levels (p. E4). They further estimate that these policy actions would result in “significant economic benefits for the state, including substantial economic cost savings, new job creation and enhanced economic development” (p. E5). CCS calculates that implementing these 49 policy actions would result in an overall net cost savings of more than \$5.5 billion between 2007 and 2020 (p. E5). Surprisingly, this works out to almost \$13 of *savings* (not cost) per ton of greenhouse gas emissions reduced (p. E5).

Although some specific policies will differ, the Arizona plan provides a good model to evaluate the likely merits of CCS’s work in North Carolina. CCS keeps a list of policy actions states have used. In plans that CCS is involved with the typical state plan contains between 50 and 75 specific policy actions.⁴ The “technical working groups” responsible for recommending these specific policy actions in North Carolina are essentially the same as the five areas in which the Arizona plan recommends policy actions.⁵

² http://www.climatestrategies.us/What_We_Deliver.cfm . The Arizona plan can be found at www.azclimatechange.us.

³ Full report and appendices can be downloaded at: <http://www.azclimatechange.gov/>.

⁴ See http://www.climatestrategies.us/Policies_That_Work.cfm.

⁵ The only exception being that in North Carolina Waste was moved from the Residential, Commercial, and Industrial working group to the Agriculture and Forestry working group.

Problem 1: CCS fails to quantify benefits in a way that they 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. Presumably policy makers would consider projects with *net benefits desirable* and those with *net costs undesirable*.

However, the cost-benefit estimates provided by CCS do not allow for such comparisons because they never estimate the dollar value of the supposed benefits of their recommendations.

In a memo titled “Standard CCS methods for quantification of draft greenhouse gas (GHG) mitigation policy options,” CCS clearly states that “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 we do not have good information on the dollar value of GHG reduction benefits, we use physical benefits instead, measured as MMTCO_{2e}.”⁶

This statement is disingenuous. Practitioners of cost-benefit analysis have developed procedures to estimate the dollar value of costs and benefits even when there are market imperfections. Even if it does not develop its own independent estimates, CCS could draw on the measures of the value of GHG mitigation that have been developed by others.⁷

In the absence of a dollar value for GHG reduction, we are left without any guidance as to whether any policy that has a cost is desirable. For example, if a policy could reduce GHG emissions by five tons, but it would require giving up two tons of steel in lost production, would it be desirable? CCS gives us no guidance because we can not directly compare tons of GHG reduction to tons of steel so we are left essentially comparing apples and oranges. A proper cost-benefit analysis would compare the dollar value of the benefit (reduced GHG) to the dollar value of the cost (reduced steel), and would pay attention to establishing a dollar value for the relevant costs and benefits.

⁶ See <http://www.azclimatechange.gov/download/O40F9294.pdf>.

⁷ For instance, William Nordhaus, *The Challenge of Global Warming: Economic Models and Environmental Policy* (New Haven, CT: Yale University, July 2007). Available at http://nordhaus.econ.yale.edu/dice_mss_072407_all.pdf.

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

In some important instances CCS confuses benefits and costs. The Arizona report states that an additional benefit from their energy policy recommendations includes “the creation of jobs in rural communities and job-needy areas due to the development of alternative energy opportunities in these areas” (p. 60).

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.

Even if jobs were a benefit (which they are not), CCS is selective when counting them. In the same paragraph on p.60 it mentions “reduced need for electric generation facilities.” Presumably this would cost jobs, yet CCS does not acknowledge this or attempt to weigh it against jobs created in clean energy.

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

Although CCS does not estimate the monetary value of benefits (reduced GHG emissions), they do attempt to quantify the monetary costs of their various policy recommendations. Astonishingly, CCS finds that if its overall package of recommendations is adopted, the total cost will actually be negative on net. In other words, Arizona will become wealthier by lowering its GHG emissions, even without counting any monetary benefits from reduced GHG emissions!

