II. Central Recommendations: Carbon Trust & Cleantech Commercialization

A. Create a California Carbon Trust

A new public or a public-private entity that creates an incentive fund using allowance revenues to encourage carbon reductions in sectors inside and outside the cap, while also supporting environmental justice goals, actively managing the carbon market, and encouraging research, development and demonstration efforts. Activities could start prior to 2012, helping to set an early price signal.

- *Timeframe:* in place by 2012.
- *GHG Reduction Potential*: The potential for GHG reductions would depend on the trust's funding source (initially from early auction proceeds or some other source) and the cost of acquiring carbon rights. If the Trust is able to secure reductions at a cost equal to or slightly less than auction prices, then for every million tons of CO_2 allowance auction revenue provided to the trust about one million tons of CO_2 reductions would occur.
- *Ease of Implementation:* moderately difficult. Barriers include the following:
    - Assumes some auction revenue.
    - Requires the creation of a new mechanism. It may make sense to house the Trust within an existing entity or create a new entity designed specifically to encourage the development and execution of greenhouse gas reduction projects outside the cap. This entity could be a public entity or a public/private entity.
- *Co-benefits / Mitigation Requirements***:** many co-benefits, no mitigation requirements:
    - Provides funding for carbon reductions
    - Encourages carbon reduction projects prior to 2012
    - Can direct funding towards technology demonstration and research in areas where private investment is lacking
    - Supports Environmental Justice goals of empowering communities and reducing criteria and toxic pollutants
- *Responsible Parties:* To be determined. Could be an existing agency (a combination of CARB and regional air boards, the California Treasurer's office, etc.) or could be a new entity.

Problem: California would benefit from a financial mechanism that stimulates investment in GHG reduction projects and technologies in both capped and uncapped sectors of the state's economy. This financial mechanism can address the following problems:

- Barriers and early failures in emerging markets for GHG reductions
- Lack of financial support for projects in disadvantaged communities or with other significant co-benefits

- Price spikes and instability in the carbon market
- Gaps in private sector funding for research and demonstration projects

Possible Solution: A California Carbon Trust could serve four important roles as the manager of an incentive fund for carbon and other GHG reductions in California. Its primary purpose would be to achieve GHG emission reductions outside the AB 32 cap, helping California to reach its ambitious GHG reduction targets. The second purpose, closely linked to the first, would be to further the environmental justice goal of empowering communities to take part in achieving emission reductions of both carbon and other criteria and toxic pollutants. A third role for the Trust would be to serve as a market maker and price stabilizer for the carbon market. And the fourth role would be to fund University research and "first project" demonstration financing in areas where private sector funding is lacking. The Trust's activities could start prior to 2012, jump-starting emissions reductions in California, helping to establish an early price signal for carbon and other GHG emissions.

1) Achieve Additional GHG Reductions and Address Carbon Market Failures

This Trust would achieve its primary goal of reducing GHG emissions outside the cap -- reductions that cannot be claimed by regulated entities -- by offering to purchase the carbon benefits from projects that meet strict requirements of being additional, real and verifiable. Qualified projects would compete based on a project-proposed price of carbon. This process would operate in parallel with private offset investments, but would have greater flexibility to fund reductions that would achieve AB 32 goals but may not receive private sector funding. For instance, private sector investments may need to achieve rapid payback times to attract private capital, with the benefits of reductions in the future greatly discounted. By taking a long view of meeting GHG reductions in 2020 and 2050, the Trust could invest in projects that may have a greater overall GHG reduction per dollar of investment, but a longer lead time. The Trust could also address other gaps and failures in the carbon market, encouraging a variety of projects that are having trouble finding access to capital from the private sector.

The Trust would not fully fund the project, but would offer enough of a financial incentive to allow the project to become financially feasible. For example, a project applicant might want to retrofit the HVAC system at a multi-family residential building. A market barrier exists because of the discrepancy between who makes the capital investment and who ultimately reaps the benefit of that investment: in this case, the building owner must front the capital while the tenants benefit from lower utility bills. The Trust creates an incentive to help overcome the market barrier by offering to purchase the project's carbon benefit from the building owner. The building owner benefits because he or she is reimbursed for the retrofit up to the value of the carbon reduced, while tenants benefit from lowered utility bills, not to mention more efficient and better quality air conditioning and heating in their homes. The State of California benefits from the reduction in carbon emissions, and capped entities such as members of the business sector benefit because California is closer to its emission reduction target at no expense to them.

To ensure the integrity of the carbon reductions, the Trust must limit funding to project for which clear measurement and verification standards exist. For example, project types could include those for which the California Climate Action Registry has accounting protocols or those that produce measurable and verifiable energy efficiency or low carbon energy generation. In all cases, the Trust would need to hold a reserve to protect against unexpected shortfalls (i.e., some percentage of carbon reductions is held in reserve so that environmental integrity can be maintained in case of project failure.)

The Trust's standard project selection process would be based on the relative cost-effectiveness of emissions reductions, similar to the state's successful Carl Moyer program. The Trust could issue requests for proposals periodically (quarterly or annually, for example), and applicants could include municipalities, hospitals, schools, community organizations, nonprofits, or any other project sponsor outside of the cap. An application to the Trust for funding would detail the project's plans, including the quantity of emissions to be reduced and a proposed price at which the project will sell the emission reductions to the Trust. A Dutch auction could determine the price at which the Trust decides to purchase carbon reductions. Because the Trust does not fund entire projects, all projects would have to be financially viable through a combination of their own economics and the additional value of selling the carbon reduction units to the Trust.

The Trust could choose to do one of two things with the carbon it has "purchased" from emission reduction projects. Both of these mechanisms ensure that carbon reductions occur within California and investments stay within the state.

