MEMORANDUM

TO: Clean and Renewable Energy Subcommittee members

FROM: Hal Nelson

CC: Donna Boysen, John Warmerdam, Tom Peterson, Tom Looby

DATE: May 27th, 2008

RE: Cap and Trade Briefing

This memo is to assist the members of the Clean and Renewable Energy subcommittee in developing its cap and trade policy option. The cap and trade program is the most complicated of all the policy options. Depending on the degree of consensus and complexity of each of the design elements, its suggested that the subcommittee offer one of four types of recommendations for each policy design element:

1) offer a fully articulated recommendation
2) make a recommendation of no recommendation if there are diverse conclusions within the subcommittee on the relevant element
3) make a recommendation of further study
4) make a fully articulated recommendation contingent on the findings of cost effectiveness from future study.

For the overall policy option, it is also possible to make a recommendation to proceed with the cap and trade, but to not quantify the costs of the program.
Please recall that these are preliminary design elements, subject to review and revision based on future developments. The design elements of the cap and trade affects the quantification of the costs of the cap and trade option and vice versa.

Overview: Cap and trade mechanisms for reducing greenhouse gases (GHGs) are proliferating globally. Each of these programs (or proposals) are different, based on the political, economic and social characteristics of the jurisdiction. However, there are certain principles that can be enumerated in the architecture of a cap and trade program. Design principles of a cap and trade could include:

- cost effectiveness
- reduce uncertainty among regulated actors
- full coverage of participants
- fair treatment or regulated actors
- program transparency
- simplicity
- administrative efficiency
- equitable treatment of early action

The principles are often in conflict with each other, but having a list of them is important in weighing costs and benefits of program design. Thus, the chosen design principles can help inform the many elements of a cap and trade. These elements are listed below along with some considerations for each one.

Timing: When should the cap become effective? It is likely that some guidance on this element will come eventually from the ICCAC, but in the meantime a placeholder start date is important for the quantification process. *Ceteris paribus,* the sooner the cap starts, the easier it will be to meet interim targets by reducing unconstrained interim emissions growth and giving actors more time to implement reduction measures by the interim targets. This consideration is balanced by the preparation and lead time required to implement mitigation projects.

Emissions reductions goals: The program design needs to give specific targets for the program at the interim and final target recommendations set by the ICCAC in the interim report. These include the level of cap at 2012 and 2020 relative to the recommended baseline year of 2005.

Jurisdictional coverage: The CRE subcommittee should consider the range of geographical coverage. Typically, the larger the coverage, the lower the cost of mitigation as regulated actors have greater access to lower cost GHG mitigation projects. Certainly a federal (or optimally an international) program offers a wider range of mitigation opportunities than an Iowa-only or a regional program. The Midwestern Governors Association (MGA) Midwestern GHG Reduction Accord recommends a regional approach to provide leadership and develop programs that are reflective of the conditions unique to the Midwest. However, the development and implementation of larger scale programs could be delayed past what is acceptable to the ICCAC.

One other consideration that falls under coverage for the power sector is the type of cap; supply side, or demand side. A supply side, or smokestack cap, would cover only installations in the state of Iowa. A demand side, or load based cap, covers installations that serve load in the state. The load based cap can cover emissions associated with purchased power and emissions associated with unit contingent contracts that serve state load but that are located outside the state. If a load based cap is recommended, then a baseline for the emissions intensity of purchased power needs to be established.

Sectoral coverage: Gases from other sectors can be regulated under the cap and trade using CO_2 equivalents. In addition to CO_2, the draft Iowa Inventory and Forecast shows significant emissions of hydrofluorocarbons (HFC's), nitrous oxide (N_20), and methane (CH_4) over the 2005-2025 planning period. Besides power, other sectors that could possibly be included under the cap and trade are industrial boilers, transport fuels, landfills, large animal feeding operations, and other agricultural operations. The benefits from including natural gas utilities and pipeline operators need to be weighed against the cost and availability of emissions reductions from within these sectors.

The inclusion of multiple sectors increases the heterogeneity of marginal costs of mitigation and increases potential efficiency of the cap and trade program. The MGA recommends a multi-sector cap and trade mechanism to help achieve GHG reduction targets. However, inclusion of other sectors can increase the complexity of the program and if emissions data is unreliable in some sectors this can reduce the potential integrity of emissions reductions. Others have argued that emissions reductions in other sectors might be better achieved by other mechanisms than a cap and trade.