Of the 49 policy actions recommended in Arizona, CCS estimates a cost per ton of GHG removed for 30 of their recommendations. CCS finds that only 10 of these 30 recommendations have a net cost associated with them. They find that five policies have zero net cost, and that Arizona would actually become wealthier by implementing 15 of the recommendations (p. 19). Note, that Arizona is not becoming wealthier because of the dollar value associated with lower GHG emissions since that is explicitly left out. CCS is claiming that by forcing individuals to comply with their recommendations, the individuals themselves will receive direct cost savings that make them better off.

There are good reasons to be skeptical about this claim of a free lunch. If there are direct benefits (negative costs) to individuals from reducing activities that emit greenhouse gases we should expect their own self-interest to guide them to reduce emissions. If CCS is correct that 15 of their recommendations would save people money, then Arizona need not actually implement any policy: Most people would simply do what CCS recommends on their own.

Beyond theoretical objections, CCS is underestimating the costs of its recommendations, particularly for those programs estimated to have a net negative cost. We illustrate this by examining in more detail one of the specific proposals suggested in the Arizona report: a plan to reduce vehicle idling.

The Arizona plan called for a reduction in vehicle idling through a state-wide anti-idling ordinance targeted at heavy duty vehicles and diesel engines and promoting the use of technologies such as automatic engine shutdown.⁸ CCS estimated that the net cost (in present value) of this program through 2020 would be negative \$258 million. In other words, by implementing this program Arizona would be \$258 million richer.

Where would this savings come from? According to CCS, education of drivers would emphasize the benefits of reduced idling which include, “fuel savings, toxic emissions reductions, and GHG reduction” (Appendix p. I-13).⁹ We already know that CCS can not quantify the value of GHG reductions and there is no indication that they can quantify the dollar value of toxic emissions reductions. So we are left to conclude that fuel savings, a private benefit that accrues to the individual from reduced idling, creates the full \$258 million in savings.

What about the costs of the program? CCS mentions, “idling technology loan grants,” “funding enforcement,” “distributing material,” “staff training,” “funds for pilot or demonstration projects,” “workshop/outreach programs,” “a system for tracking violations,” “etc” (p. I13-14). Although these are all mentioned in how to administer the program, and are clearly costs, the report specifically states in the key assumptions section that, “Program administration costs, enforcement costs... have not been factored into the cost analysis” (p. I15). How can CCS’s estimates be reliable if they ignore many of the very costs that their programs specifically intend to create?

What costs are included? Apparently only an assumed \$6,000 conversion cost of equipping vehicles with anti-idling technology. The benefit (negative cost) comes from the fuel savings that would be generated by reducing idling by 80 or 100 percent starting with the assumption that the current vehicles which would fall under the ordinance idle their engines an average of 6 hours per day, surely a high number. Crucially, CCS does not explain why owners currently allow their vehicles to idle so much when it is obvious that they have so much to gain! This implies there are benefits to idling that are unaccounted for in CCS’s analysis hence leading them to understate the costs of their proposal.

Implications for North Carolina

There is nothing on the North Carolina Climate Action Plan Advisory Group’s website to indicate that the Center for Climate Strategies will be employing a different methodology in North Carolina than they have used in other states such as Arizona. Although it

⁸ More information on their recommendation can be found at:
<http://www.azclimatechange.gov/download/O40F9298.pdf>

⁹ CCS also mentions reduced engine wear but later states that it does not factor in the value of that benefit.

appears to conduct a cost-benefit evaluation of climate change policies, CCS's analysis does not hold up to the scrutiny of peer review.

The Center for Climate Strategies fails to do one of the most basic calculations included in any responsible cost-benefit study: it does not quantify both benefits and costs in dollar terms so that they can be compared. CCS sometimes confuses costs for benefits. Furthermore, there are serious omissions in their estimates of program costs. CCS asks us to believe that there really is a free lunch in their recommendations, and that implementing their policies would actually not have any net cost, despite the fact that private, self-interested individuals are not grasping these opportunities on their own. One has to conclude, given such flaws in their methodology, that CCS overestimates cost savings and underestimates the costs that will be incurred.

Unfortunately, the flaws in CCS's methodology mean that unless the methodology used to construct their North Carolina report is significantly different from the work they have done in the past, the forthcoming report will contain little information that could guide policy makers to make efficient decisions.