- *The Trust can retire the carbon for public benefit.* Credits to be retired might have no real market value, or might pose double-counting concerns. For example, the Trust would retire the credits generated by an energy efficiency program that allows the associated Load Serving Entity to claim credit by reducing its own emissions. All carbon reduction projects that also value co-benefits such as air pollution reductions would have to be retired.

- *Credits from Trust projects that value only carbon might be eligible for sale in the voluntary markets.* The revenue generated by these sales could be put back into the Trust and used to invest in further reductions. Possible buyers might include state agencies, corporations, or individuals (through an offset program) that want to offset their emissions.

Note that the Trust could potentially be designed so that some of the carbon credits it purchases could be used by capped entities as a flexible compliance mechanism in the regulated market. These credits would come from certain approved project types for which protocols exist.

2) Encourage Environmental Justice Goals and Projects with Co-Benefits

By setting aside some portion of its funds to be distributed to projects based on geographic location, demographics, and/or associated co-benefits, this Trust could also help to reach important environmental justice goals. Distributing funds based on geography or demography would ensure that disadvantaged communities receive a pre-determined amount of funding for projects that not only reduce carbon emissions, but also foster community development and protect low income consumers from rising energy prices.

In addition to (or instead of) distributing funds based on geography or demographics, the Trust could choose to favor projects with ancillary benefits, such as green collar job creation, technology demonstration, or criteria and toxic pollution reduction. In these cases, the Trust would pay not only for carbon reductions, but would also pay for co-benefits such as local air quality benefits. For example, a project that reduced NOx in addition to CO_2 could be financially rewarded not only for the carbon reduced, but also for the NOx reduced by the project. By attaching either a time value or a monetary value to co-benefits, the Trust would create incentives for projects that not only help California reach its GHG reduction targets, but also achieve environmental justice goals such as job creation and pollution reduction.

The selection process for projects with co-benefits would be similar to that for projects that involve only carbon benefits. Projects would be judged on relative cost-effectiveness, compared with other projects in the same category (based on geographic location, specific co-benefits, etc). Projects would also need to be financially viable through a combination of their own economics and the additional value of the carbon reductions, plus whatever values the Trust assigns to the co-benefits. Again, the GHG reduction credits could be retired for public benefit or possibly sold into voluntary markets.

3) Actively Manage the Carbon Market and Mitigate Price Volatility

The third role of the Trust could be as an enabler and/or "market maker" of the carbon market in California. The Trust could purchase emission reductions that have been certified as tradable credits and sell or retire them as needed in order to help stabilize the California carbon market.

The Trust could also be designed so that some of the carbon credits it purchases from projects outside the cap could be used as a flexible compliance mechanism in the regulated market. These credits would come from certain approved project types for which protocols exist, and would only be sold into the compliance market as needed to alleviate price spikes. The Trust would thus act as a "shock absorber" – buying credits from capped entities when demand for carbon is weak in order to support higher prices needed for investment and innovation, and selling credits when demand is high and supply is low.

By stabilizing the price of carbon (when necessary) and providing a sense of certainty over time, the Trust would be managing carbon the way that the Federal Reserve Bank manages interest rates. This active management should decrease the likelihood of the

regulatory process overreacting or reacting too slowly to volatile carbon prices. As a dynamic manager of the price of carbon with a long-range view, the Trust would perform the role of a market oriented safety valve and obviate the need for static regulations such as price floors or ceilings. Specific rules for intervention in the market would have to be developed in advance.

4) Encourage Research, Development, and Demonstration

A fourth role for the Trust would be to fund low-cost, high impact University research and demonstration projects. These are both areas that lack adequate private funding but can produce valuable technology advancement, accelerating GHG reductions and supporting economic growth. The Trust could set aside some percentage of the allowance revenues to be spent in this area, with funds to be distributed based on judgments of the relative promise, reliability, and cost-effectiveness of projects in various categories.

Funding Sources for the Carbon Trust

Revenues for the Trust could come from the auction of allowances, from penalties or fees for non-compliance post-2012, or from another source such as the general fund or borrowing guaranteed through repayment from auction revenues. Based on historical experience, revenue from penalty fees is expected to be minimal. California Environmental Quality Act mitigation fees are another possible revenue source to consider[iii]. If the Trust is designed to be a market maker and has the authority to purchase and sell carbon credits, an additional source of funding would be the sale of certified, tradable carbon credits. Finally, another source of funding could be the sale of carbon reduction credits into the voluntary market.

The state might consider offering one or more early auctions of a small percentage of the 2012 allocations. This early auction proposal presupposes that the state has decided not to grandfather all allocations based on historic emissions and has established a minimum percentage of allowances to be auctioned in 2012. One or more early auctions would help to set an early price signal and would remove some of the uncertainty about rule-making, jump-starting the market for carbon in advance of 2012. We should expect that a price discovery period would probably reveal a price lower than expected; this is what has happened historically in other similar schemes. Early auctions would allow the state to "learn by doing," essentially serving as a trial period. The state would have the opportunity to learn and make adjustments before 2012. If the state decides against an early auction, the Trust could be funded initially through the state's general fund or through a loan, or through other sources.

Any auction revenues are legally a fee and thus must meet the legal standard established by the Sinclair Paint court decision. A "Sinclair Test" requirement means a nexus must exist between the purpose of the fee and the use of its revenues. The Trust passes the Sinclair test because both the fee and the Trust's expenditures are intended to reduce carbon emissions in California.

Consideration should be given to designing the Trust as a public/private partnership in order to leverage private capital in addition to the public money used to purchase credits. Involving private capital could provide access to resources that should help improve the economics of the

Trust, particularly in the earlier years of operation before 2012. Another possible benefit of involving the private sector would be a contract guarantee that Trust revenues would be restricted to the purpose of reducing GHG emissions.