Phases: How long should each interim compliance period be? With limited banking and borrowing, then typically only allowances from the current multi-year period can be surrendered for compliance. Should all sectors/actors start at the same time? Some sectors might have spotty emissions inventories. Stationary sources with good emissions data are likely candidates for regulation in the first phase should a multi-sector cap and trade be recommended.

Sources covered: Typically a large percent of GHG emissions can be accounted for by a relatively small number of installations. An analysis of Iowa's CO_2 inventory should reveal an appropriate *de minimis* level for sources covered.

Pooling: Small regulated actors in the same sector might be allowed to pool. These actors typically have limited administrative resources. The distribution of allowances is treated as for other actors, but then small operators can voluntarily give up their allowances to a trustee who administers the program. The pool then undertakes emissions reductions projects jointly which potentially results in economies of scale and reduced transaction costs.

Distribution of allowances: Distribution can occur on any point on the scale from free allocation based on historical emissions (grandfathering) to an auction of all allowances. The Acid Rain Program and the 1st phase of the EU Emissions Trading Scheme are the most well known examples of grandfathering. Programs that have recommended auctioning include some states in the Regional Greenhouse Gas Initiative (RGGI), the 3rd phase of the EU ETS, and the Interim Opinion on GHG Regulatory Strategies in California.

Between the two extremes lies partial auctioning based on sector, performance based allocations, and sliding allocations based on time. The choice of distribution of allowances has significant potential impacts on the equity of the program. In regulated markets, price increases are likely to be reduced with grandfathering, but the ability of the program to assist stakeholders who are negatively impacted is reduced. Typically, the auctioning of some fraction of allowances is required for program liquidity, CO_2 price discovery, and increasing the ease of new entrants.

Use of auction proceeds: Typically, programs to reduce externalities are most efficient if the proceeds are returned in a lump sum to impacted actors or are used to reduce existing distortionary taxes in the economy. Conversely, auction revenues can also be strictly dedicated to investment in GHG mitigation efforts. Other jurisdictions have dedicated a

small fraction of the auction proceeds to cover program administrative costs. One consideration here is the statutory authority that the program will require, as tax reductions in other sectors typically involves legislative involvement that could increase the complexity of the program design and implementation.

Flexibility mechanisms: The balance of this memo addresses design elements that help to limit the costs of the cap and trade. These mechanisms are intended to give regulated actors flexibility in the timing of reduction requirements, types of allowances permitted, and in reducing the price volatility of the program.

Safety valve: a safety valve is a mechanism that sets a value for CO_2 allowance prices which, if reached, allows regulated actors to purchase an unlimited number of allowances. This essentially "busts" the cap and at the same time gives some assurances of total program costs. The cap and trade above the safety valve level can be considered similar to a carbon tax. This off-ramp could also include increasing the allowable limit of offsets and/or outside allowances that are eligible for compliance with the cap and trade based on CO_2 allowance prices.

Banking and borrowing: Banking allowances enables holders to surrender allowances from earlier compliance periods in the current period. Unlimited banking of allowances essentially makes the allowances not expire. This helps to reduce volatility as allowances that are banked during periods of CO_2 low prices are used or sold during periods of high CO_2 prices. Borrowing allows actors to borrow allowances from future periods for use in the current period. Borrowing is believed to reduce volatility, potentially at the cost of administrative complexity, which could be mitigated by longer compliance periods.

Offsets: Offsets are reduction projects in sectors that are not covered under the (or any) GHG reduction program. The supply curve for offsets is potentially very flat, providing low cost emissions reduction opportunities for regulated actors, thereby minimizing program cost. The trade offs with cost minimization are additionality and risk reduction or supplementarity. If the offsets that enter the program would have happened anyway (are not additional to BAU activity) then the environmental effectiveness of the cap and trade is jeopardized. Also, a large percent of offsets and trading entering into the program reduces in-sector reductions and enable high CO_2 intensive activities to continue. Risks to stakeholders from future regulation and climate change are therefore not reduced. For this reason, some analysts have argued that offsets should be supplemental to in-sector reductions.

For offsets to be included in the cap and trade, some decisions need to be made about their level of inclusion, what technologies are eligible (such as forestry projects), and the geographic scope of offset eligibility. Some jurisdictions have allowed a large percent of reductions to come from national or international sources, while others might prefer in-state projects due to their economic development benefits. Similarly, other jurisdictions have allowed the use of unbundled renewable energy credits (RECs) for compliance.